



EN

Horizon 2020

Work Programme 2018-2020

8. Health, demographic change and wellbeing

Important notice on the Horizon 2020 Work Programme

This Work Programme covers 2018, 2019 and 2020. The parts that relate to 2019 and 2020 are provided at this stage on an indicative basis. Such Work Programme parts will be decided during 2018 and/or 2019.

(European Commission Decision C(2017)7124 of 27 October 2017)

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Introduction

Challenges

Europe is facing four main healthcare challenges: (i) the rising and potentially unsustainable health and care costs, mainly due to the increasing prevalence of chronic diseases, to an ageing population requiring more diversified care and to increasing societal demands; (ii) the influence on health of external environmental factors including climate change; (iii) the risk to lose our ability to protect the populations against the threats of infectious diseases ; (iv) health inequalities and access to health and care. Europe must invest in research, technology and innovation to develop smart, scalable and sustainable solutions that will overcome those challenges. Europe must work with other global actors and must grasp every opportunity for leadership.

Objectives and policy drivers

Building on the principle of openness – open science, open innovation and open to the world the societal challenge 1 on 'health, demographic change and well-being' (SC1) aims to deliver solutions for a better health for all by:

- Moving towards the effective integration of personalised medicine approaches into healthcare services and systems to the benefit of patients and citizens;
- Fighting infectious diseases and the growing threat of antimicrobial resistance;
- Addressing the needs of the most vulnerable groups and the global increase of chronic diseases;
- Decoding the role of environment – including climate change and air quality – on health and developing mitigating measures;
- Exploring the digital potential for health innovation and healthcare, including the building of a 'European health research and innovation cloud';
- Stimulating innovation in the European healthcare domain and industry by exploring the application of advanced technologies, improve the health of the workforce and promote regulatory science.

These objectives implement the EU's commitment at international level and at EU level in particular the [2030 Agenda for Sustainable Development and its Sustainable Development Goals](#), the [COP21](#)¹ and the goals of [the Ostrava Declaration on Environment and Health](#), the [Digital Single Market](#) (and its relevance for the digital transformation of health and care), the new [European One Health Action Plan against Antimicrobial Resistance](#), the [cross-border healthcare directive](#) (and its support to the European Reference Networks), the [Commission](#)

¹ 21st annual Conference of the Parties (COP) in Paris from November 30th to December 11th 2015 of The United Nations Framework Convention on Climate Change (UNFCCC)

[Communication on upgrading the single market](#) (and its proposed health technology assessments initiative), and the [Council Conclusions on Personalised Medicine](#) and [on Pharmaceuticals](#)

This Work Programme implements several overall recommendations expressed in the *Horizon 2020 interim evaluation*, such as enhancing societal involvement and societal impact. It also implements specific measures identified in the SC1 thematic assessment of the interim evaluation of Horizon 2020, such as applying further simplification processes with the pilot topic on lump sum cost reimbursement, and increasing the support for international co-operation.

Expected impacts

The expected impacts of this work programme are described at the level of the calls and at the level of the call priorities further below.

Research synergies

Social sciences and humanities research is incorporated, and sex differences and gender aspects are addressed where relevant. SC1 integrates the *principle of responsible research and innovation*, including *ethics*, in all its activities.

International cooperation is encouraged all through the work programme, in line with the strategy for EU international cooperation in research and innovation (COM(2012)497).

In line with promoting 'Open Science', grant beneficiaries in this work programme will engage in research data sharing by default, as stipulated under Article 29.3 of the Horizon 2020 Model Grant Agreement (including the preparation of a data management plan), and in particular FAIR² (findable, accessible, interoperable and reusable) data sharing. Participants may however opt out of these arrangements, both before and after the signature of the grant agreement. More information can be found under general annex L of the work programme.

In the context of a public health emergency grant beneficiaries will be subject to additional requirements with respect to timely sharing of data.

For *clinical studies*, the 'Open Science' approach requires (i) the registration of the study prior to the enrolment of the first patient in a registry which is part of the WHO Registry Network³, and (ii) in line with the WHO 'Joint statement on public disclosure of results from clinical trials'⁴ the disclosure of the study results by posting on the results section of the registry and through journal publication within 12 months from primary study completion.

The use of *European health research infrastructures* (including e-infrastructures) is also encouraged when appropriate, e.g. research infrastructures established as a European Research Infrastructure Consortium (ERIC) or identified on the roadmap of the European

² <https://www.force11.org/group/fairgroup/fairprinciples>

³ <http://www.who.int/ictrp/network/en/>

⁴ <http://www.who.int/ictrp/results/jointstatement/en/>

Strategy Forum on Research Infrastructures (ESFRI). Projects submitting a data management plan are invited to identify the existing European research data infrastructures that may be used and how these may be mobilised, in particular for long-term data curation and preservation.

The programme should allow for further building of clinical research infrastructure and evidence with regard to efficient and validated models of organisation of complex networks such as *European Reference Networks* of healthcare providers established by Article 12 of Directive 2011/24/EU⁵.

Actions included in this work programme may also gain more impact and scope by envisaging *synergies with the European Structural and Investment Funds (ESIF)* in health and related fields⁶. It is therefore recommended, where relevant, to seek concrete synergies with ESIF in *smart specialisation priorities* within the EU regions.

Finally, SC1 also builds strong links and synergies with Joint Programming Initiatives (JPIs), with activities undertaken by the Innovative Medicines Initiative 2⁷ (IMI2), the European and Developing Countries Clinical Trials Partnership 2⁸ (EDCTP2) and the Active and Assisted Living Joint Programme 2⁹ (AAL2). Topics in this work programme also respond to the priorities of the European Innovation Partnership on Active and Healthy Ageing¹⁰ (EIP-AHA).

Contribution to focus area(s)

Focus Area 'Boosting the effectiveness of the Security Union' (SU): EUR 36.00 million

Focus Area 'Digitising and transforming European industry and services' (DT): EUR 60.00 million

⁵ http://ec.europa.eu/health/ern/policy/index_en.htm

⁶ In order to provide support for promoting synergies, the European Commission has produced guidance to the relevant authorities through a Staff Working Document (SWD (2014)205 final) and annexes which contains explanations on the basic rules and principles for obtaining synergies and combining the different funds, and which contains recommendations to the relevant actors as well as to the European Commission on how to facilitate synergies:

<https://ec.europa.eu/research/regions/index.cfm?pg=synergies>

https://ec.europa.eu/research/regions/pdf/publications/h2020_synergies_201406.pdf#view=fit&pagemode=none

⁷ <http://www.imi.europa.eu/content/imi-2>

⁸ <http://www.edctp.org/>

⁹ <http://www.aal-europe.eu/why-another-aal-programme/>

¹⁰ http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing

Call - Better Health and care, economic growth and sustainable health systems

H2020-SC1-BHC-2018-2020

This call will aim at reconciling better health and healthy ageing with the need to develop sustainable health and care systems and growth opportunities for the health and care related industries. The scope of the call may range from prevention, diagnosis, stratified approaches, predictive toxicology, the development of novel and repurposed therapeutic approaches, including medical technologies and advanced therapies, cohorts and registries-based research, to integration of care and systemic digital solutions for health and ageing well. It aims to translate new knowledge into innovative applications and accelerate large-scale uptake and deployment in different health and care settings, making health and care systems and services more accessible, responsive and efficient in Europe and beyond. To this end, the inclusion of private companies and other innovators in the projects is encouraged.

Research areas to be addressed under this priority will implement and provide the evidence base for global and EU policies mentioned as 'policy drivers in the Introduction'. .

This call will be implemented through five main priorities:

1. Personalised medicine
2. Innovative health and care industry
3. Infectious diseases and improving global health
4. Innovative health and care systems - Integration of care
5. Decoding the role of the environment, including climate change, for health and well-being

1.1 Personalised medicine

This priority will aim at delivering personalised health and care solutions to benefit citizens. It will generate and translate knowledge on disease aetiology and technological innovation into personalised health and care solutions. Areas of application include chronic, rare and communicable diseases. This priority targets any type of population, including children, the ageing population and high-risk groups. Relevant links with the [European Reference Networks](#) will be sought. Research under this priority will also attempt to develop an understanding of the economic impact and the potential of personalised medicine to transform health systems.

The expected key impact of this priority is improved health outcomes for the citizens. Additional impacts are to: (i) establish Europe as a global leader in personalised medicine research; (ii) support the personalised medicine science base through a coordinated approach to research; (iii) provide evidence to policy makers of the benefit of personalised

medicine to citizens and healthcare systems. The International Consortium on Personalised Medicine will be instrumental to achieve these aims.

Proposals are invited against the following topic(s):

SC1-BHC-01-2019: Understanding causative mechanisms in co- and multimorbidities

Specific Challenge: The increasing number of individuals with co-and multimorbidities poses an urgent need to improve management of patients with multiple co-existing diseases. A better understanding of their causative mechanisms is needed to develop early diagnosis, efficient prevention and monitoring, and better treatments adapted to co- and multimorbid patients throughout their life course. Furthermore, there are many different etiological models of comorbid conditions (e.g., direct causation model or a consequence of treatment). In this context, capturing and measuring patient's complexity in the context of co- and multimorbidities is crucial for adequate management of these conditions and requires innovative approaches.

Scope: Proposals should identify and validate causative mechanisms (e.g. molecular, genetic, correlative, drug-drug interaction) combining mental and physical disorders through the integration of basic, pre-clinical and/or clinical research¹¹. Applicants should prove the relevance of the identified mechanisms for co-morbid development. Where pertinent, development of biomarkers and other technologies for diagnosis and monitoring of comorbid conditions in patients is encouraged. A purposeful exploitation of existing data, biobanks, registries and cohorts is expected¹², but does not exclude generation of new data. Sex and gender aspects, age, socio-economic, lifestyle and behavioural factors and any other non-health related individual attributes should be taken into consideration. SME participation is strongly encouraged.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 6 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- New directions for clinical research to improve prevention, diagnosis, prognosis, therapy development, and management of co- and multimorbidities.
- Whenever relevant identified biomarkers for more accurate and earlier diagnosis, prognosis as well as monitoring of patients' condition.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

¹¹ Clinical trials are excluded

¹² Including any national, EU or international resource or infrastructure if appropriate.

SC1-BHC-02-2019: Systems approaches for the discovery of combinatorial therapies for complex disorders¹³

Specific Challenge: Many complex disorders pose a challenge to identify the most effective therapeutic interventions because current therapies often target specific aspects of a disease, without achieving complete control or the best possible results for patients. Due to the multiple causes of such diseases and the heterogeneity between patients, approaches directed at single targets have had limited efficacy, overlooking important factors involved in disease pathophysiology. Hence, a promising therapeutic approach to meet this challenge is to combine different therapies, while increasing therapeutic efficacy in a cost-effective manner.

Scope: Research should aim to understand at systems level the pathophysiology of a disorder in groups of patients responding well or poorly to particular therapies and further develop combinatorial therapies tailored to the needs of individuals or stratified patient groups.

Projects should focus on already available and/or authorised therapies and have access to standardized biobank samples derived from retrospective or currently running clinical studies. These patient samples should be re-analysed with modern high-throughput technologies. The existing and newly produced data should be integrated using systems approaches, which could combine sub-cellular/cellular and/or organ level *in-silico* models and network analysis as appropriate, and used to build more sophisticated computational frameworks to predict patient responses to combinatorial therapies. These predictions should be validated in pre-clinical and clinical studies¹⁴ taking into account sex and gender differences. Funding of late stage clinical trials is not within the scope of this topic.

Applicants should include a thorough data management plan for transnational data sharing to enable the computational analysis and it is strongly recommended to adhere to the state-of-the-art international standards and to the general concepts of the FAIR¹⁵ principles.

The topic invites proposals in complex disorders of high prevalence and of a high economic burden (rare diseases are excluded). SME participation is strongly encouraged.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 6 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- New concepts of combinatorial therapies for complex disorders tailored to the needs of individuals or stratified patient groups.

¹³ <https://www.nature.com/scitable/topicpage/complex-diseases-research-and-applications-748>

¹⁴ http://ec.europa.eu/research/participants/data/ref/h2020/other/legal/templ/h2020_tmpl-clinical-studies_en.pdf

¹⁵ <https://www.force11.org/group/fairgroup/fairprinciples>

- Improved efficacy and take-up in the clinical setting in comparison to established therapeutic interventions.
- Enable the development of personalised medicine.
- Increased research & innovation opportunities in this industry intensive field, particularly for SMEs.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-03-2018: Exploiting research outcomes and application potential of the human microbiome for personalised prediction, prevention and treatment of disease

Specific Challenge: The human microbiome plays an important role for health. Many different projects in 'metagenomics' and epidemiological research in recent years have delivered new knowledge on associations between the microbiome and a wide range of diseases. International initiatives such as the International Human Microbiome Consortium (IHMC) have generated large-scale data. These research efforts were first of all made to identify host-microbe-interactions and links of the microbiome with diseases. Now the challenge is to accelerate the translation of data and knowledge to define balanced healthy conditions and to predict and prevent diseases through the development of personalised approaches and clinical tools. Building on existing data it is necessary to produce also new data with the aim to make the research more comprehensive or more holistic and to achieve more valuable clinical tools. Whilst the promise of such tools is evident, they need to be validated and be part of personalised medicine.

This topic will focus on the clinical aspects of personalised prediction and prevention of disease. Other aspects of microbiome research in relation to food/nutrition will be addressed by a cluster of topics in Societal Challenge 2. Further topics may be launched under the IMI2 JU.

Scope: The aim is to achieve understanding of balanced states of health and on that basis to deliver personalised approaches and clinical tools for predicting and preventing diseases. Proposals should integrate and use high quality microbiome, metabolome and other -omics data produced by large scale international initiatives. They should combine and expand these data with approaches including disease-oriented functional analysis, endogenous and exogenous factors, innovative imaging, functional, structural and lifestyle, ageing, dietary data, environmental data, mental disorders and/or any other comorbidity.

Proposals should build on data from existing microbiome projects and, as appropriate, on data from other international initiatives. Focussed production of new data should make subject coverage more comprehensive with the aim of delivering more valuable clinical tools. Proposals should address relevant ethical implications, take into account sex and gender differences, the effect of country-specific issues and should include a section on research data

management. The proposed work should be connected to the future European Open Science Cloud¹⁶ to enable sharing and re-use of resources as well as interoperability with other types of data and tools across disciplines. Proposals should contribute to standardisation of sample collection and storage, methods (Standard Operating Procedures) and study designs. SMEs participation is encouraged.

Proposals addressing rare diseases are not in scope of this action.

The Commission considers that proposals requesting a contribution from the EU of between EUR 10 and 15 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Personalised medicine approaches for the prediction and prevention of diseases through exploitation, integration and combination of data from existing microbiome projects and appropriate other international -omics studies.
- More valuable clinical tools built on existing data and new complementary data in relevant repositories.
- Identification and validation of microbial functionalities; robust healthy conditions and determinants of resilience for defined populations at specific body sites.
- Better prediction and prevention of diseases through validated novel clinical tools that are helpful for end-users.
- More intensive collaboration and strategic synergies between scientists across disciplines and sectors.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-04-2018: Rare Disease European Joint Programme Cofund

Specific Challenge: Despite the advances on biomedical research most of the estimated 6000 to 8000 rare diseases lack means for specific diagnosis and therapy. Small and dispersed patient populations, fragmented expertise and research resources make rare diseases a prime area for EU-level collaboration. Substantial funding from the EU Framework Programmes for Research and Innovation has had an integrating effect in the field, and three consecutive ERA-NETs have built the base for close research collaboration between Member States.

¹⁶ In particular, microbiome data sharing is relevant for the future Health Research and Innovation Cloud, which will be a thematic component of the European Open Science Cloud: https://ec.europa.eu/research/openscience/pdf/realising_the_european_open_science_cloud_2016.pdf.

European Reference Networks (ERNs¹⁷) established under the Directive on Patients' Rights in Cross-Border Healthcare will bring a major structuring effect on research and care by linking thematic expert centres across the EU.

There is a need to more efficiently bring the results of rare diseases research and innovation to patients in terms of new and optimised treatment options, diagnostic tools and integrated care, making sure that patients maximally benefit from the research and investments done at the EU and Member States levels.

Scope: The overall objective is to implement a European Joint Programme (EJP) Cofund for Rare Diseases which would create a research and innovation pipeline "from bench to bedside" ensuring rapid translation of research results into clinical applications and uptake in healthcare for the benefit of patients. The initiative should follow the policies and contribute to the objectives of the International Rare Diseases Research Consortium (IRDiRC).

The specific objectives of the EJP Cofund are to improve integration, efficacy, production and social impact of research on rare diseases through the development, demonstration and promotion of sharing of research and clinical data, materials, processes, knowledge and know-how, and to implement and further develop an efficient model of financial support for research on rare diseases including basic, clinical, epidemiological, social, economic, and health service research. Reaching these objectives requires support of a wide range of activities and participants which cannot be achieved with an ERA-NET-Cofund.

The EJP Cofund should be implemented through a joint programme of activities ranging from research to coordination and networking activities, including training, demonstration and dissemination activities, to be structured along the four main components:

1. Research and innovation programme to be funded through transnational calls for proposals resulting in financial support to third parties, based on the annual work plans of the EJP Cofund;
2. Development of a virtual platform for rare diseases information, research data, data based on samples, tools and standards to support and accelerate rare diseases research;
3. Capacity building to improve the research and innovation potential of key stakeholders and enhance uptake of research results;
4. Strategic coordination and management.

The research and innovation programme should encompass various aspects of rare diseases, such as development of new means for diagnosis and screening, improved annotation and interpretation of genetic variants, functional analysis of candidate variants, animal and cellular models for human conditions, natural history studies with improved, scalable and participants-centred registries, preclinical research for new therapies, development of new methods for clinical trials, clinical trials for new and/or repurposed therapies including advanced therapies,

¹⁷ https://ec.europa.eu/health/ern/policy_en

discovery and validation of robust biomarkers, basic research into pathomechanisms and molecular pathways, social, economic and healthcare oriented studies including burden of disease studies, and health services research to improve patient outcomes and healthcare systems. The calls should be implemented on the basis of the standards and good practice for calls implemented under ERA-NET Cofund actions (international peer review, Horizon 2020 evaluation criteria, proposal selection according to the ranking list etc.).

The development of the virtual platform for rare diseases information, research data, samples, tools and standards should build on the existing resources, link directly with funded research projects and establish new connections across the rare diseases community in particular with European Reference Networks (ERNs). Pilot actions involving funded research projects, ERNs, or relevant national or regional research and care institutions should be launched to ensure the usefulness of the developed tools to be followed by upscaling in a progressive manner.

The EJP Cofund for Rare Diseases will contribute to the Health Research and Innovation Cloud, one of the thematic clouds of the European Open Science Cloud¹⁸.

Capacity building activities should include training and support activities focussing on areas such as research data management, product development, HTA processes, translational research and defining and sharing best practice guidelines and involve large groups of stakeholders including patient organisations.

Strategic coordination and management should encompass annual programming including gap-analysis and identification of research priorities and policy questions in demand for evidence generation, as well as monitoring of the outcome of the EJP Cofund. Appropriate considerations of the relevant ethical, legal, sex/gender and societal aspects should be included. Close linkage with IRDiRC would be ensured by integration of the IRDiRC Secretariat in the EJP Cofund.

Participation of patient organisation should be encouraged in relevant activities of the EJP Cofund.

For grants awarded under this topic for EJP Cofund, beneficiaries may provide support to third parties as described in General Annex K of the Work Programme either in form of grants or prizes. The respective options of Article 15 of the Model Grant Agreement will be applied.

Financial support provided by the participants to third parties is one of the primary aims of this action. Therefore, the 60 000 EUR threshold provided for in Article 137(1)(c) of the Financial Regulation No 966/2012 and Article 210(a) of the Rules of Application Regulation No 1268/2012, does not apply .

The Commission considers that proposals requesting a contribution from the EU of between 50 and EUR 55 million would allow these challenges to be addressed appropriately.

¹⁸ https://ec.europa.eu/research/openscience/pdf/realising_the_european_open_science_cloud_2016.pdf

Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Improve lives of rare disease patients by providing new and optimised treatment options and diagnostic tools for these diseases.
- Decrease fragmentation of rare diseases expertise and research resources.
- Increase the EU's capacity to innovate in the field of rare diseases.
- Improve healthcare systems' capacity to take up research results.
- Reinforce the EU's role as a global leader for rare diseases.

Type of Action: COFUND (European Joint Programme)

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-05-2018: International flagship collaboration with Canada for human data storage, integration and sharing to enable personalised medicine approaches

Specific Challenge: The EU has ample experience in building and running data repositories to support biomedical research. Notable initiatives are ELIXIR¹⁹ and the European Genome-phenome Archive²⁰, storing many types of data up to the population-wide level. Similar expertise exists in Canada notably via IHEC (International Human Epigenome Consortium²¹) and its Data Portal²² as well as PhenomeCentral, a repository for clinicians and scientists working on human rare disorders²³.

There is a recognised need for tools that allow researchers to manage, exchange and preserve their data efficiently. Data repositories are scattered around the world and often do not use compatible data standards. There is a pressing need for better integration of public repositories, coordinated data sharing and sustainable storage of high value data. Apart from hardware and maintenance costs, the cost of data curation, a necessary element to foster progress in biology and medicine, also needs to be considered.

Scope: To build a collaboration of stakeholders in Europe and Canada in the domain of repositories storing and sharing human –omics data that will create a framework for long-term cooperation. In order to do so, this programme aims to enhance and standardise data deposition, curation and exchange procedures thus ensuring better data reuse and increased benefit to the scientific communities worldwide. The selected projects should build on the

¹⁹ the pan-European infrastructure for life sciences data <https://www.elixir-europe.org/>

²⁰ <https://ega-archive.org/>

²¹ <http://ihec-epigenomes.org/> and <http://ihec-epigenomes.org/about/policies-and-guidelines/>

²² maintained at the Montreal Neurological Institute <http://epigenomesportal.ca/ihec/>

²³ <http://www.phenomecentral.org>

data quality metrics, standards and access policies developed by major international initiatives (e.g., IHEC, ICGC²⁴, IHMC²⁵, MME²⁶).

Considering the existing data policies, projects should develop approaches that integrate data from disparate sources and include one or more of the following elements:

- Data models that guarantee the interoperability of human health research data from different repositories and integrate different types of –omics data and, where relevant, clinical research and lifestyle data. The data models should take into account sex/gender differences where relevant. The projects should build on existing research infrastructures such as –omics repositories, biobanks and registries.
- Reference architecture for data and process interoperability.
- Technologies and methodologies for data harvesting, data access, data transfers, and archiving complex datasets.
- Bioinformatics toolbox to support the analysis and management of data on diseases from a personalised medicine standpoint.
- International ethical and legal governance model for a research data management and storage infrastructure and an associated data management plan compliant with the required level of data security and privacy that is aligned with the recent recommendations of the OECD Council on Health Data Governance²⁷.

This topic raises important issues of data sharing, privacy protection, informational right to self-determination and data security, which should be addressed from a legal, ethical as well as a social sciences perspective. It is important that proposals enable sustainable, collaborative projects and ensure cross-references with existing infrastructures (e.g., BBMRI-ERIC, ELIXIR) and other on-going initiatives (e.g., International Consortium for Personalised Medicine²⁸, European Open Science Cloud²⁹, IHEC, etc.). Synergies should be sought with other projects (e.g. calls under the Innovative Medicines Initiative (IMI)³⁰ and running IMI projects³¹). The proposals should take stock of the BBMRI-ERIC Code of Conduct for using personal data in health research. A multidisciplinary approach, i.e., involving clinicians, biologists, bioinformaticians, etc., is considered a key aspect of successful proposals. Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one participant from Canada.

²⁴ <https://dcc.icgc.org/>

²⁵ <http://www.human-microbiome.org/>

²⁶ <http://www.matchmakerexchange.org>

²⁷ <https://www.oecd.org/health/health-systems/Recommendation-of-OECD-Council-on-Health-Data-Governance-Booklet.pdf>

²⁸ <http://www.icpermed.eu/>

²⁹ https://ec.europa.eu/research/openscience/pdf/realising_the_european_open_science_cloud_2016.pdf

³⁰ <https://www.imi.europa.eu/content/imi-2>

³¹ ETRIKS: <https://www.etriks.org/>, EMIF: <http://www.emif.eu/>, OPEN-PHACTS: <https://www.openphacts.org/>

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 6 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting different amounts. In addition to the EU/Associated Countries and Canada, the proposed project consortia may include other international partners. SME participation is encouraged.

Expected Impact:

- Intensified sharing, reuse, collaboration and knowledge discovery in the health field, while ensuring legal safety on the use of the data.
- Integration of various health and disease data in data-intensive fields such as personalised medicine.
- More efficient research through reduced duplication of experimentation.
- A network of research infrastructures and databases in the EU and Canada that build synergies between ongoing activities, contributing to delivering the backbone for new discoveries that address the Societal Challenges delineated in Horizon 2020³².
- Strengthened position of the EU and Canada in science and more collaboration between academia and industry resulting in more innovation, jobs and growth.
- Contribute to the Digital Single Market through piloting IT health research solutions.
- Further the “Open science” and “Open to the world” priorities and contribute to the Health Research and Innovation Cloud, one of the thematic clouds of the European Open Science Cloud.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCO-01-2018-2019-2020: Actions in support of the International Consortium for Personalised Medicine³³

Specific Challenge: Personalised Medicine is a very broad and multifaceted area where success relies on a well-functioning collaboration between several disciplines and different actors. While great advances have been made in some fields of medicine, in particular in stratification of cancer patients and in addressing rare diseases, most of today's healthcare protocols do not include personalised approaches apart from occasional division into broad age groups (children/adults/elderly), sex or ethnicity. Furthermore the prevention aspect of personalised medicine, i.e. identifying individuals prone to develop certain diseases, is largely isolated from treatment options. As is the case for a relatively nascent field there is a need for

³² <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/societal-challenges>

³³ This topic will continue in 2020

standardisation of approaches, including for sampling, data storage, interpretation and data exchange and also for clinical trials design and reimbursement models. European countries with their social model of healthcare along with (in several cases) centralised cost reimbursement, are ideally placed to lead the way for an integrated health management system. Many needs for coordination and support activities have been identified by ICPeMed³⁴, which includes representatives from most EU countries along with several other European countries and Canada. Also the wider internationalisation of ICPeMed can be underpinned by coordinating networking activities with third countries.

Scope: Each action should focus on *one* of the following fields:

1. International aspect: The action should focus on building links with third countries by analysing the potential and advantages of collaboration in personalised medicine (PM) with those countries, studying areas of interest for Europe in PM collaboration and promoting international standards in the field. In particular the uptake of personalised approaches in health systems and healthcare should be addressed, taking into account social and cultural aspects, health economy issues and equitable healthcare. For the 2018 call, the project should focus on CELAC³⁵ as a group of countries, and for the 2019 call on China. Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one participant from the international partner region CELAC or from China, respectively.
2. Regional aspect: The action should establish and support networking between regions and interregional cooperation in different European countries, in particular linking remote or sparsely populated regions with regions harbouring critical mass of medical and PM expertise while taking into account broader socio-economic and cultural aspects. The focus of the action can include aspects of genomic analysis, me-Health (mobile and electronic Health), telemedicine etc. but should aim at structuring PM application at regional level. Linkage to existing inter-regional projects (financed by INTERREG programmes) or interregional partnerships of Thematic Smart Specialisation Platforms will be actively encouraged. (2018 call).
3. Healthcare- and pharma-economic models for personalised medicine, interlinking European public health approaches with medical practice and financing. The action should carry out studies in support of research in and development of new health- and pharma economic models for PM, including prevention, to capture value and to develop relevant health financing models. Analysing mid- and long-term impacts of innovative products designated for sub-sets of patient populations on the patients themselves and on public health systems. Assessing the benefits of personalised medicine development for citizens and their broader social environment while ensuring patient safety, access,

³⁴ International Consortium for Personalised Medicine; <http://icpermed.eu>

³⁵ Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Grenada, Guyana, Jamaica, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela

equity, solidarity, data safety and financial sustainability of public health systems in the EU. The action should involve different relevant stakeholders and take into account work being carried out by other EU funded initiatives, such as EUnetHTA³⁶. SME participation is encouraged. Results of the studies and workshops should be actively disseminated to a wider audience, including relevant authorities, professionals and the wider public. (2018 call).

4. Standardisation for clinical study design. Establishment of innovative clinical trial design methodology for PM, including guidelines for research and reflection papers. The action should take into account sex/gender differences as well as the work done by relevant stakeholders and authorities such as EMA³⁷ and the HMA network³⁸, as well as the European legal framework³⁹. SME participation is encouraged. The results of the studies and workshops should be actively disseminated to a wider audience, including, industry, researchers and other professionals. (2019 call).

For grants awarded under this topic for Coordination and Support Actions it is expected that results could contribute to European or international standards. Therefore, the respective option of Article 28.2 of the Model Grant Agreement will be applied.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1.5 and 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: Contributing to the implementation and reach of the ICPeMed initiative; furthermore:

1. International aspect: Integrating the country/group of countries into ICPeMed activities. Support wider adoption of standards developed in Europe. Contribute towards the UN Sustainable Development Goal 3: Ensure healthy lives and promote well-being for all at all ages.
2. Regional aspect: Strengthened links between European regions setting up or planning personalised medicine healthcare approaches. Aligning research funding with ongoing and foreseen investments e.g. from Structural Funds. Recommendations on best practice in implementing PM at regional level.
3. Healthcare- and pharma-economic models: Increased understanding of personalised medicine perspectives on how to capture value, develop institutional support and design relevant payment models. Recommendations for faster translation from discovery to patients'/citizens' access. Contributing to understanding of trends and dynamics in the pharmaceutical markets in relation to increased emphasis of research and development

³⁶ European Network for Health Technology Assessment: <http://www.eunetha.eu/>

³⁷ European Medicines Agency: www.ema.europa.eu

³⁸ Heads of Medicines Agencies: <http://www.hma.eu/>

³⁹ Especially the clinical trials regulation (EU) No 536/2014 and the data protection regulation (EU) 2016/679

efforts on PM. Suggestions on how savings through prevention can be included in payment and reward models and contribute to the sustainability of public health systems in the EU. Improved knowledge and understanding among healthcare professionals and the wider public of potential benefits of PM approaches.

4. Standardisation for clinical study design: Contribute to standardisation of PM clinical trial design. Demonstrate feasibility and importance of PM approaches. Underpin accelerated market uptake. Improved knowledge and understanding among healthcare professionals, regulatory authorities and industry how best to adapt clinical trials designs to stratified patient populations.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCO-02-2018: Data integration and data-driven in-silico models for enabling personalised medicine - a European standardization framework

Specific Challenge: Big data relevant to personalised medicine encompasses many different, heterogeneous and complex data sets. The challenge is to harness and understand this abundance and diversity of data to produce medical benefits tailored to the individual or stratified patient groups.

To meet this challenge it is necessary that best practices are defined and widely adopted when using new technologies. For example, health research data production should be compliant with community-based quality standards, coupled with interoperable approaches for data integration and appropriate *in-silico* models to make sense of the data and produce results of medical relevance. Computational/*in-silico* models can be used to predict disease evolution, treatment response, and ultimately enable the personalisation of medical interventions

Standards, standard operating procedures or harmonisation strategies are part of the knowledge economy that facilitates innovation and the broader adoption of new technologies by European industry and by the regulatory authorities when approving new medicinal products and/or medical devices. Standards are key elements to facilitate competitiveness of European industry and the success of clinical research.

Scope: The proposal should establish a forum for *in-silico* methodologies applied in translational and clinical research, where different transnational initiatives should meet and debate on their standardisation strategies. The project should evaluate the data integration and data-driven *in-silico* models strategies and identify best practices for integrating and modelling heterogeneous human disease data transnationally. The project should focus on those heterogeneous types of human data which are best structured (addressing relevant ethical implications and sex and gender differences) and thus pose fewer technical challenges for transnational sharing of data. Such data could be in principle biological and clinical data

and the models should comprise of several computational models e.g. systems biology, physiological modelling, network analysis etc.

The proposal should deliver recommendations for flexible/adaptable standardisation guidelines for European collaborative research for heterogeneous data integration and data-driven *in-silico* models with predictive capability to interpret the human disease data while respecting legal and ethical requirements for data protection. In addition to the research standards the project should also ensure that the standardisation guidelines delivered address the regulatory needs in terms of data-driven *in-silico* models. Such guidelines should be based on open access principles and on interoperable solutions to those standards existing in the industry and used by the regulatory authorities. Inclusion of regulatory authorities could lead to an increased impact of the research proposed, and this will be considered in the evaluation of the proposal.

The action should also aim to organise awareness workshops during which scientists and policy makers and regulatory authorities would debate on future developments of *in-silico* models in health research.

The proposal should adhere to the general concepts of the FAIR⁴⁰ principles, establish links with relevant initiatives already supported by the European Commission and create a collaboration with the relevant ESFRI European infrastructures, IMI projects and the relevant standardisation initiatives e.g. European Metrology Programme for Innovation and Research.

For grants awarded under this topic for Coordination and Support Actions it is expected that results could contribute to European or international standards. Therefore, the respective option of Article 28.2 of the Model Grant Agreement will be applied.

The Commission considers that a proposal requesting a contribution from the EU of between EUR 1.5 and 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Harmonisation of health disease data integration and data-driven *in-silico* models in Europe.
- Accelerate the use of academic research data in clinical research and the broader adaptation by research, regulatory authorities and industry community.
- Contribution to the sustainability of health research by using the power of health data.
- Growth of the European data-driven economy.

Type of Action: Coordination and support action

⁴⁰ <https://www.force11.org/group/fairgroup/fairprinciples>

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCO-04-2018: ERA-NET to support the Joint Programming in Neurodegenerative Diseases strategic plan (JPND)

Specific Challenge: The EU Joint Programming Initiative on Neurodegenerative Diseases Research, in particular Alzheimer's (JPND), was established in 2009 as the pilot of the Member State-led Joint Programming Initiatives and enables the participating EU Member States to work together on the challenge of age-related neurodegenerative diseases. JPND allows the establishment, alignment and building on of national research programmes to increase the effectiveness and impact of research efforts.

Building on earlier successes of the JPND Research Strategy in scaling-up and establishing synergies with Horizon 2020, there is a need to continue previous efforts to consolidate the JPND successes in defragmentation, better coordination and alignment amongst the countries participating in the JPND.

Scope: Proposals should pool the necessary financial resources from participating national or regional research programmes in the area of neurodegenerative diseases research by implementing a transnational joint call for proposals resulting in grants to third parties with EU co-funding, with a view to scale-up the implementation of the JPND Research Strategy. Proposers are requested to also implement other joint activities, including training and additional joint calls without EU co-funding.

Proposals should also promote the strategic alignment of research activities related to neurodegenerative diseases across Europe, such as developing and aligning national research plans and strategies, making data bases more accessible and interoperable, harmonisation of measurements and methodologies, networking of already existing structures and studies, training etc.

Proposals should demonstrate the expected impact on national and transnational programmes as well as the leverage effect on European research and competitiveness, and should plan the development of key indicators for supporting this.

Participation of legal entities from third countries is encouraged in the joint call as well as in other joint activities including additional joint calls without EU co-funding. Participants from these countries may request a Union contribution (on the basis of the ERA-NET unit cost) for the coordination costs of additional activities.

The specific focus of the joint call will be further developed by the beneficiaries of this action.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Funding of research proposals on a topic identified by the JPND implementation plan or by their action groups, which needs to be addressed at European level and which is complementary to topics of the EC work programmes.
- Leverage transnational excellent research with EU-added value in the area of neurodegenerative diseases.
- Increased commitment of participating countries to the implementation of the JPND Strategic Research Agenda.
- Establishment and alignment of national and regional plans and initiatives on neurodegenerative diseases.
- Strengthened exchange and better interoperability between existing European infrastructures and data bases.
- Enhancement and/or better exploitation of national or EC-supported activities.

Type of Action: ERA-NET Cofund

The conditions related to this topic are provided at the end of this call and in the General Annexes.

1.2 Innovative health and care industry

This priority will focus on turning innovative knowledge and technologies into practical applications benefiting citizens, healthcare systems and businesses. It will support the most innovative stakeholders in Europe in the area of health and care research. Areas of research will include innovative diagnostics and therapeutics, including advanced therapies. SMEs will be an important component and target of this priority. Actions under this priority are expected to demonstrate clear exploitation potential and socioeconomic benefits for patients and sustainable health systems. This priority will be complementary to the activities undertaken under the [SME instrument](#), the [Fast Track to Innovation](#) and the [Innovative Medicines Initiative \(IMI\)](#).

The expected key impact of this priority will be to stimulate the healthcare industry. This priority should (i) deliver applications and innovative products and services in the area of health; (ii) exploit the potential of the European health and care industry and contribute to growth, competitiveness and jobs in this sector.

Proposals are invited against the following topic(s):

SC1-BHC-07-2019: Regenerative medicine: from new insights to new applications

Specific Challenge: Regenerative medicine offers hope for untreatable disease and the ageing population, improved quality of life and reduced medical costs. However, so far, regenerative

medicine has not yet proved itself in the clinic beyond rare diseases or conditions of limited public health importance. With recent scientific discoveries opening up new approaches to regenerative medicine, the challenge is to use these to extend the regenerative approach to major diseases and conditions.

Scope: Regenerative medicine replaces or regenerates human cells, tissue or organs, to restore or establish normal function. Projects should focus on innovative translational research to develop regenerative processes towards the ultimate clinical goal of addressing unmet clinical needs of large patient groups. Proposals should be based on new approaches such as genome editing or gene therapy, transdifferentiation or *in vivo* reprogramming, cell therapy and transplantation, 3D bioprinting, organoids or use of combined products (non-exhaustive list for illustrative purposes only). In all cases, proposals should explain in what way their approach is regenerative. Research on improved methods of tissue and organ transplantation is included on the condition that there is a clear regenerative step in the process. The project may focus on any step(s) on the innovation chain, from early testing and characterization of regenerative mechanisms to preclinical research, proof of concept or clinical trial. Sex and gender differences should be investigated, where relevant. Projects should include a section on the proposed therapy's exploitation potential, regulatory and commercialisation strategy and how it would be made available and delivered to patients.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 8 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Potential new regenerative therapies to address unmet clinical needs of large patient groups identified.
- Europe's position in translational regenerative medicine strengthened.
- New therapies for major human diseases and conditions, and new approaches for therapy taken further in the development pipeline.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-09-2018: Innovation platforms for advanced therapies of the future

Specific Challenge: Advanced therapies are based on gene, cell or tissue-engineered products which are defined according to the terms of Regulation 1394/2007. So far, only a small number of these products have been placed on the market, and of these, most are for rare diseases. However, in recent years, important discoveries and developments, some unprecedented, have been made in molecular and cell biology and in cell technology, which

offer improved opportunities for advanced therapies development. The challenge is to use the new knowledge and new technologies to introduce greater innovation into the advanced therapy development chain as a basis for tackling diseases and conditions affecting large patient groups.

Scope: Building on European strengths and using the definition set out in Regulation (EC) 1394/2007⁴¹, projects should create knowledge, testing and exploitation platforms around innovative concepts for advanced therapy development. Platforms should comprise the components and expertise necessary to create a solid foundation on which to build possible new therapeutic approaches and/or aim to overcome particular development bottlenecks. Possible components could include studying the basic biology of the potential therapy and investigating its mode of action, proof of concept (*in vitro*, in animal models – where necessary - or first-in-man studies); safety, efficacy, characterisation, refinement and manufacturing of the product could be considered. Projects should also propose a business model for exploiting results and carry out appropriate outreach and public information activities. Examples of issues that have been identified as holding back the field include gene delivery to cells, reducing off-target effects in gene therapy, immunogenicity of potential new therapies, cell homing and tracking, lack of adequate pre-clinical models, or responding to regulatory concerns, such as potency assays, product characterization, or bank-to-bank variability (non-exhaustive list for illustrative purposes only). Sex and gender differences should be investigated, where relevant. Potential ethical issues should be addressed.

The Commission considers that proposals requesting a contribution from the EU of between EUR 12 and 15 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Strengthened competitive position of European advanced therapy research and development.
- Improved perspectives for treating diseases and conditions in large patient groups with advanced therapies.
- Technological progress in the advanced therapy field.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

⁴¹ OJ L 324, 10.12.2007, p. 121.

SC1-BHC-10-2019: Innovation Procurement: Next generation sequencing (NGS) for routine diagnosis

Specific Challenge: We observe a progressive shift in routine diagnostics, and more particularly in personalised medicine practice, from a growing number of molecular tests to a next generation sequencing approach (NGS). NGS can provide insights on a person's genetic susceptibility to disease, diagnostic information, and predictive indications about treatment outcome. It also allows to embrace simultaneously different molecular pathways of disease evolution and to identify actionable mutations in a patient for medical decision and further research. In addition, it requires less sample material than multiple tests and therefore reduces risk and inconvenience for patients. However, the introduction of NGS in clinical practice is hampered by its cost, the availability of proper NGS tests, and diagnostic errors resulting from insufficient quality assurance, technological bias and complex interpretation of data.

Scope: The objective is to implement NGS in routine diagnostics for personalised medicine and scale up demand-driven innovation for healthcare systems. This includes organisational, economical, technical and clinical aspects. It should lead to NGS tests, clinically validated procedures (including sex analysis), quality assurance schemes, tools and methods for data collection, management, analysis and interpretation, with a view to assist clinical decision-making and foster medical research and innovation. Transferability and cloud based NGS data analyses should be considered, as appropriate. Input from initiatives like the EJP Cofund on rare diseases and ERNs⁴² should be considered when relevant. Ethical issues should be addressed.

For grants awarded under this topic for Pre-Commercial procurement it is expected that results could contribute to European or international standards. Therefore, the respective option of Article 28.2 of the Model Grant Agreement will be applied.

The Commission considers that proposals requesting a contribution from the EU of between EUR 9 and 11 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Proposals of this topic should follow the specific requirements for pre-commercial procurement PCP supported by Horizon 2020 grants as set out in General Annex E of the WP.

Expected Impact:

- New NGS platforms and use of NGS tests in routine diagnostics for personalised medicine.
- Accepted new European standards and quality assurance schemes with respect to NGS.
- Strengthening of implementation of personalised medicine and improved clinical decisions and health outcomes for the benefits of patients.

⁴² https://ec.europa.eu/health/ern/policy_en

- Contribution to the sustainability of healthcare systems.
- Growth and benefit to the European industry, in particular SMEs.

Type of Action: Pre-Commercial Procurement

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCO-05-2018: Strengthening regulatory sciences and supporting regulatory scientific advice

Specific Challenge: A large proportion of EC and nationally funded projects in biomedical clinical research is focusing either on the development of novel active substances or on the optimisation of pharmacological treatments, such as novel indications or new treatment/dosing schemes for already registered pharmaceutical products.

For such innovations to achieve full impact, it is necessary to file for new marketing authorisations or request significant changes of the regulatory labelling of existing marketing authorisations to bring improvements from academic research into clinical practice. However, in a majority of cases, the clinical research conducted by researchers in academia does not fulfil regulatory requirements and thus, innovations do not reach the patients in a timely and efficient manner. Researchers often do not allocate enough time and resources and also lack specific relevant know-how to develop strategies enabling successful regulatory Scientific Advice procedures. This is partly because regulatory sciences are not well addressed in medical teaching and training programmes.

Scope: Proposals should; (i) establish, regularly update and disseminate a comprehensive inventory⁴³ of existing support activities for regulatory Scientific Advice and Protocol Assistance in Europe such as the Innovation Task Force (ITF⁴⁴) briefing meetings; (ii) analyse the effectiveness of existing support activities and develop a common strategy for training programmes to strengthen regulatory sciences and improve support for successful outcomes from regulatory Scientific Advice and Protocol Assistance based on identified best practices; (iii) support and/or advice for the delivery of corresponding pilot training programmes in an efficient and collaborative manner, and (iv) assess the need for and possibly propose additional mechanisms sustainably supporting academic groups in regulatory Scientific Advice and Protocol Assistance procedures.

A crucial objective is to complement, coordinate and/or harmonise efforts among Member States and at European level in order to support the main target group: academic clinical scientists. The aim is to reach these researchers very early in the planning process for relevant

⁴³ Already existing initiatives and infrastructures should be integrated efficiently and to the fullest extent

⁴⁴ The Innovation Task Force (ITF) is working on matters relating to emerging therapies and technologies. EMA and the EU national competent authorities (NCAs) strengthened their collaboration to support medicine innovation and early development of new medicines by establishing the EU innovation network.

grant applications. A further aim is to strengthen regulatory knowledge in general by reaching clinical scientists during professional training and qualifications.

The relevant stakeholders must be involved in the consortium that will implement this action, in particular all interested national competent authorities (NCAs) alongside academic and industry representatives and associations with relevant experience. NCAs should have clearly identified contact points. Proposals should consider the involvement of the European Medicines Agency (EMA⁴⁵), the Heads of Medicines Agencies (HMA) network⁴⁶ and EUnetHTA⁴⁷ at European level, in order to ensure (i) the comprehensiveness and validity of analyses, (ii) the feasibility and effectiveness of implemented and implementable activities and (iii) the impact of the whole project.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1.5 and 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Improved knowledge of Regulatory Sciences among academic clinical researchers.
- Improved success in regulatory Scientific Advice and Protocol Assistance procedures.
- Improved direct regulatory impact of results from academic clinical research to ensure benefits for patients and healthcare systems.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

1.3 Infectious diseases and improving global health

This priority will tackle infectious diseases and the health of vulnerable groups. Taking a 'One Health'- and a more personalised approach, it will target the improvement of risk assessment and surveillance tools, and the development of innovative medical countermeasures addressing in particular antimicrobial resistance, emerging and re-emerging infectious diseases (public health emergencies) and poverty-related and neglected diseases. Also relevant to this priority are maternal and newborn health, global collaboration on non-communicable diseases and on brain research, up-scaling interventions in specific diseases to populations in low-and middle-income countries and in vulnerable populations of

⁴⁵ European Medicines Agency: www.ema.europa.eu

⁴⁶ The Heads of Medicines Agencies is a network of the Heads of the National Competent Authorities whose organisations are responsible for the regulation of medicinal products for human and veterinary use in the European Economic Area <http://www.hma.eu/>

⁴⁷ EUnetHTA Joint Action 3 is a European network of national/regional HTA bodies under the EU Third Health Programme <http://www.eunetha.eu/>

high-income countries and the connection between global health and extensive migration waves. This priority links to the EDCTP, the EU and WHO (World Health Organisation) Global AMR action plans, the European One Health Action Plan against Antimicrobial Resistance, the global coordination of emerging infectious diseases research, and further multi-lateral research initiatives.

The key expected impact of this priority is to prevent, detect and treat priority diseases worldwide. Additional impacts are: (i) to position the EU as a leading partner in the promotion of global health and the fight against infectious diseases; (ii) to support research preparedness for epidemics and development of vaccines and medicines for communicable and non-communicable diseases; (iii) to implement the GloPID-R (Global Research Collaboration for Infectious Disease Preparedness) and GACD (Global Alliance for Chronic Diseases) agendas as well as the related G7, G20 and WHO actions; (iv) to provide evidence for addressing migration-related health issues.

Proposals are invited against the following topic(s):

SC1-BHC-13-2019: Mining big data for early detection of infectious disease threats driven by climate change and other factors

Specific Challenge: A range of factors is responsible for the (re-)emergence of infectious disease threats, including antimicrobial resistance, altering the epidemiology and spread of disease in a changing global environment. These include drivers such as climate change and associated environmental impacts, population growth, unplanned urbanisation and high mobility, as well as animal husbandry or intensive farming practices.

At the same time, tools for infectious disease diagnostics and surveillance are evolving rapidly, allowing for ever more accurate diagnosis in ever shorter time. The use of next generation sequencing combined with surveillance data, health registries and societal data from informal/non-traditional sources (e.g. social media) holds promise for improving individual and population health. Current advanced IT technologies offer the opportunity to integrate such big data sets and could enable the rapid and personalised treatment of infected patients, and bolster the detection, tracking and control of infectious disease outbreaks.

Scope: It is expected that proposals develop:

1. the technology to allow the pooling, access, analysis and sharing of relevant data, including next generation sequencing;
2. the innovative bio-informatics and modelling methodologies that enable risk modelling and mapping; and
3. the analytical tools for early warning, risk assessment and monitoring of (re-)emerging infectious disease threats.

Proposals should be able to demonstrate the feasibility of such extended data mining for the purposes outlined above, as well as its European level added value. The ready-to-use

analytical tools and services that are developed should be based on an assessment of the needs of potential end-users in the Member States and on European level, should as far as possible build on and be compatible with existing European initiatives, and should remain available for public use at the end of the project at a reasonable cost.

Proposals should be transdisciplinary and ensure an integrated One Health approach by linking data from a wide range of relevant sources depending on the infectious disease threat. These may include human (e.g. community, hospital or laboratory health services) and animal health surveillance, health registries, microbial and viral genomic data (including next generation sequencing), pathogen resistance data, mapping of vectors, climate and environmental data⁴⁸ as well as societal data that are correlates of disease; possible sex and/or gender differences should be taken into account. Solutions for gaps in existing data (addressing both a lack in quality and quantity) should be proposed.

Solutions for interoperability between different data sources should be addressed and integrated. It is expected that quality-controlled data are shared in accordance to the general concepts of the FAIR⁴⁹ principles. The use of harmonised protocols in collaboration with other actors is recommended for this purpose. Appropriate regulatory and governance mechanisms need to be foreseen, taking into account different data sharing needs, as well as data privacy and data security aspects for the different types of stakeholders providing and analysing data. The technology and tools developed should be functional outside of outbreaks (i.e. in "peace time"), so that all stakeholders involved develop a routine use of them. At the same time, flexibility is needed to enable adaptation to different outbreak contexts and situations. The proposal shall foresee, in case of public health emergencies, open access to data at the moment it is generated or no later than one month thereafter subject to any safeguards required to protect research participants and patients, in accordance with the relevant options in Article 29.3 of the Model Grant Agreement.

The use of advanced IT technologies like high performance computing, or geo-localisation data⁵⁰ are anticipated. The use of European health research (e-)infrastructures such as those included under CORBEL⁵¹ is encouraged where relevant. The successful proposal(s) should foresee to consult with the end-users at both national (e.g. public health institutes) and European (e.g. ECDC, EFSA) level at key milestones of the project's timeline. If more than one proposal is selected, they are expected to collaborate. In addition, coordination will be needed with the selected proposal from the Horizon 2020 call topic SFS-36-2017 on the establishment of a European Joint Programme on One Health.

The Commission considers that proposals requesting a contribution from the EU of between EUR 12-15 million would allow this specific challenge to be addressed appropriately.

⁴⁸ The use of climate change data from Copernicus is encouraged: <http://climate.copernicus.eu/>

⁴⁹ Findable, accessible, interoperable, re-usable: <https://www.force11.org/group/fairgroup/fairprinciples>

⁵⁰ Use of data from the European global navigation satellite systems Galileo and EGNOS (Geostationary Navigation Overlay Service) is encouraged.

⁵¹ <http://www.corbel-project.eu/home.html>

Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Strengthened EU preparedness to address threats from (re-)emerging infectious disease threats, by making available the appropriate technology and tools for risk modelling and early threat detection, to support an appropriate public health response.
- Contribution to the European One Health action plan against antimicrobial resistance.⁵²
- Contribution to the digital transformation of health and care within the context of the EU Digital Single Market.⁵³
- Contribution to achieving Sustainable Development Goal (SDG) 3 and specifically the targets on 1) combating epidemics, and 2) strengthening capacity for early warning and response to health risks.⁵⁴ Contribution to achieving of SDG 13 and specifically the targets on 1) integrating climate change measures into national policies, strategies and planning, and 2) improving education, awareness-raising and human and institutional capacity on climate change adaptation, impact reduction and early warning.⁵⁵

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-14-2019: Stratified host-directed approaches to improve prevention, treatment and/or cure of infectious diseases

Specific Challenge: Despite major advances in development of new drugs and vaccines against infectious diseases, many of the therapies and preventive measures do not result in the expected favourable health outcomes for various reasons. The pathogen might be resistant to the treatment, or a required immune response might not be provoked to contain the infection; the used drug might not reach the pathogen, or the pathogen might escape the host defence mechanisms. In addition, each individual might be responding differently to the intervention, making it difficult to make one intervention fit all patients. A promising avenue to overcome treatment failure in infectious diseases is to develop novel therapeutic or preventive approaches on the basis of specific factors identified in the host or the host-pathogen interaction. This approach provides the basis for stratification of individuals based on these characteristics and tailor the treatment or the preventive measure accordingly.

Scope: Proposals should test emerging concepts in drug and/or vaccine development in order to address the problem of antimicrobial drug resistance and to optimize therapeutic, curative

⁵² To be published mid-2017.

⁵³ https://ec.europa.eu/commission/priorities/digital-single-market_en

⁵⁴ <http://www.un.org/sustainabledevelopment/health/>

⁵⁵ <http://www.un.org/sustainabledevelopment/climate-change-2/>

or preventive measures against infectious diseases of major concern for Europe. Proposals should capitalize on knowledge of the role of host factors, immune-modulators or of host-pathogen interactions influencing disease outcome that can be utilized to strengthen the response to treatment or prevention measures. This should lead to new enhanced therapies, cures and/or preventive measures. Differences in factors such as age, gender and genetic variation among the human population should be taken into consideration.

The proposals should focus on late pre-clinical and/or clinical research, supporting proof of concept and selecting relevant biomarkers for clinical validation. They should take advantage of existing or newly established cohorts to help identify factors for predicting the course of the disease and its response to the intervention in stratified patients.

The downstream constraints for the uptake of the intervention by national health systems should be taken into account. The suitability, acceptability and adaptability of the interventions to be developed should be addressed and assessed for different population groups and will thus require expertise from the social sciences and the humanities.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 10 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Increase Europe's capacity to control infectious diseases.
- Enriched product development pipelines with novel, potentially more effective, targeted treatments, cures and/or preventive measures for infectious diseases and/or validated biomarkers with potential for rapid uptake into clinical practice.
- Reduced burden of major infectious diseases.
- Contribute to the achievement of the [European One Health Action Plan against Antimicrobial Resistance](#).
- Contribute to the achievement of the Sustainable Development Goal 3, ensure health and well-being for all, at every stage of life.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-15-2018: New anti-infective agents for prevention and/or treatment of neglected infectious diseases (NID)

Specific Challenge: Neglected Infectious Diseases (NIDs) diseases are responsible for a significant health and socioeconomic burden in large parts of the world, particularly in

resource-poor countries, however some (e.g. leishmaniasis, Chagas disease) are increasingly becoming a concern for Europe too, driven by factors like the climate change and globalization. Despite a significant effort to develop new drugs to treat these diseases over the past 10 years, existing therapies suffer from various shortcomings, namely, a high degree of toxicity and unwanted effects, as well as treatment regimens often lengthy or parenteral that discourage compliance and increase the emergence of resistance. Vaccines can also be a major tool for the control of NIDs, particularly given the limitations of mass drug administration strategies, but currently the only major NIDs for which licensed vaccines exist are rabies and dengue. Development of new, more effective, safe and affordable treatments and vaccines for NIDs is therefore an urgent need.

In the last few years, increased awareness and funding for NIDs has resulted in the identification and preclinical development of several treatment and vaccine candidates against various NIDs. However, the typical NIDs 'market failure' (i.e. high risk and low potential return) discourages the uptake and costly further development of these candidates by pharmaceutical and biotechnology companies. Targeted public funding is therefore necessary to bridge the gap between preclinical and clinical development, and help advance existing candidates along the development pipeline.

Scope: The topic bridges the gap between preclinical and early clinical development of drugs and/or vaccines against neglected bacterial and parasitic diseases⁵⁶. Therefore, the proposed actions should focus on late preclinical (e.g. validation in animal models, toxicology, Good Manufacturing Practices (GMP) production, preparation of Investigational Medicinal Product Dossier) and early clinical (up to phase 1) development of already existing lead drug and vaccine candidates. Multidisciplinary platforms bringing together academic and industry research teams, from European and disease-endemic countries, with the capacity to exploit existing experience and propose innovative solutions addressing several relevant pathogens are particularly encouraged. Sex and gender differences should be taken into account where relevant.

The downstream constraints of candidates for the effective deployment and uptake by limited-resources public health systems should be taken into account by the proposed action:

- It should address the following key elements of the target-product profile (TPP): suitability, acceptability, adaptability of the intervention to be developed for different population groups, including particularly vulnerable ones (e.g. women and children), served by under-resourced health systems.
- It should also address issues that permeate and often impede access such as: optimal route and dosing or immunization regime, up-scaling of manufacturing, registration and

⁵⁶ For the purpose of this call, eligible neglected diseases are: childhood diarrhoeal diseases, kinetoplastid diseases (human African Trypanosomiasis, leishmaniasis, Chagas disease) and helminth (Schistosomiasis, soil-transmitted helminthiasis, food-borne trematodiasis, filariasis, Onchocerciasis, taeniasis/cysticercosis, dracunculiasis, echinococcosis) diseases, as well as bacterial diseases like Buruli ulcer, leprosy, yaws and mycetoma. Neglected viral diseases are specifically excluded from this topic.

pre-qualification, distribution and field-deployment logistics (e.g. storing temperatures), and the predicted cost per patient of the final product.

- Ultimately, the proposed action should include a clear pathway through the different necessary steps (research, manufacturing, regulatory approvals and licensing, IP management, pricing etc.) in order to allow uptake by health systems in limited-resource settings.

Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one participant from disease-endemic countries.

Please note that this topic is part of the lump sum funding pilot scheme. Funding for grants awarded under this topic will take the form of lump sums as defined in [Commission Decision](#). Details of the lump sum funding pilot scheme are published on the [Participant Portal](#) together with the specific [Model Grant Agreement for Lump Sums](#) applicable.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 and 10 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Increase the number and quality of treatment and vaccine candidates for neglected infectious diseases appropriate for implementation and uptake by health systems with limited resources.
- Reduce the NIDs disease burden and their social and economic consequences, and thus contribute to achieving the United Nation's Sustainable Development Goals 1 (No Poverty), 3 (Good Health and Well-being), 5 (Gender Equality), 10 (Reduced Inequalities) and 13 (Climate Change).
- Strengthen the pipeline of products available to proceed into further development and clinical testing and, if appropriate, within the context of the European and Developing Countries Clinical Trials Partnership (EDCTP2).

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-16-2018: Global Alliance for Chronic Diseases (GACD) - Scaling-up of evidence-based health interventions at population level for the prevention and management of hypertension and/or diabetes

Specific Challenge: The Global Alliance for Chronic Diseases⁵⁷ (GACD) aims to coordinate research on chronic diseases at a global level in order to enhance knowledge exchange across individual projects, and to better understand the impact of socio-economic, cultural, geopolitical and policy on research findings, so as to appropriately adapt interventions and scale-up to different geographical, economic and cultural settings. The GACD call will support research associated with the scale-up of interventions for the prevention and/or management of hypertension and/or diabetes in low- and middle-income countries (LMIC⁵⁸) and/or in vulnerable populations in high income countries (HIC).

Hypertension affects one billion people worldwide and is a major contributor to the growing global pandemic of cardiovascular disease and stroke. It is estimated that raised blood pressure indirectly currently kills approximately 8 million people every year⁵⁹, while cardiovascular disease accounts for approximately 18 million deaths a year⁶⁰, nearly one third of total deaths. Not only is hypertension more prevalent in LMIC, there are also more people affected because a larger proportion of the population live in those countries than in HIC.

Poor hypertension control and the absence of strategies to maintain normal blood pressure, particularly in LMICs and in vulnerable populations in HIC, reflect the challenges of effective and affordable implementation in healthcare and other sectors.

In the past twenty years the global death rate from diabetes has doubled and the World Health Organisation is predicting that this will increase by two thirds by 2030. It is currently estimated that 422 million adults worldwide suffer from diabetes of which 80% are from LMIC. In 2012, an estimated 1.5 million deaths were directly caused by diabetes and another 2.2 million deaths were attributable to high blood glucose⁶¹.

Identifying and evaluating interventions to assess efficacy is not always enough to ensure their wide uptake in the real-world. Even when information, tools and interventions have been tested within real-world effectiveness studies, the development of knowledge to support their broader uptake⁶² has often remained outside the remit of research. Effectively implementing and scaling-up interventions, programmes, and policies to the regional and national levels are persistent challenges.

⁵⁷ <http://www.gacd.org/>

⁵⁸ World Bank country classification based on estimates of gross national income per capita: databank.worldbank.org/data/download/site-content/CLASS.xls

⁵⁹ Forouzanfar et al. JAMA. 2017;317(2):165-182. doi:10.1001/jama.2016.19043

⁶⁰ Roth et al. J Am Coll Cardiol. 2017 May 15. pii: S0735-1097(17)37244-3.

⁶¹ WHO Global report on diabetes: <http://www.who.int/diabetes/global-report/en/>

⁶² For instance: cost and financing of the intervention, provider training, availability of resources, integration into healthcare systems, delivery to vulnerable or difficult-to-reach populations, monitoring the quality of intervention delivery

It is essential that policy makers, communities, families, caregivers, patients, as well as healthcare practice and other settings are equipped with evidence-based strategies to integrate scientific knowledge and effective interventions into everyday use. Researchers have found it challenging to ensure that tools and interventions deemed efficacious within clinical or community-based trials are readily adopted and implemented. Scaling-up interventions to large populations is not a straightforward task. In practice, translation from a pragmatic trial to the real-life commissioning and continuous delivery of an intervention across a health system is a huge political and economic challenge. Without intentional, guided efforts to scale-up, a new evidence-based intervention might not be broadly implemented.

Scope: Proposals must focus on the scale-up of interventions at population level for hypertension and/or diabetes prevention and/or management in LMIC, and/or in vulnerable populations in HIC. Proposals addressing comorbidities with either hypertension or diabetes, including between them, are encouraged.

Proposals must align with commitments or planned commitments at a regional or country level to implement evidence-based interventions (including evidence of cost-effectiveness and affordability) across health or other sectors. Policymakers, intervention payers (excluding research funding agencies), researchers (including local researchers), implementers and beneficiaries should be involved at all stages of the intervention development and implementation design to identify the challenges to intervention delivery in real settings. Such partners will be integral to the success and sustainability of the programme and it is essential that they are engaged early, and participate actively in the design of the research proposal. Researchers should collaborate closely with the authorities responsible for the programme's delivery. Those authorities must pay for and provide the interventions, possibly through loans contracted from development banks or other financial providers. Proposals will carry out the research associated with the scale-up of the intervention.

Proposals must build on evidence-based interventions (including evidence of cost-effectiveness and affordability) for the respective population groups under defined contextual circumstances and should seek to replicate and scale-up interventions. The selected interventions to be scaled-up should have been proven to be equitable, safe, effective, and efficient as well as making local health systems and health services more responsive and person-centred. In particular, proposals should:

- Be targeted at the regional or national level.
- Identify, develop, test, evaluate and/or refine strategies to scale-up evidence-based practices⁶³ into public health, clinical practice, and community settings.
- Identify, understand, and develop strategies for overcoming barriers to the adoption, adaptation, integration, scale-up and sustainability of evidence-based interventions, tools, policies, and guidelines. They should address a range of scale-up challenges,

⁶³ For instance: behavioural interventions; prevention, early detection, diagnostic, treatment and disease management interventions; quality improvement programmes

including complex processes, inefficient use of resources, inequitable allocation of resources, and supply and demand barriers to scaling-up and sustainability.

- Identify, understand, and develop strategies for measuring the unintended consequences of intervening at a system level.
- Use scale-up methods, tools, and approaches to enhancing equity, efficiency, people-centred, and responsive health systems, promoting a culture of evidence-informed learning, engaging stakeholders, and improving decisions on policies and programmes to achieve better health outcomes.
- Be aligned with existing policies, programme management, monitoring and evaluation processes. They may include important shifts in the practices, incentives, and engagement of global, national and regional health policy, regulatory frameworks, management, research, publication, and civil society stakeholders.
- Include health economic assessments as an integral part of the proposed research.
- Demonstrate that policy makers and health authorities are supportive of, and have been engaged in designing the research proposal.

Proposals should be multidisciplinary and cross-sectorial. Relevant gender and cultural aspects, as well as vulnerable populations, should be taken into account. Proposals may build on previous hypertension and diabetes projects supported under the GACD that have demonstrated the potential for impact.

The proposal will cover the research around the scaling up of the interventions. The research may cover:

- Identification of the best evidence-based interventions;
- Definition and implementation of optimum scale-up methods (e.g. pilots in multiple settings, defining a scalable unit);
- Embed real time monitoring/evaluation to refine protocols and ensure adaptability and effective uptake;
- Evaluation of health outcomes;
- Where appropriate, make recommendations for the replication of the applied scale-up interventions to other countries or very large regions.

Research under GACD involves regular exchange of research findings and information across participating projects by means of cross-project working groups and annual joint meetings. Wherever feasible, projects should harmonise and standardise their data collection and exchange data. Applicants must budget for annual costs of having two team members participate in one annual face-to-face meeting of the Annual Scientific Meeting (location to vary annually).

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: (one of or combinations of):

- Enhanced programmes and policies that can significantly reduce the numbers of patients with hypertension and/or diabetes through prevention.
- Enhanced programmes and policies that can significantly increase the number of patients for whom hypertension and/or diabetes was previously undetected.
- Enhanced programmes and policies that can significantly increase the number of patients for whom hypertension and/or diabetes is controlled.
- Enhanced effective, efficient, equitable and sustainable health systems, to lesser inequalities and greater health equity and additional societal benefits, in the medium and long-term.
- Improved health services more responsive to the need of the comorbidities of hypertension and diabetes and other non-communicable diseases.
- Recommendations to translate findings to other countries or very large regions.
- Contribute to the attainment of the sustainable development goals for non-communicable diseases⁶⁴.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-18-2018: Translational collaborative cancer research between Europe and the Community of Latin American and Caribbean States (CELAC)

Specific Challenge: The world is facing a critical healthcare problem: due to a growing and aging population increasingly exposed to a number of well-known and new risk factors, cancer is becoming one of the most important public health problems worldwide.

In 2012, the incidence of new cancer cases in the Community of Latin American and Caribbean States (CELAC) countries was 1.1 million, with 0.6 million deaths; in Europe the incidence was 3.45 million new cases, with 1.75 million deaths⁶⁵. Moreover, about two-thirds

⁶⁴ <https://sustainabledevelopment.un.org/sdg3>

⁶⁵ <http://www.iarc.fr>

of all cancer deaths occur in low- and middle-income countries and incidence and mortality are expected to increase by about 75% in these countries by 2030⁶⁶.

Current cancer care does not fully reflect ethnic, cultural, environmental and resource differences. In addition, limited research is being conducted on tumours primarily found in CELAC countries.

There is a need to establish evidence obtained through international high-quality translational collaborative research to tailor cancer control to specific patient groups.

Scope: Proposals must focus on translational and multidisciplinary research to identify specific patient groups in view of improving one or more of the following aspects: screening, early detection, diagnosis, and/or prognosis.

Proposals must build on the diverse genetic backgrounds, risk factors, cancer incidence⁶⁷, geographical environment, and/or different healthcare models (including social care and volunteers) in European and CELAC countries.

Proposals may integrate molecular, behavioural, nutritional, clinical, social and environmental epidemiology⁶⁸ data from cohorts; registries; biobanks; repositories; research infrastructures;

Considerations of effectiveness and potential clinical benefit should be integrated in the proposals where relevant.

Specific population age groups, sex and gender aspects, socio-economic, ethical, ethnic, cultural, lifestyle and behavioural factors and any other non-health related individual attributes should be taken into consideration where relevant.

Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least two participants from two different CELAC countries⁶⁹.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: The proposals should address one of or combinations of:

⁶⁶ <http://www.iarc.fr>

⁶⁷ For instance, cancers proportionally more frequent in the CELAC region include gastric, cervical, gallbladder, childhood leukaemia

⁶⁸ including environmental carcinogens, e.g. in homes, occupational, urban and rural settings

⁶⁹ CELAC countries: Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Grenada, Guyana, Jamaica, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela.

- Identify high-risk populations with a view to tailor early detection and diagnosis or to optimise prevention.
- Improve early detection and/or diagnosis and/or prognosis of cancer adapted to specific settings.
- Provide evidence to national programmes and policies focusing on screening, early detection and/or diagnosis and/or prognosis.
- Provide novel opportunities for the development of targeted therapies.
- Contribute to attaining sustainable development goals for non-communicable diseases⁷⁰

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-19-2019: Implementation research for maternal and child health

Specific Challenge: Each year, an estimated 213⁷¹ million women become pregnant and 140 million newborn babies are delivered. However, many of the women and infants receive no appropriate care or care that is below evidence-based standards; others suffer from over-medicalisation. Access to quality care, during and after pregnancy, is essential to ensure good maternal health and the favourable early development of the child.

The gap between countries with the lowest and highest maternal mortality rates has doubled between 1990 and 2013 and huge differences exist within countries in Europe and globally. The burden of maternal mortality in both contexts falls disproportionately on the most vulnerable groups of women and girls: Every day approximately 830 women die from preventable causes related to pregnancy and childbirth; 99% of maternal deaths occur in developing countries⁷²

Although there is a consolidated evidence base of what works in improving maternal and newborn health, the "knowledge-do" gap has not been bridged and evidence based guidelines are insufficiently implemented or integrated in routine training and service provision. Therefore, more and better targeted implementation research is needed.

Scope: Proposals should focus on implementation research⁷³ for improving maternal and child health with a focus on the first '1000 days' from pregnancy until two years of age.⁷⁴ This

⁷⁰ <https://sustainabledevelopment.un.org/sdg3>

⁷¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4727534/>

⁷² WHO, Maternal mortality fact sheet (n. 348), Nov 2015 - <http://www.who.int/mediacentre/factsheets/fs348/en/> Lancet Series on Maternal Health (2016).

⁷³ Implementation Research is the scientific study of methods to promote the systematic uptake of clinical research findings and other evidence-based practices into routine practice, and hence to improve the quality (effectiveness, reliability, safety, appropriateness, equity, efficiency) of health care. It includes the study of influences on healthcare professional and organisational behaviour

research can take place in either high income countries or low and middle income countries, or in a combination thereof.

The implementation research in the first 1000 days may cover:

- new or improved health service delivery interventions that strengthen maternal and child health; and/or
- the scaling up and/or adapting of existing evidence-based interventions to new contexts.

Neither pre-clinical research nor clinical trials in the context of product development are within the scope of this call.

The research should take into account the specificities of different contexts and situations. The research should be integrated from different perspectives, e.g. recognising the interdependent relationship between mother and child; addressing prevention, health promotion and treatment; allowing for the specific needs of vulnerable groups (e.g. preterm infants, adolescents, migrants); addressing different concurrent pathologies; avoiding the creation of parallel or vertical programmes, etc;. Research may cover physical and/or mental health, as well as communicable and non-communicable diseases. The integration of social sciences including gender analysis and the use of mixed methods research⁷⁵ is strongly encouraged. In addition, particular attention should be given to equity issues.

The interventions should build on but may go beyond existing state-of-the art knowledge on biological, psychological and social determinants of maternal and child health. Research is expected to be carried out in continuous partnership, in particular with the end-users, i.e. the concerned women, the fathers, and their community, in addition to policy makers, politicians, and the media, to ensure that evidence can be translated into policy and practice.

The Commission considers that proposals requesting an EU contribution between EUR 2 to 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Research-supported solutions to maternal and child health challenges.
- Providing evidence of successful and/or innovative approaches for bridging the "knowledge-do" gap in improving maternal and child health.
- Better understanding of scaling-up processes with regard to different contexts and resource requirements.

⁷⁴ Lancet Series on Maternal and Child Nutrition (2013).

⁷⁵ broadly defined as research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry <http://journals.sagepub.com/doi/pdf/10.1177/2345678906293042>

- Contribution to the achievement of SDGs 2 on improved nutrition (target 2), Goal 3 on health (targets 1 and 2 on maternal and child health) and Goal 5 on gender equality (targets 1 and 6) and Goal 10 (on reducing inequality within and between countries).

Applicants may be interested in a separate but connected call topic on "Food systems Africa" under Societal Challenge 2.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-21-2018: Research on HIV, tuberculosis (TB) and/or hepatitis C (HCV) in patients with mono-, co-infections and/or comorbidities in the context of fostering collaboration with the Russian Federation

Specific Challenge: ECDC (European Centre for Disease Control) and WHO-Europe (World Health Organisation) report high number of cases for HIV and TB infections (both in incidence and prevalence) in the European regions and in recent years the epidemic situation has deteriorated in eastern Europe^{76,77}.

For TB, in particular diagnosis and treatment of multidrug-resistant TB (MDR-TB) poses a major challenge. In the east of Europe there is still high burden of TB and HIV and their comorbid forms. Additionally, a significant proportion of the infected patients are also affected by co-infections and comorbidities that may adversely affect their prognosis, which is a global challenge in healthcare and in particular refers to TB/HIV cases.

Several issues in the current epidemiological situation are still to be addressed to reduce the cases of new infections and deaths, including investigation of reasons underlying fast spread of M-DR-TB and HIV/AIDS in some regions, development of rapid tools for an accurate detection of TB infections and management of HIV and TB drug resistance. Adverse effects of treatments and the requirement for strict adherence to antiretroviral treatment further complicate management of these diseases.

Furthermore, in the WHO European Region an estimated 15 million people live with hepatitis C (2.0% of adults) with two-thirds of infected persons in the Region living in eastern Europe and central Asia⁷⁸. Also for HCV there are many challenges, including the need to analyse genetically determined factors affecting disease progression in HCV infected patients (with mono-infection or HIV-HCV co-infection).

Given the dynamics of the epidemics and the need to contain them, there is a commitment from the European Union and from the Russian Federation to support joint research and

⁷⁶ <http://ecdc.europa.eu/en/publications/Publications/HIV-AIDS-surveillance-Europe-2015.pdf>

⁷⁷ <http://ecdc.europa.eu/en/publications/Publications/tuberculosis-surveillance-monitoring-Europe-2015.pdf>

⁷⁸ <http://www.euro.who.int/en/health-topics/communicable-diseases/hepatitis/data-and-statistics>

further strengthen the collaboration between research and healthcare centres to address the issues outlined above.

Scope: Proposals should address one or more of the following subtopics:

1. **TB:** To investigate biomarkers or new diagnostic tests for early screening of TB risk groups for TB infection and identification of antimicrobial drug resistance.
2. **HIV:** To investigate the susceptibility to HIV and/or disease progression rate after infection, including various HIV subtypes and/or transmission clusters, and/or the development of adverse effects during antiretroviral therapy and concomitant diseases (comorbidities and/or co-infections, including with tuberculosis).
3. **HCV:** To evaluate the genetic determinants of the virus and the host, and comorbid conditions that can be involved in disease progression and create the basis for the development of future HCV treatment strategies.

In performing the research agenda to address one (or more) of the listed subtopics, the applicants might make use of already established European cohort networks or establish new collaborations thus widening their geographical scope and include HIV, HCV and/or TB mono or co-infected individuals and perform retrospective or prospective studies. Proposed actions should take into consideration vulnerable groups and target populations, which may include, but not limited to: ageing subjects, injecting drug users and other social risk groups. Sex and gender differences should be taken into account where relevant.

Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one participant from the Russian Federation. Also, the duration of the proposed action cannot exceed 24 months (until end of 2020), with a foreseen start of the action no later than 1 January 2019. For more information, interested entities in the Russian Federation shall consult the website of the Russian NCP for Health at <http://www.h2020-health.ru/ru/competition-ru-eu>, as well as the website of the Ministry of Education and Science of the Russian Federation http://www.fcpir.ru/participation_in_program/contests/list_of_contests/, where the corresponding Russian call will be published.

The Commission considers that a proposal requesting an EU contribution between EUR 2 to 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude the submission and selection of proposals requesting other amounts.

Expected Impact:

- Improvement of coordination and integration between European and Russian clinical and research centres dealing with HIV, TB and/or HCV infected patients.
- Produce scientific evidence leading in the long-term to the reduction of the burden of these infection diseases.

- Produce scientific evidence and contribute to the optimisation (and personalisation) of diagnosis, treatments and improvement of quality of life of patients affected by HCV, HIV and/or TB infections (mono or co-infections) and comorbidities.
- Contribute to the achievement of the Sustainable Development Goal 3: Ensure Healthy lives and promote wellbeing for all at all ages, the WHO end TB strategy⁷⁹, the WHO global health sector strategy on HIV⁸⁰, and the WHO global health sector strategy on viral hepatitis⁸¹.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCO-06-2018: Establishment of an International Network of Social Sciences Research Centres to help address governance and other challenges in the preparedness for and the response to infectious threats

Specific Challenge: Infectious diseases, in particular epidemics and antimicrobial resistance, pose significant threats to the social, economic and health security of communities and countries around the world. However, these diseases also transcend borders and require multi-sectoral and multi-jurisdictional co-operation and preparedness to ensure the world is safe from global threats.

Many global infectious disease outbreaks are enabled, accelerated and allowed to spread by shortcomings in governance at all levels (national, regional as well as global). This governance challenge has been recognised and many initiatives are beginning to work in this space. However, communities would be better prepared to respond to infectious threats (public health emergencies or antimicrobial resistance) if such efforts and structures that govern the overall prevention and response were informed by research evidence from the range of social sciences and humanities disciplines.

The Global Research Collaboration for Infectious Disease Preparedness (GloPID-R- <https://www.glopid-r.org/>) and the Joint Programming Initiative on Antimicrobial Resistance (JPI-AMR- <http://www.jpamr.eu/>) have identified the need to establish an international Network of Social Sciences Research Expertise, to better address governance and other challenges in prevention and response to infectious threats, be it at local, national, regional or global levels.

Scope: The scope of this Coordination and Support Action (CSA) is to:

I. Initiate, in an organised and coordinated manner, the International Network of Social Sciences Research Expertise, addressing governance challenges, engage with stakeholders on

⁷⁹ <http://www.who.int/tb/strategy/end-tb/en/>

⁸⁰ <http://www.who.int/hiv/strategy2016-2021/ghss-hiv/en/>

⁸¹ <http://www.who.int/hepatitis/strategy2016-2021/ghss-hep/en/>

behalf of network members, and work with research funding agencies to grow the network to an effective, internationally representative scale. The proposed network would have the following main objectives:

1. **Strengthen research capacity** and catalyse **social sciences researchers** to generate and apply new knowledge about effective governance arrangements for infectious disease preparedness, combating antimicrobial resistance, and prevention and response efforts. This would include addressing the ethical, legal and social aspects (ELSA) as well as among others the issue of accessibility;
2. **Foster cross-region and global research collaborations** to better connect researchers currently working in isolation and to support bigger, more robust social science research on the governance aspects of infectious threat prevention and response;
3. **Facilitate ongoing engagement between researchers and global policymakers** to inform national and global decision-making on appropriate governance arrangements for effective prevention and response measures;
4. **Inform and enable better preparedness and response** efforts through the application of knowledge, sharing of lessons learned, and creation of improved governance arrangements. But **also be a source of advice in case of a public health emergency**, to inform priority setting and response from a social science perspective. In this respect flexibility will be expected from the consortium.

Activities supported by this CSA should include among others the following:

1. Identifying best practices and lessons for enabling, coordinating, and supporting prevention and response efforts by international institutions and regional agencies across borders, while also taking into account research-constrained settings and systems;
2. Identifying strategies to strengthen the discovery, development, and take-up of existing and new innovative interventions and other measures across multiple sectors including examining their impact on health systems. This would include identifying the barriers and motivations that influence the wider use and uptake of these innovations such as vaccines;
3. Developing proposals for more effective raising of public awareness about infectious threats in general and AMR in particular, and inducing behaviour change;
4. Conducting socio-economic and cultural analyses to better understand the societal cost/benefit of different strategies to prepare for and prevent AMR and epidemics.

II. Establish the central coordinating hub for the network under development, focusing on maximising opportunities for collaboration, learning and data sharing in order to scale-up evidence.

The consortium is expected to collaborate with GloPID-R members and JPI AMR and their various initiatives in this domain, as well as other relevant initiatives already existing or under

development at national, regional, and international level, in order to maximise synergy and complementarity. Specific propositions on how this can be achieved should be included in the proposal. It is expected that, at a minimum, the network hub will host an annual meeting for the network, and additional thematic workshops as appropriate.

The Commission considers that a proposal requesting an EU contribution between EUR 2 to 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amount.

Expected Impact:

- Effective cross-region and global research collaborations that better connect multidisciplinary researchers currently working in isolation.
- Strengthened capacity to address the socio-economic and governance dimensions of an effective research preparedness and response to infectious threats.
- Robust evidence to guide policy makers on global infectious disease governance.
- Built in-country capacity in low and middle income countries to better support global efforts.
- Contribution to the implementation of the 'European One-health action plan against AMR and the WHO Global Action Plan on AMR'.
- Contribution to the achievement of SDG 3, and in particular the targets 3 on combatting communicable diseases, B on supporting the research and development of vaccines and medicines for diseases that primarily affect developing countries, and D on strengthening capacity on early warning and management of global health risks.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCO-08-2018: Creation of a European wide sustainable clinical research network for infectious diseases

Specific Challenge: Infectious diseases pose a serious threat to global health. Emerging epidemics, pandemics and rising levels of antimicrobial resistance require a strong and coordinated response to protect citizens in Europe and beyond as indicated in the European One-Health Action Plan against AMR. There is a need to establish a clinical research network across Europe that has the capacity and capability to directly enrol patients with infectious diseases, to increase efficiency for testing and developing new diagnostic, preventive and/or therapeutic strategies and therapies. This should allow generating rigorous evidence to improve the diagnosis, prevention and treatment of infections and to better respond to infectious disease threats, and contribute to the G7 aim concerning the need to establish a global clinical studies network on drug resistance that provides access to a large clinical

research infrastructure for the design, coordination and conducting of clinical trials and studies in cooperation with the existing global experts networks and infrastructures such as ECRIN⁸² to ensure the common benefit of the outcomes⁸³.

Scope: Proposals should build on successful European collaborative initiatives such as PREPARE⁸⁴ and COMBACTE⁸⁵ and further advance clinical research in the field of infectious disease by supporting the establishment of a European wide multidisciplinary clinical research network. Such a network should be capable of performing all clinical trial aspects encompassing study design, execution and reporting (sex and gender differences analysis to be included where relevant). It should develop and allow for innovative research approaches and enable flexibility in responding to unpredictable events and signals. The network should provide clear and direct access for stakeholders including academic organizations, SMEs and larger industry to perform clinical studies. The proposal should develop a business plan to ensure the sustainability of the network. The network should actively disseminate information and contribute to awareness rising. Furthermore, it should also create synergies with global initiatives, enabling quick and smooth interactions and collaboration across the world.

The Commission considers that a proposal requesting an EU contribution between EUR 2 to 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amount.

Expected Impact:

- Reduce the cost and time of clinical trials for diagnosis, prevention and treatment of infections.
- Attract industry back to invest in the development of anti-infectives.
- Strengthen the operational capacity and the required infrastructures for clinical research.
- Increase information exchange between sectors and scientific disciplines.
- Maintain Europe's leading role in combating AMR and controlling infectious diseases.
- Ensure global collaboration between networks in Europe and other countries/regions to optimise a coordinated response to infectious diseases.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

⁸² <http://www.ecrin.org/>

⁸³ http://www.mhlw.go.jp/seisakunitsuite/bunya/hokabunya/kokusai/g7kobe/KobeCommunique_en.pdf

⁸⁴ <https://www.prepare-europe.eu/>

⁸⁵ <https://www.combacte.com/>

SC1-HCO-09-2018: Building international efforts on population and patient cohorts

Specific Challenge: Cohorts are invaluable resources to obtain detailed description of individual biological variations in connection with a variety of environmental, pathogenic, occupational, societal, and lifestyle determinants that influence the onset and evolution of diseases. Europe currently has some of the most valuable population and patient cohorts, including well annotated clinical trial cohorts. Several large cohorts have also been developed in various parts of the world. Despite recent efforts to network cohorts, the level of integration need to be escalated in order to optimise the exploitation of these resources, essential to underpin and facilitate the development of stratified and personalised medicine.

Scope: Building on existing cohorts and in close alliance with relevant research infrastructures, proposals should establish a strategy for the development of the next generation of integrated cohorts, including:

1. Map the cohort landscape in Europe and large international initiatives. The mapping should include, for instance meta-data on purpose, coverage and measurements and any other relevant information.
2. Identify best strategies for cohorts' integration, taking into account relevant ethical issues.
3. Promote the harmonisation of past and future data collection and provide recommendations on standards to improve future sample and data collection.
4. Foster the inclusion of data emerging from new technologies (e.g. ICT, social platforms), new type of data (e.g. lifestyle, geographical, genetic, eHealth records) and exposure, including to new and emerging products (e.g. novel tobacco products, e-cigarettes, waterpipes).
5. Promote best practises to optimise access to existing and future cohorts.
6. Contribute to define an international strategic agenda for better coordination of cohorts globally.

The Commission considers that a proposal requesting an EU contribution between EUR 1 to 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amount.

Expected Impact: Coordination of large cohorts at EU and global level would:

- Maximise the use of cohorts in defining/improving clinical practice and public health policy and bringing innovations to patients.
- Accelerate the development of personalised medicine.
- Improve the understanding of the complex interactions of environmental, social, occupational and lifestyle determinants of health.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCO-10-2018: Coordinating European brain research and developing global initiatives

Specific Challenge: The EU and its Member States have made considerable investments in brain research. The European Commission alone has invested some EUR 5.3 billion over the past 10 years. At the same time, many large research initiatives such as the Human Brain Project (HBP), the Joint Programming on Neurodegenerative Diseases (JPND), the ERA-Net NEURON and the Innovative Medicines Initiative (IMI) have been established in parallel. The numerous resulting research projects have generated considerable amounts of knowledge and innovative approaches. However, translation into new health interventions is below expectations and needs.

Therefore, in many areas of brain research, there is a particular need for better networking and coordination of efforts, at both European and global level, in order to minimise fragmentation and duplication. At the same time, better access to and sharing of data and holistic analysis of results are of crucial importance in line with the EC's Open science policy. Addressing these gaps would create new synergies and open new avenues of research and to which in turn will foster understanding of diseases, innovation and accelerate innovation through the development of new diagnosis, prevention and treatment options in areas of high and unmet medical needs.

Scope: Proposals should:

1. Identify areas of neurosciences where the need for enhanced coordination of research communities into active clusters is particularly acute;
2. Accelerate exchange between researchers in different European research initiatives to promote cooperation and to minimise fragmentation and duplication;
3. Support the emergence of these clusters, facilitate links with research infrastructures and other major initiatives, in coordination with European Commission services, with the aim of sharing data and enhancing the exploitation of results, fostering new collaborations and identifying future research objectives;
4. Identify and develop tools and support activities implemented by EU funded initiatives and infra-structures suitable to develop Open Science policy in the neurosciences by sharing and better utilisation of clinical data via IT platforms and also considering any relevant regulatory requirements and policies;
5. Explore possibilities for broader scale cooperation at global level by fostering dialogue with researchers outside Europe in coordination with research funders around the world, in order to foster the global brain research agenda.

The relevant stakeholders must be involved, in particular thematically focussed research communities, learned societies, large research initiatives, infrastructures as well as relevant funding bodies and regulatory authorities, in order to ensure effective implementation and impact of this coordination action.

The Commission considers that a proposal requesting an EU contribution between EUR 1 to 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Reduce fragmentation and duplication of research efforts and foster synergies through enhanced coordination of brain research efforts at EU and at global level.
- Improve access to and optimise the use of research infrastructures and data sources by the neuroscience research communities, thus ensuring better exploitation of the large investments made in brain research.
- Achieve critical mass and economies of scale by initiating and fostering new global research initiatives.
- Enable and accelerate the translation of breakthroughs in brain research into relevant clinical applications.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCO-11-2018: Strategic collaboration in health research and innovation between EU and China

Specific Challenge: Compared to its size and increasing weight on the R&I international scene, China's participation and cooperation to the Horizon 2020 SC1 programmes is low. This is a lost opportunity because most of the major health challenges are global, and cooperation with China on specific strategic health challenges can contribute to provide more evidence-based solutions and to avoid duplication.

Scope: The objective of this action is to support networking between European and Chinese policy makers, programme owners and funders, with the following goals:

1. To develop a sustainable platform between EU and China that will facilitate a constant dialogue on addressing common health R&I challenges.
2. To identify health challenges, whose solution may benefit from closer bi-lateral and/or multi-lateral cooperation between EU and China, to facilitate and develop collaborative research initiatives between EU and Chinese stakeholders.

The Commission considers that a proposal requesting an EU contribution between EUR 0.8 and 1 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Increased bi-lateral and multi-lateral cooperation on health research strategic items between EU and China.
- Higher participation of Chinese researchers in SC1 and future EU health research programmes, but also of European researchers in Chinese health research programmes.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

1.4. Innovative health and care systems - Integration of care

This priority will aim at developing effective, accessible and sustainable health interventions and integrated care systems. This aim is particularly relevant in the context of personalised medicine, management of chronic diseases and health promotion. It includes the further development of health technology assessment methods, and the evaluation of community- and population-based intervention strategies, both retrospectively and prospectively. It addresses also the dimension of new financing and business models, which will also require contributions from the disciplines of social sciences and humanities. This priority includes the integration of the care dimension by better coordinating primary and community care with the specific needs of the patient.

The expected impact of this priority is better evidence for the development of more sustainable and resilient health systems, including through better and more coordinated health technology assessment, resulting in increased access to quality care for everyone and better health promotion. It should also provide a path to implementation of integrated care programmes, and to strengthen the procurement communities and the links between the demand (care authorities) and supply (technology providers) sides.

Proposals are invited against the following topic(s):

SC1-BHC-22-2019: Mental health in the workplace

Specific Challenge: In most European countries, absences from work and early retirement due to mental illness have increased in recent years⁸⁶. Mental health conditions such as depression, anxiety and stress represent substantial financial costs for employers and employees, as well as a significant loss for society at large. An EU-level estimate of the overall costs, direct health costs and lost productivity is more than 450 billion EUR per

⁸⁶ [http://www.mentalhealthandwellbeing.eu/assets/docs/publications/Framework%20for%20action_19jan%20\(1\)-20160119192639.pdf](http://www.mentalhealthandwellbeing.eu/assets/docs/publications/Framework%20for%20action_19jan%20(1)-20160119192639.pdf)

year.^{87,88,89} Mental illness is an important cause of absence from work but it is also linked to high levels of presenteeism, where an employee remains at work despite experiencing symptoms resulting in lower productivity. It is important to create mentally healthy workplaces, i.e., promoting and protecting employees' good mental health and supporting them when they experience mental health problems, and their return to work. A healthy workplace involves creating an environment that is supportive of the psychosocial aspects of work, recognising the potential of the workplace to promote workers' mental health and wellbeing, and reduce the negative impacts of work-related stress. Many of the factors that influence the positive mental health and wellbeing of workers relate to the social environment at work such as the working conditions, style of management, working culture and levels of supports, as well as job security.

More knowledge is needed about effective interventions by employers to promote good mental health, and about the barriers to effective implementation of such interventions, in particular for smaller enterprises and public agencies with less resources and knowledge to manage these health issues.

Scope: Proposals should develop and implement intervention(s) that an employer/organization can take to promote good mental health and prevent mental illness in the workplace. These interventions can be newly developed or improvements on existing ones. They should address challenges in mental health in the workplace⁹⁰ in the EU. The interventions should be assessed in terms of direct and indirect individual and collective health outcomes and cost-effectiveness, implementation facilitators and barriers.

Proposals should build on existing knowledge but may well go beyond. Co-morbidities in mental and/or physical health should be addressed. Research should be multidisciplinary, including social sciences and the humanities. The stigma attached to mental ill health is important to consider as well as other social and cultural factors which may be relevant to improving the working environment. Mixed-methods research⁹¹ is encouraged. Proposals should involve key partners such as employers and employees in the private and public sector, policy makers, insurers, social partners and civil society in developing initiatives. Proposals should address relevant gender issues (e.g. gender equality at the workplace). Ethics and data protection aspects should be addressed where they are relevant.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 4 million would allow this specific challenge to be addressed appropriately.

⁸⁷ http://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/publication/wcms_466547.pdf

⁸⁸ [http://www.mentalhealthandwellbeing.eu/assets/docs/publications/Framework%20for%20action_19jan%20\(1\)-20160119192639.pdf](http://www.mentalhealthandwellbeing.eu/assets/docs/publications/Framework%20for%20action_19jan%20(1)-20160119192639.pdf)

⁸⁹ https://ec.europa.eu/health/mental_health/eu_compass_en

⁹⁰ A Workplace is a location, which can be inside or outside, virtual or physical, and can include an office, factory or home – where a person's primary occupation takes place

⁹¹ Broadly defined as research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a programme of inquiry <http://journals.sagepub.com/doi/pdf/10.1177/2345678906293042>

Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Improved mental health and reduced sickness absence in the EU working population.
- Positive impact on productivity and economic results of workplaces by improved policies and action to promote mental health.
- Improved policies on mental health in the workplace based on the broader evidence base of effective interventions.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-23-2018: Novel patient-centred approaches for survivorship, palliation and/or end-of-life care

Specific Challenge: Health conditions linked to end-of-life issues, acute and chronic pain, life-threatening non-communicable diseases, late or long term side effects and consequences of diseases and their treatments impact quality of life and pose an immense societal and economic burden. Palliative⁹², end-of-life and survivorship care benefits patients with malignant and non-malignant chronic health conditions, providing relief from their symptoms and improving their quality of life. From 38% to 74.0% of the affected population⁹³ is estimated to be in need of palliative care. While a variety of interventions are in use, these are often not adequately validated or adapted to the specific needs of patients affected with a specific chronic disease or with multimorbidities. Therefore a need exists to strengthen the evidence base for available effective interventions improving quality of life in the domains of palliative, end-of-life and survivorship care.

Scope: Proposals should demonstrate, the effectiveness and cost-effectiveness of new, improved or specifically adapted pharmacological and/or non-pharmacological interventions to either relieve symptoms (e.g. pain) and suffering caused by life-threatening non-communicable diseases (including disabilities), or serious late and long-term side effects of disease treatments in patients and survivors, or symptoms that occur at the end of life. Randomised clinical trials or observational studies of new or improved patient and/or family

⁹² According to WHO, palliative care is "an approach that improves the quality of life of patients and their families facing the problem associated with life threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual" (<http://www.who.int/cancer/palliative/definition/en/>).

⁹³ Morin et al. Estimating the need for palliative care at the population level: A cross-national study in 12 countries. Palliat Med. 2016

centred⁹⁴ interventions, targeting children⁹⁵ and/or adults, should be considered for this topic. Proposals should give a sound feasibility assessment justified by available publications or preliminary results.

Proposals should prove the feasibility of integrating the proposed interventions in current pain management, palliative and/or end-of-life and/or survivorship care regimes and healthcare systems across Europe while taking into account the complex human aspects which are necessarily managed by such regimes and systems.

The proposals should address sex, gender, age and socio-economic factors in health and any other factors (e.g. ethical, familial, cultural considerations, including personal beliefs and religious perspectives, etc.) that could affect health equity.

The Commission considers that proposals requesting a contribution from the EU of between EUR 3 and 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Reduced symptom burden and suffering or improved well-being of patients in need of palliative, end-of-life or survivorship care and their formal and informal caregivers.
- Improved clinical guidelines and policy recommendations with respect to pain management, palliative, end-of-life or survivorship care of patients with life-threatening non-communicable diseases or afflicted by late and long term side-effects of treatments.
- Improved quality, effectiveness and cost-effectiveness of palliative, end-of-life or survivorship care services as well as access to care.
- Reduced economic and wider societal burden arising from increased numbers of patients in need of palliative, end-of-life or survivorship care.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-25-2019: Demonstration pilots for implementation of personalised medicine in healthcare

Specific Challenge: Personalised medicine (PM) has the potential to respond to, among others, the increasing burden of co-morbidities and thus enhance the sustainability of healthcare systems. With the increasing number of scientific approaches available, it is crucial

⁹⁴ Involving patients and their caregivers (families, volunteers, nurses and others), and taking their views and values into account in care decisions.

⁹⁵ According to WHO " A child is a person 19 years or younger unless national law defines a person to be an adult at an earlier age " (<http://www.who.int/hiv/pub/guidelines/arv2013/intro/keyterms/en/>).

to demonstrate the benefit of large scale deployment of personalised medicine to citizens and healthcare systems. This was also one of the conclusions of the Personalised Medicine Conference 2016 (<http://ec.europa.eu/research/conferences/2016/permed2016/index.cfm>).

Scope: The pilot projects should demonstrate the benefit for individuals as well as the implementability and economic viability of personalised medicine approaches in real life healthcare settings. The pilots should be tailored to the needs of citizens, making use of a wide variety of data and proposing prediction, prevention or treatment solutions, focussing on diseases with high burden to society (taking due account of sex/gender differences) and including multi-morbidity conditions if relevant. The use of big data approaches and high performance computing is encouraged. Applicants should ensure coordination with national, regional or local authorities engaging in healthcare environments and should aim at linking different institutions (hospitals, other healthcare facilities, public health authorities, payers etc.). The pilot projects should engage partners in regions or cities having adopted or that are in advanced planning for introducing PM approaches. Patient representatives as well as partners from countries that are in the process of upgrading their healthcare systems should be involved, ensuring a wide European dimension. Applicants should address the health economic, ethical, legal and societal aspects of the proposed action. Taking into account the advances already achieved for PM approaches in cancer and rare diseases, projects with primary focus on these diseases are excluded from the scope of this topic.

The Commission considers that proposals requesting a contribution from the EU of between EUR 18 and EUR 20 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Evidence for a PM-based model of care that can be used as a basis for the delivery of new ways of care organisation.
- Demonstration of the viability and feasibility of PM approaches in real-life settings and at a large scale, exemplifying potential for savings in overall healthcare costs.
- Widening of PM approaches to include diseases other than cancer and rare diseases.
- Linking of different actors for healthcare, economy, lifestyle, healthy living and regulation, making use of the multitude of data available.

Type of Action: Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-26-2018: HTA research to support evidence-based healthcare

Specific Challenge: Health technology assessment (HTA) is gaining increasing importance across Europe and the world as a tool to support evidence-based decision-making in healthcare. HTA aims to assess the added clinical/therapeutic value of a new health technology compared to the existing standard of care, under the usual circumstances of healthcare practice (relative effectiveness assessment). HTA can also assess additional aspects of added value (e.g. economic or organisational), depending on the specific context in which it is used.

European collaboration on HTA has increased in recent years, notably in the context of EU-funded projects⁹⁶, including work towards shared methodologies and the joint production of relative effective assessments. Despite recent progress, a number of methodological challenges remain in the field of HTA. This includes a need for methodologies that address the specificities of particular types of health technologies⁹⁷ and their increasingly combined use in healthcare. Better methodological agreement is also needed in particular therapeutic areas, including on important aspects of relative effectiveness assessment such as health outcome measures. Moreover, there is a need to resolve methodological issues related to the use of "real-world" data, to inform the assessment of effectiveness under the usual circumstances of healthcare practice.

Thus the challenge is to address these complex issues and needs, by bringing together methodological expertise from across the various relevant research communities. Such a collaborative effort should draw on the best available expertise and latest evidence, in order to develop methodological approaches that are scientifically sound, fit for purpose and fit for the future.

Scope: Proposals should develop new or improved methodological approaches and frameworks, and foster methodological consensus-building, to address all of the following areas:

1. Specific types or groups of health technologies: Help adapt existing HTA frameworks to reflect the specificities of particular types of health technologies⁹⁷ for which HTA is currently less established but gaining importance. Particular consideration should be given to the increasing role of combinations of technologies, co-dependent technologies (e.g. companion diagnostics) and personalised medicine⁹⁸ in healthcare.

⁹⁶ EUnetHTA Joint Actions 1-3, AdHopHTA, ADVANCE-HTA, INTEGRATE-HTA, MedtecHTA, GetReal, ADAPT-SMART

⁹⁷ Health technologies are broadly defined to include e.g. pharmaceuticals, medical devices, in-vitro diagnostics, medical procedures, screening tests, vaccination programmes, eHealth, and other measures used for health promotion, disease prevention, diagnosis or treatment.

⁹⁸ Personalised medicine refers to a medical model using characterisation of individuals' phenotypes and genotypes (e.g. molecular profiling, medical imaging, lifestyle data) for tailoring the right therapeutic strategy for the right person at the right time, and/or to determine the predisposition to disease and/or to deliver timely and targeted prevention.

2. Selected therapeutic areas: The focus should be on therapeutic/disease areas where new products frequently face challenges in HTA, but a high unmet medical need persists. Methodological work and consensus-building should be aimed at key issues for relative effectiveness assessment, such as patient-relevant health outcomes, appropriate outcome measures, clinically relevant patient subgroups, and the current evidence-based standard of care. With regard to patient-relevant health outcomes, patient preferences and patient-reported outcome measures (PROMs) should be taken into account. Particular consideration should be given to strengthening synergies between HTA and clinical guideline development, with a view to more consistent reporting on the clinical/therapeutic value of health technologies.
3. Use of real-world data: Methodological work should address current concerns and uncertainties around the quality and suitability of real-world data (e.g. from diseases-specific registries and routine healthcare databases) for relative effectiveness assessment in HTA. It should also contribute to broader efforts for improving the collection, comparability and analysis of real-world data across Europe⁹⁹.
4. Implementation: In all of the above areas, part of the efforts should be directed at implementation of methodological work, using e.g. case studies or pilots. Involvement of HTA bodies in all of the above areas should ensure that the needs of HTA practitioners are addressed and uptake in HTA practice is facilitated.

The proposed consortium should bring together partners with relevant expertise from e.g. academia, HTA bodies, regulators, centres of expertise for clinical research and care¹⁰⁰, scientific and medical learned societies, and organisations involved in developing evidence-based clinical guidelines and systematic reviews in healthcare. The consortium should also seek input from relevant stakeholders such as patients, technology developers, healthcare providers and payers. The composition of the consortium should ensure a broad geographical representation of European countries. Gender equality aspects should be taken into account in carrying out the relevant research objectives and activities.

Proposals should complement or build on existing work, including results of EU-funded projects in the field of HTA⁷⁶. The consortium should closely liaise with EUnetHTA¹⁰¹ to avoid duplication, build on EUnetHTA existing work and create synergies with ongoing EUnetHTA activities and other relevant EU cooperation efforts.

The Commission considers that a proposal requesting an EU contribution between EUR 5 to 10 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

⁹⁹ Synergies should be sought with related initiatives, e.g. EUnetHTA Joint Action 3 (Work Package 5), the EMA initiative for patient registries, and JRC activities on registries.

¹⁰⁰ For rare diseases, involvement of European Reference Networks (ERNs, see https://ec.europa.eu/health/ern/policy_en) should be considered.

¹⁰¹ EUnetHTA Joint Action 3 is a European network of national/regional HTA bodies under the EU Third Health Programme.

Should more than one proposal be selected, applicants are expected to collaborate and this should be indicated in the proposal.

Expected Impact:

- New or improved methodological approaches, frameworks and consensus-building mechanisms to address the above-mentioned challenges for particular types and groups of technologies, therapeutic areas and real-world data use in HTA.
- Strengthened methodological quality of HTA by input of specialist expertise from the broader scientific, clinical research and evidence-based healthcare community.
- Improved methodological agreement between HTA researchers across Europe, increasing the impact of HTA on evidence generation, clinical guideline development and evidence-based healthcare.
- Contribute to strengthening EU cooperation on HTA, building on ongoing and planned efforts.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCO-12-2018: Innovation in healthcare - a CSA towards using pre-commercial procurement and public procurement of innovative solutions in healthcare systems

Specific Challenge: Innovative solutions for healthcare have the potential to improve patient care in European healthcare setting. Integrated care¹⁰² principles allow care for patients to be better coordinated, and jointly planned by the health and social care professionals across vertically and horizontally relevant preventive and curative services. To respond to changing organisation of care and support the transition of hospital services towards *a patient-centred integrated care* model, healthcare providers are encouraged to join forces and create demand for such innovations through public joint procurement, serving the triple aim of healthcare: better care experience, better care outcomes, and more efficient care.

Implementation of timely and correct *diagnostics for infectious diseases* that will speed up the identification of the causative infectious disease pathogens, resistance and drug susceptibility is crucial for tailoring the antimicrobial treatment to ensure appropriate antimicrobial drug use and to reduce unnecessary prescriptions. As innovative rapid diagnostics are significantly more expensive than culture-based diagnostics that are widely used since decades, the uptake of these new tests in hospitals and especially primary care centres has been limited. To respond to this clinical and public health need and to facilitate the uptake of innovative rapid

¹⁰² Integrated care considers initiatives seeking to improve outcomes of care by overcoming issues of fragmentation through linkage or coordination of services of different providers along the continuum of care

diagnostics for infectious diseases into healthcare practice, contracting authorities can act together to create demand for such innovations through public joint procurement.

However, before joint innovation procurement can be undertaken, first the cross-border cooperation between interested healthcare procurers must be established to counter fragmentation of delivering innovative solutions in healthcare settings¹⁰³.

Scope: The objective of this coordination and support action (CSA) is to create a Europe-wide consortium of healthcare providers and public procurers in the health and social care sector that define together unmet procurement needs to implement innovative solutions in healthcare.

The consortium should prepare future procurement topics to conduct:

- A PCP/PPI to implement rapid diagnostic tools for infectious diseases in clinical practise (at least 1 topic). To assure the compatibility and interoperability between infectious disease diagnostics and avoid technological standardisation issues, public health sector procurers that participate in this CSA should also develop specifications that are suitable for Europe-wide deployment of the innovative diagnostics.
- One or more PCP/PPIs to drive the shift towards health systems reform. Clinicians, patients, public procurers in healthcare systems, health and social care facility managers, and health insurers/payers should work jointly to identify the gaps and needs that will lead to the development of new innovative solutions for patient-centred integrated healthcare.

Activities supported by this CSA should include the following aspects:

- preparation of innovation procurement calls to be published in topic SC1-BHC-20-2020 of the Work Programme 2018-2020. That topic will follow the specific requirements for innovation procurement PCP/PPI supported by Horizon 2020 grants as set out in General Annex E of the work programme.
- open market consultation with the industry, including on technical and service readiness
- analysis of the suitable testing environments
- analysis of differences in legal public procurement framework for the participating procurers in health and social care,
- market analysis and analysis of potential barriers (standardisation, certification, regulatory requirements, intellectual property rights, contracting models, payment schemes)

¹⁰³ This call topic is complementary but separate from DTH-10-2019-2020 for digital solutions for health and care services

- consultations with relevant stakeholders, end-users (consumer organisations, reimbursement bodies) to prepare for a future market uptake of the solutions.

Expected Impact:

- Improved networking of health and social care providers and public procurers in healthcare systems to identify stakeholders and specifications for a strategy to launch procurement for innovative diagnostics for infectious diseases, and for innovative solutions in integrated care.
- Optimised procurement strategy for innovative infectious disease diagnostics and for innovative solutions in integrated care.

The Commission considers that a proposal requesting an EU contribution between EUR 1.5 and 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

1.5 Decoding the role of the environment, including climate change, for health and well-being

This priority will assess the impact of environment (i.e. factors external to the human body and to health and healthcare systems, including climate change) on health and well-being, and the related socio-economic impacts. This priority will address three main items: (i) the development of new testing and screening methods to identify endocrine disrupting chemicals; (ii) the development of the 'human exposome', allowing the assessment of the totality of the life-long environmental influences that individuals are exposed to and their health impacts; (iii) the development of a European environment and health research agenda for the future. This priority contributes to the Ostrava Declaration on Environment and Health¹⁰⁴ and the EU chemical and other sectoral policies. Where appropriate, this priority will build on existing results from projects funded under previous EU research framework programmes and create links to the European Human Biomonitoring Initiative¹⁰⁵.

The expected key impacts are improved risk assessment and mitigation measures. This priority aims to reinforce health and wellbeing as a strong driver for the societal and political changes needed in support of a sustainable society. The research undertaken will provide tools and evidence enabling new approaches to estimate the environmental burden of disease and will through new knowledge reinforce the evidence base for preventive actions.

Proposals are invited against the following topic(s):

¹⁰⁴ <http://www.euro.who.int/en/media-centre/events/events/2017/06/sixth-ministerial-conference-on-environment-and-health/documentation/declaration-of-the-sixth-ministerial-conference-on-environment-and-health>

¹⁰⁵ www.hbm4eu.eu/

SC1-BHC-27-2018: New testing and screening methods to identify endocrine disrupting chemicals

Specific Challenge: There are a variety of natural and anthropogenic chemicals that can produce adverse effects via a disruption of the body's endocrine (hormone) system, referred to as endocrine disruptors (EDs)¹⁰⁶. EDs are of increasing importance in chemical regulations in the European Union, and criteria to identify EDs have recently been presented for two pieces of EU legislation (Biocidal Product Regulation and Plant Protection Products Regulation)¹⁰⁷.

In the EU, the legislation regulating chemical substances often includes their screening and testing according to the EU test methods regulation¹⁰⁸, which predominantly contains test methods developed under the OECD¹⁰⁹. The current testing tools, including regulatory *in vivo* tests and novel *in vitro* assays, do not appropriately identify effects related to certain less studied endocrine-mediated pathways or health outcomes, in which EDs may be implicated. Moreover, the new ED criteria require information about both the adverse effects and the endocrine mode of action.

Scope: New and improved approaches are needed to increase the quality, the efficiency and the effectiveness of existing methods to meet demanding and evolving regulatory requirements worldwide. In consultation with relevant regulatory bodies, research should improve and harmonise screening and testing protocols/strategies and hazard/risk assessments by developing better and faster tools, test methods or models, including *in vitro* and *in vivo* tests, high-throughput and *in silico* methods (e.g. QSAR), potentially combined with research on adverse outcomes pathways. For *in vitro* tests, appropriate coupling of their results to human health effects should be ensured. Information is also needed as regards how epidemiological and field monitoring data, which are also to be considered as data sources in a regulatory context, can be used to gain information about possible associations between levels of exposure to specific chemicals and ED-related effects. Focus should be on the most urgent regulatory needs, e.g., methods addressing the thyroid axis, developmental neurotoxicity, metabolic disorders, female reproduction and non-genotoxic carcinogenicity. Proposals should involve, in addition to academic researchers, regulatory agencies and other actors as appropriate. Proposers should consider sex and gender analysis when relevant. International cooperation is essential. Proposals are required to describe how they will contribute to ongoing international ED related activities (e.g. OECD work, EU level databases), including decision schemes under development. To speed up regulatory uptake of tests, validation is an essential step to be included in the proposals.

¹⁰⁶ WHO/UNEP-State of the science of endocrine disrupting chemicals – 2012:
<http://www.who.int/ceh/publications/endocrine/en>

¹⁰⁷ Communication from the Commission to the European Parliament and the Council on endocrine disruptors and the draft Commission acts setting out scientific criteria for their determination in the context of the EU legislation on plant protection products and biocidal products:
http://ec.europa.eu/health/endocrine_disruptors/policy/index_en.htm

¹⁰⁸ http://ecvam.jrc.ec.europa.eu/alt-animal-testing-safety-assessment-chemicals/test_method_reg

¹⁰⁹ OECD work on endocrine disruptors:
<http://www.oecd.org/env/ehs/testing/oecdworkrelatedtoendocrinedisrupters.htm>

The Commission considers that a proposal requesting an EU contribution between EUR 4 to 6 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Collaboration between successful proposals will be encouraged.

Proposals could consider the involvement of the European Commission Joint Research Centre (JRC) as an added value in order to provide an effective interface between the research activities and regulatory aspects and/or to translate the research results into validated test methods and strategies fit for regulatory purpose. In that respect, the JRC will collaborate with any successful proposal.

Expected Impact:

- Improved hazard and risk assessment of EDs, including in the workplace.
- Novel ED assay candidates for regulatory use.
- Support for the OECD work on testing and assessing chemicals for ED identification.
- Enhanced international cooperation.
- Contribution to the development of an international strategy and guidelines for testing EDs and assessing associated hazard and risk.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-BHC-28-2019: The Human Exposome Project: a toolbox for assessing and addressing the impact of environment on health

Specific Challenge: Despite the general acknowledgement by the scientific community that '*Genetics load the gun but environment pulls the trigger*'¹¹⁰ when it comes to the causation of major non-communicable diseases (NCDs)¹¹¹, there is persistent uncertainty as to the global burden of disease attributable to environmental (including life-style and climatic) factors, including healthcare costs and negative economic impact. Deciphering the human exposome¹¹² is a novel way of addressing the challenge to improve health and reduce the overall burden of disease. This will require improved knowledge of health risks, including combinations of several risk factors, and the mechanisms by which they affect health at different stages throughout the life course, including exposures in foetal life. Effective preventive action will need to be designed, building on knowledge of various risk factors,

¹¹⁰ Dr. Francis Collins, Director of the U.S. National Institutes of Health (NIH) www.ncbi.nlm.nih.gov/pmc/articles/PMC2675383

¹¹¹ <http://www.who.int/mediacentre/news/releases/2016/deaths-attributable-to-unhealthy-environments/en/>

¹¹² The concept of the exposome refers to the totality of environmental exposures (diet, lifestyle, occupational and environmental factors) from conception onwards, including its external and internal components.

including exposure to pollutants in daily life, individual behaviour and the social context, taking into account gender issues.

Developing a Human Exposome Project would present a fundamental shift in looking at health, by moving research away from 'one exposure, one disease' understanding to a more complex picture upon which to build solid, cost-effective preventive actions and policies in the future. It would respond to the need for more complete and accurate individual-level exposure data in order to estimate the largely unknown environmental component of NCDs.

Scope: Applicants should take advantage of the last decade's rapid technological advances which have opened up new opportunities to collect, combine and analyse large data sets offering new possibilities to understand the contribution of environmental factors to the global health burden of common chronic diseases. Proposals should use innovative approaches to the systematic and agnostic identification of the most important environmental risk factors for the development of major NCDs across the life course (including *in utero*), leading to preventive interventions at the individual, group or population level and contribute to sustainable healthcare. Well-designed retrospective epidemiological studies may be included and proposals may envisage the creation of a prospective Europe-wide exposomics cohort and biobank, integrating behavioural, socio-economic factors and clinical records.

The following components should be considered: agnostic evaluation of the role of multiple and unknown exposures; assessment of individual exposure to multiple stressors; sensors that combine external exposure and health data measurements; integration of external exposome data with cross-omics responses and (epi)genetic data; systematic evaluation and simulations of the health impacts; socio-economic modelling and econometric analysis including ethical and sex/gender aspects where relevant; better data mining tools, including advanced statistical analysis of complex data and high-performance/high throughput computing and storage; a long-term host and a single shared data infrastructure, taking into account existing structures and ensuring open access to data generated.

Innovation and connections with industry are expected in the areas of sensor development (external exposome), omics technology and novel biomarker development (internal exposome), bioinformatics, and data processing and management. Proposals are expected to respond to a persistent or long-standing policy/regulatory need where the exposome approach would be useful to solve a scientific issue to underpin better regulation now or in the future (examples: indoor and outdoor air quality, waste, occupational health, noise).

In order to establish an overarching Human Exposome Project, an overall coordination mechanism between the projects funded will be required and will be added at the grant preparation stage to all selected proposals as a common work package. Grants awarded under this topic will be complementary. The respective options of Article 2, Article 31.6 and Article 41.4 of the [Model Grant Agreement](#) will be applied.

The Commission considers that a proposal requesting an EU contribution between EUR 8 to 12 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Innovation in environmental health sciences, in particular for external and internal exposure assessments and data management.
- Enabling researchers and policy makers to continuously include new knowledge in the policy making processes by using the toolbox to generate data and information.
- Better prediction of disease risk by acquisition of new knowledge on the influence of external exposures on biological pathways at different life-stages and identification of early signs of health damage caused by environmental factors.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCO-13-2018: Setting the priorities for a European environment, climate and health research agenda

Specific Challenge: Environment and health research is wide in scope and multidisciplinary, and the related policies and regulations are spread across different sectors and organisational structures. In Europe, in addition to the specific policies in sectors such as air and water quality, noise or chemicals, there are currently several overarching policy programmes governing environment and health: the Seventh Environment Action Programme¹¹³ to 2020, the WHO-led European Environment and Health Process¹¹⁴, the Paris agreement adopted under the United Nations Framework Convention on Climate Change¹¹⁵ and the United Nations Agenda 2030 for Sustainable Development¹¹⁶. In order to respond to the new and continuing challenges in environment, climate change and health in the next decade, identified in these and other policy programmes, increased coordination and cross-fertilisation of ideas between sectors is required. This will raise the visibility of the work undertaken, introduce a more strategic approach, thereby optimising and adding value to H2020 and the next EU research framework contributions to environment and health activities and policies in Europe.

Scope: The aim is to establish a research/policy coordination group consisting of relevant science and policy actors in environment and health from H2020-funded activities and national/EU regulatory bodies as well as relevant international actors. The objective is to identify proactively key policy areas requiring scientific support for environment, climate change and health related issues in the next decade and develop a European medium-term research and innovation strategy and agenda covering key research and policy aspects – from

¹¹³ <http://ec.europa.eu/environment/action-programme/>

¹¹⁴ <http://www.euro.who.int/en/health-topics/environment-and-health/pages/european-environment-and-health-process-ehp>

¹¹⁵ http://unfccc.int/paris_agreement/items/9485.php

¹¹⁶ sustainabledevelopment.un.org/post2015/transformingourworld

causality research and new technologies and approaches to evaluation of socio-economic impacts of environment and health problems and preventive actions, also in occupational settings. In addition to this strategy, a set of guidelines, agreed by the stakeholder community, reflecting the current state-of-art for health impact and risk assessment of environmental factors applicable across key sectors, should be developed. The action is invited to structure its work in an inclusive way, ensuring the engagement of all stakeholders including from European countries with less developed environment and health research and policy. The proposal should contain a clear work plan for 3 years, but be open for modifications required to meet the needs of the relevant policy processes (e.g. development of the next EU research framework programme, WHO environment and health process).

The Commission considers that proposals requesting a three-year duration and an EU contribution between EUR 2 to 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Development of a research and innovation agenda for the environment (including climate change) and health nexus as input to the next EU research framework programme, including for occupational settings and quantification and monetisation of health impacts of policies.
- Contribution to the European WHO environment and health process and the implementation plan resulting from the Ostrava Declaration on Environment and Health.
- Increased coordination between environment, climate change and health projects supported across H2020 sectors and development of a cross-cutting stakeholder community.
- A set of guidelines for evaluating the socio-economic impact of environmental influences on health and wellbeing recognised by the international community.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

Conditions for the Call - Better Health and care, economic growth and sustainable health systems

Opening date(s), deadline(s), indicative budget(s):¹¹⁷

¹¹⁷ The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.

The Director-General responsible may delay the deadline(s) by up to two months.

All deadlines are at 17.00.00 Brussels local time.

The deadline(s) in 2019 are indicative and subject to a separate financing decision for 2019.

*Horizon 2020 - Work Programme 2018-2020
Health, demographic change and wellbeing*

Topics (Type of Action)	Budgets (EUR million)		Deadlines
	2018	2019	
Opening: 07 Nov 2017			
SC1-BHC-15-2018 (RIA)	52.00		06 Feb 2018 (First Stage) 04 Sep 2018 (Second Stage)
SC1-BHC-03-2018 (RIA)	50.00		18 Apr 2018
SC1-BHC-04-2018 (COFUND-EJP)	55.00		
SC1-BHC-05-2018 (RIA)	40.00		
SC1-BHC-09-2018 (RIA)	54.00		
SC1-BHC-16-2018 (RIA)	20.00		
SC1-BHC-18-2018 (RIA)	25.00		
SC1-BHC-21-2018 (RIA)	10.00		
SC1-BHC-23-2018 (RIA)	44.00		
SC1-BHC-26-2018 (RIA)	10.00		
SC1-BHC-27-2018 (RIA)	52.00		
SC1-HCO-01-2018-2019-2020 (CSA)	8.00		
SC1-HCO-02-2018 (CSA)	2.00		
SC1-HCO-04-2018 (ERA-NET-Cofund)	5.00		
SC1-HCO-05-2018 (CSA)	2.00		
SC1-HCO-06-2018 (CSA)	3.00		
SC1-HCO-08-2018 (CSA)	3.00		
SC1-HCO-09-2018 (CSA)	2.00		
SC1-HCO-10-2018 (CSA)	2.00		

The budget amounts for the 2018 budget are subject to the availability of the appropriations provided for in the draft budget for 2018 after the adoption of the budget 2018 by the budgetary authority or, if the budget is not adopted, as provided for in the system of provisional twelfths.

The budget amounts for the 2019 budget are indicative and will be subject to a separate financing decision to cover the amounts to be allocated for 2019.

*Horizon 2020 - Work Programme 2018-2020
Health, demographic change and wellbeing*

SC1-HCO-11-2018 (CSA)	1.00		
SC1-HCO-12-2018 (CSA)	2.00		
SC1-HCO-13-2018 (CSA)	3.00		
Opening: 26 Jul 2018			
SC1-BHC-07-2019 (RIA)		50.00	16 Apr 2019
SC1-BHC-10-2019 (PCP)		40.00	
SC1-BHC-13-2019 (RIA)		30.00	
SC1-BHC-28-2019 (RIA)		50.00	
SC1-HCO-01-2018-2019-2020 (CSA)		4.00	
SC1-BHC-01-2019 (RIA)		70.00	02 Oct 2018 (First Stage)
SC1-BHC-02-2019 (RIA)		50.00	16 Apr 2019 (Second Stage)
SC1-BHC-14-2019 (RIA)		95.00	
SC1-BHC-19-2019 (RIA)		25.00	
SC1-BHC-22-2019 (RIA)		30.00	
SC1-BHC-25-2019 (IA)		60.00	
Overall indicative budget	445.00	504.00	

In recognition of the opening of the US National Institutes of Health's programmes to European researchers, any legal entity established in the United States of America is eligible to receive Union funding to support its participation in projects supported under the following topics: SC1-BHC-01-2019, SC1-BHC-02-2019, SC1-BHC-03-2018, SC1-BHC-04-2018, SC1-BHC-05-2018, SC1-HCO-01-2018-2019-2020, SC1-HCO-02-2018, SC1-HCO-04-2018, SC1-BHC-07-2019, SC1-BHC-09-2018, SC1-BHC-10-2019, SC1-HCO-05-2018, SC1-BHC-13-2019, SC1-BHC-14-2019, SC1-BHC-15-2018, SC1-BHC-16-2018, SC1-BHC-18-2018, SC1-BHC-19-2019, SC1-BHC-21-2018, SC1-HCO-06-2018, SC1-HCO-08-2018, SC1-HCO-09-2018, SC1-HCO-10-2018, SC1-HCO-11-2018, SC1-BHC-22-2019, SC1-BHC-23-2018, SC1-BHC-25-2019, SC1-BHC-26-2018, SC1-HCO-12-2018, SC1-BHC-27-2018, SC1-BHC-28-2019, and SC1-HCO-13-2018

Beneficiaries in grants signed under this call will be allowed to charge the cost of clinical studies on the basis of unit costs established in line with a methodology set up in the Commission Decision C(2016) 7553, which is available on the Participant Portal.

Beneficiaries in grants signed under this call may be required by the European Commission, in the context of a public health emergency, to provide timely open access or access rights to

research data which are relevant for addressing a public health emergency. Therefore the relevant option of Article 29.3 of the Horizon 2020 Model Grant Agreement will be applied. It is expected that quality-controlled data are shared in accordance with the FAIR¹¹⁸ principles.

Indicative timetable for evaluation and grant agreement signature:

For single stage procedure:

- Information on the outcome of the evaluation: Maximum 5 months from the final date for submission; and
- Indicative date for the signing of grant agreements: Maximum 8 months from the final date for submission.

For two stage procedure:

- Information on the outcome of the evaluation: Maximum 3 months from the final date for submission for the first stage and maximum 5 months from the final date for submission for the second stage; and
- Indicative date for the signing of grant agreements: Maximum 8 months from the final date for submission of the second stage.

Eligibility and admissibility conditions: The conditions are described in General Annexes B and C of the work programme. The following exceptions apply:

SC1-BHC-05-2018	Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one participant from Canada.
SC1-HCO-01-2018-2019-2020	Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals under 1. "International Aspect" shall include at least one participant from the international partner region CELAC or from China respectively.
SC1-BHC-15-2018	Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one participant from disease-endemic countries.
SC1-BHC-18-2018	Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least two participants from two

¹¹⁸ <https://www.force11.org/group/fairgroup/fairprinciples>

	different CELAC countries.
SC1-BHC-21-2018	Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one participant from the Russian Federation.
SC1-BHC-25-2019	Taking into account the advances already achieved for Personalised Medicine approaches in cancer and rare diseases, projects with primary focus on these diseases are excluded from the scope of this topic.

Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in General Annex H of the work programme. The following exceptions apply:

<p>SC1-BHC-03-2018, SC1-BHC-04-2018, SC1-BHC-05-2018, SC1-BHC-07-2019, SC1-BHC-09-2018, SC1-BHC-10-2019, SC1-BHC-13-2019, SC1-BHC-16-2018, SC1-BHC-18-2018, SC1-BHC-21-2018, SC1-BHC-23-2018, SC1-BHC-26-2018, SC1-BHC-27-2018, SC1-BHC-28-2019, SC1-HCO-01-2018- 2019-2020, SC1-HCO- 02-2018, SC1-HCO- 04-2018, SC1-HCO- 05-2018, SC1-HCO- 06-2018, SC1-HCO- 08-2018, SC1-HCO- 09-2018, SC1-HCO- 10-2018, SC1-HCO- 11-2018, SC1-HCO- 12-2018, SC1-HCO- 13-2018</p>	<p>The thresholds for each criterion in a single stage process will be 4, 4 and 3. The cumulative threshold will be 12.</p> <p>The same applies to the second stage of the two-stage call for topics SC1-BHC15-2018, SC1-BHC01-2019, SC1-BHC02-2019, SC1-BHC14-2019, SC1-BHC19-2019, SC1-BHC22-2019, SC1-BHC25-2019</p>
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Evaluation Procedure: The procedure for setting a priority order for proposals with the same score is given in General Annex H of the work programme.

The full evaluation procedure is described in the relevant [guide](#) published on the Participant Portal.

Grant Conditions:

SC1-BHC-10-2019	The funding rate for PCP actions is limited to 90% of the total eligible costs to leverage co-financing from the procurers in this specific case.
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Consortium agreement:

All topics of this call	Members of consortium are required to conclude a consortium agreement, in principle prior to the signature of the grant agreement.
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Call - Digital transformation in Health and Care

H2020-SC1-DTH-2018-2020

This call aims at supporting the management of health and wellbeing while empowering the participation of citizens and facilitating the transformation of health and care services to more digitised, person-centred and community-based care models, thereby enabling better access to healthcare and the sustainability of health and care systems. It is relevant to the Commission priorities 'A new boost for jobs, growth and investment' and 'A connected Digital Single Market'¹¹⁹, as well as to the European Cloud Initiative and the European Free Flow of Data Initiative. It will contribute to maximising the potential of the digital economy in the health and care sectors aiming at sustainable development to the benefit of society, environment and citizens. This call will address eHealth, mobile health (mHealth) and Information and Communication Technologies (ICT) for Active and Healthy Ageing.

Proposals are invited against the following topic(s):

SC1-DTH-01-2019: Big data and Artificial Intelligence for monitoring health status and quality of life after the cancer treatment

Specific Challenge: Currently available methods and strategies for diagnosis and treatment of cancer help clinicians continuously improve quality of care and prevent cancer deaths in the population. Accurate risk assessment, availability of genetic tests, timely diagnosis and effective treatment has created the impression of cancer being a chronic disease that can be cured. However, often rather aggressive treatment, psychological stress (anxiety and depression) can cause physical and psychological problems that may cause long-term after-cure consequences such as similar or other types of cancer, other types of (chronic) diseases and affect the quality of life of a patient. Therefore, the importance of addressing and, if possible, preventing long-term effects of cancer treatment is growing. In addition to patient-reported outcomes such as functional status, symptoms intensity and frequency, multiple domains of well-being and overall satisfaction with life, the use of big data can bring valuable information for monitoring health status and quality of life after the cancer treatment. Big Data can provide new opportunities to define statistical and clinical significance, but present also challenges as it requires specific analytical approaches.

Scope: Proposals should focus and deliver on how to better acquire, manage, share, model, process and exploit big data using, if appropriate, high performance computing to effectively monitor health status of individual patients, provide overall actionable insights at the point of care and improve quality of life after the cancer treatment. Relevant solutions include for example systems for determining and monitoring (taking also in account gender differences) the combined effects of cancer treatment, environment, lifestyle and genetics on the quality of life, enabling early identification of effects that can cause development of new medical

¹¹⁹ Updated by the DSM mid-term review: http://europa.eu/rapid/press-release_IP-17-1232_en.htm

conditions and/or impair the quality of life. Proposals preferably address relevant health economic issues, use patient reported outcome and experience measures (PROMs and PREMs) and take into account the relevant social aspects of health status and quality of life after cancer treatment. Integrated solutions should include suitable approaches towards security and privacy issues.

Information can be collected from traditional sources of health data (cohorts, comprehensive electronic health records or clinical registries, incl. genetic data, validated biomarkers for remission), from new sources of health data (mobile health apps and wearables) and from sources that are usually created for other purposes such as environmental data.

It is important to assure ethical aspects of data, confidentiality, and anonymity of data transfer and engagement of those who collect / code such data in its analysis and interpretation, in order to avoid misinterpretation and inappropriate conclusions by using proper annotation methodologies of the data. Involvement of those who work within healthcare systems, patients, family and relatives, and the general public is needed.

The Commission considers that proposals requesting a contribution from the EU of between EUR 3 and 5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Participation of SMEs is encouraged.

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Mapped comprehensive big data in a reachable and manageable way by applying principles for sharing and reusability, creating a network of knowledge by linking translation tools, heterogeneous data sources and biomedical texts for monitoring health status and quality of life after the cancer treatment;
- Emerging data driven analytics and advanced simulation methods to study causal mechanisms and improve forecasts of ill-health, identification of disease trajectories and relapse;
- Better and faster means of high quality response to prevent or timely address development of new medical conditions and/or improve the quality of life;
- Better knowledge for improved patient counselling as well as to improve follow-up of patients;
- Novel information on health maintenance, onset and course of medical conditions with a view to optimise prevention and treatment;
- Evidence base for the development of policy strategies for prevention, early diagnosis, therapies as well as addressing health inequalities, support to patient registries at national level;

- Improved quality of life after cancer treatment, strengthening personal confidence and enhancing employability;
- Preventative strategies are established which have a real effect of reducing the occurrence of health disorders and co-morbidities associated with cancer treatment.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-DTH-03-2018: Adaptive smart working and living environments supporting active and healthy ageing

Specific Challenge: Demographic change and the ageing of the population create new heterogeneous challenges for age-friendly living, recreational and working environments such as a shrinking workforce and increasing numbers of workers with functional impairments, chronic conditions, care duties or re-integration in and later retirement from the labour market.

Digital solutions can support older individuals in being and staying actively involved in professional life for longer by designing fit for purpose working environments and by enabling flexible management of job-, leisure- and health-related activities considering their needs at the workplace, at home and on the move, with a particular focus on social inclusion, health needs and job retention.

Scope: Proposals should develop and validate digitally enabled adaptive services and solutions¹²⁰ leading to smart work environments for older adults, supporting them to remain actively involved in professional life, helping them to sustain and renew their work and personal life related skills and support independent active and healthy lifestyles while taking into account reduced capabilities due to age-related health risks and conditions.

Proposals should be based on trans-disciplinary research, involving behavioural, sociological, psychological, medical and other relevant disciplines, including gender and cultural aspects.

Proposals should convincingly describe the planned progress beyond state of the art in development and integration of unobtrusive, adaptive solutions for age-friendly living and working environments, addressing the needs of employees in specific and various sectors and workplaces¹²¹.

Proposals should build on active user engagement (e.g. employee participation at the workplace) in order to ensure the understanding of user needs, safeguarding ethics, privacy,

¹²⁰ Proposals should make use of the European global navigation satellite systems Galileo and EGNOS (Geostationary Navigation Overlay Service), if relevant.

¹²¹ A Workplace is a location, which can be inside or outside, virtual or physical, and can include an office, factory or home – where a person's primary occupation takes place.

security and regulatory aspects (e.g. labor law). Attention theft and impeding physical activity by ICT should be avoided.

Concepts should aim at realistic and verifiable benefits for flexible and sustainable job longevity measures and the consortium should include the necessary stakeholders to validate all relevant issues. The validation should take place in real settings (at workplaces and at home as required). The approach should demonstrate improvements in quality of life and/or improved health and safety for older adults, better management of aging workforce leading to a win-win for employers and employees, health and social system efficiency gains, business and financing models and organisational changes required for service delivery.

The Commission considers that proposals requesting a contribution from the EU between EUR 3 and 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Participation of SMEs is encouraged.

Expected Impact: Proposals should present methodologies and metrics as appropriate for measuring progress with significance towards the expected impact in:

- Independent living, and quality of life of older persons compared to current state of the art, enabling older persons to stay actively involved in work life for longer or return to work after severe disease;
- Enhanced health and safety working conditions and quality of life of older persons at work compared to the current situation, enabling older persons to be able to contribute at an appropriate level for a longer period of time;
- Evidence of user-centred design and innovation, new intuitive ways of human-computer interaction, and user acceptance;
- Potential cost-effectiveness due to enhanced self-care, life-style, age-friendly and skills conducive work environments and socio-economic benefits;
- Competitive advantage for European industry through flexible and sustainable work arrangements for an ageing workforce;
- Global leadership in ICT based innovation for active and healthy ageing including the occupational environment.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-DTH-05-2019: Large scale implementation of digital innovation for health and care in an ageing society

Specific Challenge: An ageing population is increasing demand-side pressures on public health and social care providers across Europe. These pressures undermine the long-term sustainability of existing models for delivering care services to the ageing population.

The challenge is to scale up outcome-based innovative digital health and care solutions across EU borders through joining up actions in procurement of innovation. Digital health and social care solutions have been tested and have demonstrated success in smaller scale settings. However, despite cooperation initiatives amongst regions through INTERREG programmes¹²² or the transfer of innovation schemes of the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA)¹²³, large-scale deployment of digital health and care solutions across EU borders remains limited. There is a lack of collaborative efforts in public purchasing of innovative ICT-based solutions for active and healthy ageing and successfully engaging demand and supply sides in scaling up innovation. This is the case in particular for digital solutions integrating health, social or community care and informal care, IoT enabled independent living solutions¹²⁴ that allow the citizens to live safely and independently at home therefore avoiding institutionalisation, or tele-care solutions and tools supporting for self-care and person-centred care. Moreover, take-up of these ICT-based solutions by both public care providers as well as people in need for care is a crucial factor in successfully alleviating the demand-side pressures on public health and care provision. Supporting the public procurement of innovation helps public authorities by aggregating demand and sharing the inherent risks associated to deploying new innovative solutions that can be integrated with existing public health and care provision systems.

Scope: This topic will contribute to the Digital Single Market Strategy priorities on digital transformation of health and care (notably to the priority on user-centred integrated care), to the Scaling-Up Strategy¹²⁵ of the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA) and will support the EIP on AHA Reference Sites contribution to the Digital Single Market Strategy, notably the priority focusing on user-centred integrated care. The actions supported will target large-scale deployment of digital health and care solutions across different regions in Europe. In line with the priority actions of the EIP on AHA Scaling-up Strategy, the scope of this PPI is to specify, purchase and deploy ICT based solutions (made up of services and ICT products to enable the provision of services) for active and healthy ageing through a common supply and demand side dialogue, which can deliver sustainable, new or improved health and care services promoting patient feedback in which public procurement approaches for innovative solutions lead to improved outcomes. Proposals should:

¹²² http://ec.europa.eu/regional_policy/en/policy/cooperation/european-territorial/

¹²³ Scale AHA <http://www.scale-aha.eu/2016-twinning.html>

¹²⁴ Proposals should make use of the European global navigation satellite systems Galileo and EGNOS (Geostationary Navigation Overlay Service), if relevant.

¹²⁵ https://ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/scaling_up_strategy.pdf

- Be driven by clearly identified procurement needs¹²⁶ of the participating organisations and building on a deep understanding of the needs of the ageing population, as well as the needs of the relevant health and care providers;
- Support sustainable deployment of new or improved person-centred and outcome-based services promoting patient feedback by providers involved in the procurement of solutions for digital health and care providers, including networking of inpatient and outpatient care, nursing services and care homes;
- Contribute to the creation of scalable markets across Europe in innovative solutions for active and healthy ageing;
- Specify measures that will ensure the sustainability of solutions beyond the lifespan of the proposed project, notably taking into account levels of acceptance with users and professionals as well as health economics considerations.
- Engage public and/or private procurers from each country participating (at national, regional or local level) that have responsibilities and budget control in the relevant area of care or supply of services;
- Be based on a complete set of common specifications for end to end services;
- Demonstrate that the implementation phase will reach "large scale" (i.e. sufficient scale to achieve statistical significance) through region-wide deployment across multiple regions of Europe;
- Contribute to the use of interoperable solutions based on open platforms and take into account existing best practices and standardisation initiatives;
- Provide robust safeguards to ensure compliance with ethical standards and privacy protections and take account of the gender dimension;
- Contribute with good outcome-based practices that are impact measured according to the MAFEIP¹²⁷ methodology and can be made available for replication across other regions (e.g. "detailed plans" for larger scale sustainable uptake of innovative solutions for active and healthy ageing, reference material and guidelines, manuals and education materials) through the EIP on AHA innovative practices repository.
- Contribute to the development of national strategies to stimulate the procurement of digital innovation for health and care services based on the outcomes achieved at national level.

The European Commission considers that proposals requesting a contribution from the EU of between EUR 2 and 5 million would allow this specific challenge to be addressed

¹²⁶ Proposals are encouraged to follow the principles of Green Public Procurement as appropriate, see http://ec.europa.eu/environment/gpp/index_en.htm

¹²⁷ See www.mafeip.eu

appropriately through PPI. This does not preclude submission and selection of proposals requesting other amounts.

Proposals of this topic should follow the specific requirements for innovation procurement PPI supported by Horizon 2020 grants as set out in General Annex E of the WP.

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Growing awareness and successful use of public procurement to boost ICT innovation applied to integrated care and active and healthy ageing, implemented across the whole chain of care ultimately benefiting the growing ageing population across Europe;
- Contribution with data and experiences to regulatory and legislative process development addressing potential barriers to procurement of innovative solutions for active and healthy ageing;
- Contribution of an open and comprehensive socio-economic evidence base for ICT investments in the field that can support the development of sustainable business models (e.g. cost-benefit analysis, increased efficiency of health and care systems, impact assessments, return on investments, quality of life improvements for users, ethics, safety gain and user satisfaction);
- Support initiatives on interoperability and standardisation that can contribute to defragmentation of the market for ICT based active and healthy ageing solutions;
- Creation of economic boundary conditions that can support long-term sustainability of health and care systems and emergence of new business models to develop ICT innovation for active and healthy ageing in Europe;
- Support forward-looking, concerted public-sector investment strategies that benefit from joint approaches across different regions;
- Create new opportunities for market uptake and economies of scale for the supply side for ICT based solutions and services for active and healthy ageing in a Digital Single Market for Europe.
- Contribute to inform policy measures that foster the take-up of ICT solutions for active and healthy ageing.

Type of Action: Public Procurement of Innovative solutions

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-DTH-07-2018: Exploiting the full potential of in-silico medicine research for personalised diagnostics and therapies in cloud-based environments

Specific Challenge: The progress in computer modelling and simulation applied in disease management is a European strength and various Decision Support Systems have been developed for different medical disciplines.

While the market is developing today, addressing the need of more precise and personalised diagnostics and treatments, the proposed software tools and platforms often need to further conquer visibility and trust from users and investors to get implemented in the routine clinical practice. The access of researchers to high quality big data and in particular to clinical multi-disciplinary data is crucial for validating the use of new tools and platforms in the right practice context.

Through its new initiatives on digital health and care within the Digital Single Market policy¹²⁸, the European Commission aims at leveraging the potential of big data and high performance computing for the emergence of new personalised prevention and treatments for European citizens. The European Cloud Initiative will facilitate the access of researchers to the newest data managing technologies, High Performance Computing facilities to process data and to a European Open Science Cloud list of ICT services while ensuring the appropriate data safety and protection.

Shared infrastructures, data and services in open cloud-based environments will stimulate the virtual complex experimentations in medicine and the link between researchers and healthcare practitioners, for their common benefit.

Scope: Proposals are expected to develop and validate software tools and devices for diagnostic or treatment based on computational modelling and simulation applied in biology and physiology. The solutions should enable decision making in complex situations and contribute to a more precise and personalised management of diseases in order to reduce the burden of non-communicable diseases, such as cancer.

Computer-based decision making can apply to the choice of drugs, devices or other biomedical products, procedures, interventions, in vitro and in vivo diagnostics methods and tools, or combined diagnostics and treatments. In order to ensure access to large multi-disciplinary high quality data sets and diminish the shortage of relevant data, the teams are expected to use shared infrastructures and e-infrastructures, building on existing capacity and expertise and linking where possible with the European initiatives that manage databases relevant for personal health, such as BBMRI, ELIXIR or EATRIS, as well as with Centres of Excellences for computing applications in the area of biomedicine and bio-molecular research¹²⁹ as appropriate. They should demonstrate access to the sufficient and relevant clinical data needed for advanced validations. The work should build on – and contribute to

¹²⁸ See http://europa.eu/rapid/press-release_IP-17-1232_en.htm

¹²⁹ <https://ec.europa.eu/programmes/horizon2020/en/news/overview-eu-funded-centres-excellence-computing-applications>

reusable data and computer models. Teams are encouraged to use EOSC services as appropriate and possible.

The Commission considers that proposals requesting a contribution from the EU of between EUR 10 and 15 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Better translation of big and multi-disciplinary data into predictors for medical outcome and personalised decision making;
- New digitised trusted diagnostic and treatment tools, and contributing to digitising clinical workflows;
- Improved disease management, demonstrated in the specific disease context;
- Links to other European research infrastructure projects and networks operating in related domains;
- Contribution to the emergence of a European Data Infrastructure for personalised medicine in the context of the DSM, notably by providing reusable data and computer models for personalised prevention and health treatments;
- Better data quality, interoperability and standards.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-DTH-08-2018: Prototyping a European interoperable Electronic Health Record (EHR) exchange

Specific Challenge: Large amounts of valuable health data are generated and collected during and between citizens' medical examinations across Europe. However, opportunities to reuse these data for research and better healthcare are often missed because health data continue to be confined in data silos, often not matching semantic standards, quality needs and safe data exchange techniques. With 24 official languages spoken across EU Member States, the EU eHealth interoperability task is even more daunting. In order to fully unlock these sources of value, effort must be invested in standardisation and harmonisation (including common clinical models, tools and agreed approaches), privacy and security (including data access and data integrity) and communication (towards citizens, patients and healthcare providers) to allow citizen/patient empowerment, advance medical science and improve health for everyone. Infrastructures are nowadays mature enough to host extensible and secure EHR

services that can extend the healthcare continuum across borders and possibly embrace social care as well as healthcare-related data storage services such as fitness/wellbeing.

Scope: The focus is on developing and testing an extensible, secure and interoperable platform in compliance with the General Data Protection Regulation¹³⁰ and the Network and Information Systems directive¹³¹. The work should include the development of a European prototype implementation with embedded security and large scale testing and validation in a set of use cases with demonstrated relevance for citizens' health and with involvement of citizens, hospitals, medical doctors, pharmacies and health professionals across Europe. Health authorities should be involved in the relevant parts of the proposed work.

This action is expected to prototype a (i) citizen-centered implementation of a platform that can be integrated in a federated platform structure, easy-to-use and secure, constantly accessible and portable within any other Member States of the EU and (ii) a data-driven platform to help the scientific community to benefit from user generated data (health, care, and health-related) going beyond the currently established level of implementation. Social Sciences and Humanities should thereby be considered appropriately.

The proposal should demonstrate its ability to providing a harmonised/standardised and interoperable platform with demonstrated relevant functionalities at the different user levels including, but not limited to:

- Ingest appropriate and relevant data and information sets in real time or in batch mode, including multilingual text and binary data;
- Expandable to new fields and datasets, extensible so as to be able to integrate subsequent types of data;
- Ensure the translations, mappings of source information towards the clinical/database models while using appropriate standards and semantic services;
- Ensure scalability and performance of the services, such as in a cloud-based platform;
- Ensure data and metadata quality and curation to provide analytics and reporting capabilities;
- Provide rigorous security mechanisms such as identification, authentication and encryption services to allow secured data access and privacy, for example building on distributed ledgers such as blockchain;
- Operate in a secure environment;

¹³⁰ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation): <http://eur-lex.europa.eu/eli/reg/2016/679/oj>

¹³¹ Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union: <http://eur-lex.europa.eu/eli/dir/2016/1148/oj>

- Provide citizen health data and health information import capabilities through a secured API;
- Provide appropriate export and/or access/use functionalities for citizens' health data and health information;
- Ensure citizens' opt-in processes are properly undertaken in order to allow the secondary use of data for scientific purposes and promoted health;
- Provide anonymisation/pseudonymisation capabilities to allow open access to health data for research and public health purposes;
- Ensure the proper and legitimate governance of the platform, ensuring the privacy and confidentiality of all citizens/patients/users at all time;
- Ensure compliance with relevant EU legislation, in particular REGULATION (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data;
- Ensure compliance with the Medical Devices Regulation as appropriate and regarding the specific requirements, such as the need for a unique device identification and proof of cybersecurity;
- Consider legal aspects related to data contributions and use, such as portability, data donorship, based on existing regulations on national and EU level;
- Compliance or harmonisation with requirements of respective national legislation as appropriate, especially in terms of data protection and regarding electronic patient consent.

This prototype should be primarily focused on citizens' health data generated by the citizens themselves, healthcare professionals or sourced from relevant healthcare organisations. It should include relevant components to enable further medical purposes and health research. This prototype should also be extensible so as to be able to integrate subsequent types of data such as quantified-self data or Omics data.

The consortium should cover a wide range of relevant stakeholders with multi-disciplinary expertise in technology, health and care, legal aspects, interoperability and user engagement. Involvement of Industry and health organisations is encouraged in the most appropriate phases of the project. as well as a balanced European collaboration.

The design of the prototype should be user driven as to ensure the early buy-in of final users (from citizens to healthcare professionals and scientists). It should demonstrate tested and validated functionality in exchange of realistic and fit for the purpose EHR datasets exchange bi-directionally between: 1. hospitals, 2. medical doctor practitioners and hospitals, 3. hospitals and citizen, 4. medical doctor practitioner and citizen 5. Cross-border hospitals and 6. Citizen and research database.

Additionally, a targeted communication and education campaign with key information and tools should be produced to explain the functioning and purpose of the infrastructure (from empowerment of the citizen and promotion of health to the contribution to research) and incentives should be provided to users to accelerate the take-up and sustainability of the platform. The Connecting Europe facilities¹³² and the activities of the eHealth network¹³³ should be taken into account to avoid duplication.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 10 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Interoperable and secure electronic health data use across Europe for citizens and for promoting health,
- Improved health services and health conditions, enhanced quality and safety;
- Improved efficiency in terms of health economics such as on timeliness of intervention or measures taken, preventive actions/recommendations;
- Extended healthcare continuum across borders, actors and confinements;
- Improved collection and re-use of data and information sets for citizens' health and related research;
- Open, extensible and harmonisation-based EHR solution for app developers;
- Easy and safe for citizens to donate their health data for research;
- Contribution to the creation of the digital single market providing a scalable, extensible interoperable platform;
- Support integration with services under the Connecting Europe Facility.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-DTH-09-2019: Scaling up the univocal Identification of Medicinal Products

Specific Challenge: Across the European Union, medicinal products display differences in names, variations in strength or their package size. The unavailability of a specific product

¹³² The CEF eHealth initiative: <https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/CEF+Digital+Home>

¹³³ The eHealth Network activities: https://ec.europa.eu/health/ehealth/policy/network_en

may also necessitate substitution in many instances, if a patient is to be timely served in a pharmacy. Moreover, due to differences in marketing authorisation procedures, not every medicinal product is available in each Member State, and it is not unusual that the same product may have different names across Member States or the same name may identify a different product in another Member State. As substitution is regularly necessary to dispense a foreign ePrescription (eDispensation), a univocal identification of medicinal products would enable and enhance the dispensation of a foreign ePrescription and would provide benefits to patient health, patient safety, pharmacovigilance and would also allow better data analysis of clinical records. Most national ePrescription and medicines databases are not currently supporting relevant identification attributes and codes. As the EU-wide implementation of ISO IDMP (identification of medicinal products) standards is currently under way by the European Medicines Agency (EMA) and the EU Regulatory Network to comply with the EU Pharmacovigilance legislation, this action aims at enabling and fostering the use of a common EU medicinal Product repository (ISO IDMP compliant) to fulfil the ePrescription/eDispensation in a cross-border setting use case. This will provide a univocal identification of medicinal products across Europe and potentially beyond.

Scope: This innovation action is expected to support two goals: (i) the cross-border mobility of European patients by offering safer eDispensations across borders, (ii) the implementation of the IDMP standards in Member States drug databases (including a possible linkage to the EU SPOR - Substance, Product, Organisation and Referential master data database) allowing the identification of locally available medicinal products which are equivalent to the one identified in a foreign prescription.

This requires creating an EU ePrescription/eDispensing approach to use the future EU SPOR database. A common approach and operating model needs to be developed, including common processes for validation of contents, error mitigation, linkage of the EU SPOR database with the ePrescription/eDispensing systems, updates and mappings to other systems for at least 5 Member States' organisations. Harmonisation guidelines of prescribing and dispensation practices in a cross-border setting could be a further focus.

The proposal should demonstrate its ability to:

- Define the additional quality criteria, processes, actors, risk minimisation measures and safety nets to be applied to the data coming from the EU SPOR database to ensure that the data can be safely used by the ePrescription/eDispensing systems and any harm to patient is avoided;
- Define and implement APIs or use the ones that will be provided by the SPOR system) for data retrieval/view;
- Ensure the quality of data, usability of data for national agencies, determine and support the implementation and validation of adaptations needed at national or regional levels;

- Support integration with existing cross-border ePrescription services, such as implemented under the Connecting Europe Facility¹³⁴;
- Improved pharmacovigilance, inclusion of pharmacovigilance modules capable of reporting adverse drug reactions to relevant regulators using the format defined by the ISO ICSR (Individual Case Safety Report) standard into clinical software systems, validation and diffusion;
- Establish a Working Group of European medicinal products database producers to support the implementation of the IDMP standard;
- Raise awareness and ensure coordination of pre-competitive activities, cooperation with EMA and the EU Regulatory Network (e.g. national competent authorities), and other relevant stakeholders (producers of ePrescribing, clinical record systems);
- Raise awareness and explore benefits for both regulatory and clinical contexts, use cases for public health, big data;
- Disseminate to clinical actors (prescribers, physicians, nurses) the ISO IDMP data base contents, usage, value generation and relevance for integrated care;
- Contribute to EU-US Trans-Atlantic cooperation and trans-border medicinal products data access and exchange (semantic interoperability);
- Ensure compliance with relevant EU legislation, in particular REGULATION (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data;
- Contribute, where relevant, to the sustainability and diffusion of European eHealth services, such as implemented under the CEF.

It is expected that Members of the Consortium should include a wide range of relevant stakeholders and experts including inter alia Pharmacists, National Competent Authorities, IT Integrators, producers of ePrescribing, clinical record systems. It should demonstrate its ability to deliver large scale implementation and coordination of European projects. Participation of Industry is encouraged in the most appropriate phases of the project.

The work should also provide an assessment of impacts based on benefits and costs to be anticipated. This should include not only regulatory impact, but also impact on setting global standards and best practice, and impact on clinical data quality and interoperability along with the spill-over effects on pharmaceutical companies, data base producers and competitive advantage of European companies.

Synergies with actions and activities supported by different programmes and policy initiatives of the Commission should be encouraged and resources from previous European projects should be considered.

¹³⁴ <https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/CEF+Digital+Home>

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 and 8 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Design and implementation of an IT solution based on the EU SPOR database to support ePrescribing/eDispensing in a cross-border setting is designed and implemented, open for integration with existing cross-border ePrescription and electronic health record services, such as under CEF¹³⁵ or H2020
- Better address adverse events/effects and safety issues by enhanced development of standard vocabulary for the related reporting;
- Better health data access across Europe for patients and healthcare providers;
- Improved quality of care resulting in enhanced patient safety;
- Improved efficiency gains in term of timeliness of intervention;
- Extended healthcare continuum across borders;
- Collection and re-use of a data set that is sufficiently large to detect (statistically) significant findings;
- Provision of medicinal products information for under-resourced stakeholders.

Type of Action: Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-DTH-10-2019-2020: Digital health and care services

Specific Challenge: Digital solutions supporting a continuum of care across a range of health and care services can relieve the pressure on governments to provide more cost-effective health and care systems by improving utilisation of healthcare and health outcomes. In this context the challenges are to network, lead and facilitate health systems research, innovation and digitisation in view of addressing key areas of interventions in health and care services including health promotion and disease prevention.

Scope: Support the health and care service provider to procure the development, testing and implementation of digital services and communication concepts that can facilitate the transition to integrated care models across health and social services and country-specific cross-institutional set-ups, including decentralised procurement environments and

¹³⁵ <https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/CEF+Digital+Home>

collaboration across institutions. Key challenges that could be addressed are patient empowerment, self-management, patient safety, patient involvement, chronic disease management, diagnosing, home-care logistics, hospital logistics, skills and independent living. These challenges could be addressed by applicable ICT domains e.g., telemedicine, mHealth, IoT, shared open source IT-based platforms, etc. as will be defined in the market consultation process. This should result in early adoption and demonstration of the potential for scaling-up the services and positive impact with evidence of appropriate incentives of various actors.

Proposals should deliver and:

- be driven by clearly identified user needs guiding the procurers of the buyers group¹³⁶;
- be driven by public and/or private procurers from each country participating (at national, regional or local level) that have responsibilities and budget control in the relevant area of supply of health and care services;
- demonstrate strong commitment of end-users and their communities in the co-creation process;
- as applicable contribute to the use of interoperable solutions based on open platforms and take into account existing best practices and standardisation initiatives;
- provide robust safeguards to ensure compliance with ethical standards and privacy protection;
- include robust time-lines, a well-structured work-plan aligned to the objectives of the different phases and according particular importance to the role played by the preparatory phase; (templates made available by the Commission are strongly recommended to be used in particular as concerns the call for tender) and;
- identify and understand the implications for training (including aspects of organisational, digital health literacy and new collaborative innovation principles and practises), management, and retention of healthcare staff under this topic.

The procurers, hospital clusters, care services providers and other parts of the regional ecosystems should be enabled to share knowledge, test results and needs to better coordinate the primary and community care towards more local responsibility for care services, monitoring and rehabilitation. This may include aspects such as organisational processes, digital health literacy, workforce training, financing and business models, hospital and telemedicine services, home care, patient centeredness, development of shared open source IT-based platforms, data integration, standards and regulatory issues, management and retention of healthcare staff.

¹³⁶ Proposals are encouraged to follow the principles of Green Public Procurement as appropriate, see http://ec.europa.eu/environment/gpp/index_en.htm

The service innovation should facilitate the early adoption and transferability (to other local contexts) of successful solutions addressing the innovation gap. Multi-policy/strategy collaboration across institutions (hospitals and institutions under the responsibility of municipalities), industries, academia and user communities capable of establishing dedicated operational programmes are necessary to safeguard both the service and business performance metrics and the growth potential in the innovation chain.

The proposal should include the methodology foreseen to measure progress towards the key performance areas of quality of care, sustainability and economic value within the selected key area of intervention, see e.g. MAFEIP¹³⁷. Sufficient travel allowances for regular information days concerning the procedures and thematic networking events (e.g. related to relevant co-ordination support actions) should be safeguarded. A plan how to implement the services would be an asset if the outcome of the project is successful. Approaches towards value based procurement are encouraged.

The Commission considers that proposals requesting a contribution from the EU of around €5-6M would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Proposals of this topic should follow the specific requirements for pre-commercial procurement (PCP) supported by Horizon 2020 grants as set out in General Annex E of the WP.

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Established path to innovation, evidence of benefits of disruptive technologies that can support the development of sustainable business models, improved user and market engagement, strengthened procurement community, evidence of healthy innovation ecosystem including researchers, users, eHealth and other solution providers and procurers. Evidence in key performance areas i.e., quality in health and care, sustainability of the delivery system and economic value.
- Increased opportunities for solution uptake across wider international procurement markets by aiming at interoperable solutions that are validated through field testing by participating procurers in multiple countries across Europe and contribution to standardisation where relevant.

Type of Action: Pre-Commercial Procurement

The conditions related to this topic are provided at the end of this call and in the General Annexes.

¹³⁷ Monitoring and Assessment Framework for the European Innovation Partnership on Active and Healthy Ageing – MAFEIP: <http://mafeip.eu>

SC1-DTH-11-2019: Large Scale pilots of personalised & outcome based integrated care

Specific Challenge: Senior people are statistically at greater risk of cognitive impairment, frailty and multiple chronic health conditions with consequences for their independence, their quality of life (and the one of their families) but also for the sustainability of health and social care systems. There is also increasing evidence that interactions with the environment play an important role in the evolution of the patient's health status and condition. The challenge is now to foster secure, scalable and robust digital solutions for integrated care which will:

- Ensure a truly personalized delivery of health and social care, whilst supporting outcomes-based significant efficiency gains in health and care delivery.
- Promote a shift towards outcome-based delivery of integrated (health and social) care, which can be realised in a realistic operational, organisational and financial setting.
- Ensure trust of users and policy makers with regard to data access, protection and sharing.
- Design flexible but replicable solutions with a potential for financial sustainability, large scale deployment and further business and job creation opportunities.

Scope: The scope of this topic is to foster the large-scale pilots for deployment of trusted and personalised digital solutions dealing with Integrated Care, with a view to supporting and extending healthy and independent living for older individuals who are facing permanently or temporarily reduced functionality and capabilities. This in turn is expected to contribute to a patient-centred and truly individualized strategy in order to develop trusted, robust and financially sustainable services potentially useable in any Member States and the Digital Single Market, and applicable to a very wide range of patient pathways. These approaches aim to enable people to remain independent as long as possible and prevent hospitalisation.

Expected outcomes are in priority:

- Efficiency gains in terms of resource utilization and coordination of care.
- Flexibility and replicability of service delivery patterns to combine personalization and large scale adoption of services with patient and citizen feedback.
- Ensuring secure and efficient sharing and processing of all data and information involved in the supply chain at each step of data stream: access, protection, sharing, processing and storage.
- Improvement of quality of life for the patient and his/her family and also of working conditions of all health care and social care providers involved in the supply chain, taking into account multi-disciplinary environment and constraints. Working conditions of professionals should cover in priority: work time management, quality of data/information exchange and multi-disciplinary coordination.

Outcome indicators should contribute to the assessment of the action regarding trust, recruitment, added value for the patient (in terms of quality of life) and cost-efficiency altogether.

- Recruitment of professionals will be measured by the number of professionals registered as actual used compared with the number of professionals actually registered in the pilot site region.
- Quality of life should be measured on the basis of commonly used questionnaires (like SF36) but also if required on the basis of specific disease-oriented measurement tools.
- Measurement of cost-efficiency should be measured on the basis of work time information dedicated to each patient.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 6 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: Proposals should provide measurable progress towards:

- A common vision of technical prerequisites and framework to ensure users trust with regard to health and social data and information in IT supported environment, in line with existing EU data protection regulation (and if required with EU reflection on platforms).
- An evidence-based minimum data set on key points of the pathway:
 - o Clerical information: complete definition
 - o Clinical information: generic definition.
- Harmonisation, certification, approval labelling or reliable identification of adequate solutions for integrated care.
- Robust and reliable and replicable business models for IT supported solutions in a truly personalized and multi-disciplinary environment.

Type of Action: Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCC-01-2018: Supporting investment in smart living environments for ageing well through certification

Specific Challenge: The building stock in Europe today is not fit to support a shift from institutional care to the home-based independent living model for the ageing population.

There is a recognised need to facilitate the development of community-based services and to stimulate the emergence of "age-friendly home" conversions. These homes should enable independent living and remote health monitoring to the growing ageing population. In addition to physical / spatial alterations, making homes age-friendly should include upgrading existing ICT infrastructure to support digital services for independent living and connected and integrated care including telehealth and telecare, as well as solutions supporting health status and healthy lifestyle (e.g. sensor based physiological measurements, mHealth apps, telepresence, robotics supported living). Ideally, these ICT upgrades for independent living and health status management could be combined with the needs related to energy-efficiency, security, and entertainment.

Despite its proven potential for systemic change, large-scale investment (both public and private) in sustainable homes still faces barriers, often caused by insecurity about personal, societal and financial returns on investment and a lack of clarity about concrete elements of sustainable age-friendly living environments and the choice of building, retrofitting and adaptation measures to be implemented.

Coordination and support is needed to develop a sound basis for safe investment decisions in smart age-friendly, adaptable living environments made by procurers, public authorities, industry and citizens.

This should be achieved by bringing stakeholders together (including researchers from the social sciences and the humanities), synthesising innovation from European projects, analysing and aligning (emerging) national certification and labelling schemes and facilitating development and exchange of best practices.

This CSA should aim to support the establishment of a European reference framework for age-friendly housing and should build on the ongoing work in the emerging stakeholder-driven Reference Framework for Age-Friendly Housing and the smart living environments for ageing well as demonstrated in the Large-Scale Pilot on Internet of Things.

Scope: The action will consolidate knowledge from related projects and initiatives to identify the most appropriate scheme for harmonisation, certification, approval labelling or other forms or reliable identification of adequate smart living environments for ageing well, including indicators and good practices.

In a coordinated effort with relevant R&I projects, national initiatives and other stakeholders (among them national schemes, procurers, civil society representatives, certification and regulation & standardisation bodies, building and ICT industry), the scheme should be developed and agreed for adoption.

Tasks include:

- Frequent exchange with relevant R&I projects which can contribute to certification, especially large-scale pilots on Internet of Things and other projects in the fields of independent living and ageing well;

- Providing an overview of relevant standards;
- Development of a comparative overview of relevant European and international certification or labelling schemes with their respective advantages and disadvantages;
- Development and validation of a full concept of European certification scheme based on results of comparison and validation;
- Quality and risk management concept for sustainability and further development of the proposed scheme;
- At all stages, the CSA should take into account outcomes of the ongoing work around a European Reference Framework on Smart Age-Friendly Housing and ensure that its subject and conclusions align with the framework;
- It will support the delivery on the Commission's commitment to Leadership in the Internet of Things as described in the Communication "Digitising European Industry - Reaping the full benefits of a Digital Single Market", particularly in the field of smart living environments.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 1 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Agreed scheme for European certification with potential for wide-spread adoption across Europe;
- Adequate basis for investment decisions in smart living environments for ageing well (both private and public) based on expected returns;
- Proof of increased investment into building stock fit for the longevity challenge, i.e. to move from institutional care to the home-based independent living model for the ageing population.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCC-02-2019: Support for the large scale uptake of open service platforms in the Active and Healthy Ageing domain

Specific Challenge: In the past years several open service platforms for Active and Healthy Ageing domains have been developed, originating from the medical, independent living, and

IoT domain. These platforms aim at building a common basis for application development, assuring interoperability at the application and service level, and reducing development cost by re-use of components. As these platforms mature more insight is needed in the way they contribute to the development of a scalable and open market for digital solutions for health and ageing, and which value is actually achieved through them. The integration of platforms between different domains will introduce new interoperability issues that need to be tackled. A coordination and support action that addresses these issues and gathers the insight referred above is needed in order to promote the effective uptake and impact of open platforms.

Scope: Proposals should deliver an inventory of the state of the art and analyse the use of open service platforms in the Active and Healthy Ageing domain, covering both open platforms -such as universAAL¹³⁸ and FIWARE¹³⁹- and partly-open/proprietary platforms developed by industry. In addition, proposals should address interactions between platforms.

Proposals should elaborate a methodology that monitors open platform development, adoption and spread across Europe, with relevant KPI's, factors that support or hinder the uptake of open platforms in Europe, including the associated evolution of the ecosystems and stakeholder networks.

Proposals are then expected to put this methodology into practice and study the use of open platforms by, amongst other possible actions, collecting and processing data from running and recently ended projects –including EU funded projects- and initiatives that use the referred platforms, with special focus on those building upon UniversAAL and FIWARE. They should also address the evolution in the further development and maintenance of the platforms as well as the use and sustainability of relevant open platforms.

Proposals should elaborate evaluation guidelines aimed at collecting evidence on socio economic costs and benefits of the use of open platforms as means for service delivery to serve as a reference for promoting further use of this approach.

Proposals are expected to include activities aimed at fostering integration efforts and knowledge exchange between the projects and initiatives referred above and also the user communities around the platforms. Proposals should collect best practices and practical experience with integrating multiple platforms. Technical, organisational, financial/business and legal aspects should be taken into account. Proposals should explore and link relevant on-going policy initiatives in the field such as the Blueprint for digital transformation of health and care¹⁴⁰.

Proposals should describe collaboration activities with other relevant European projects or initiatives, e.g. the European Innovation Partnership on Active and Healthy Ageing. They are also expected to include dissemination activities for different stakeholder groups -technology developers, policy makers, end users-, preferably in the context of major events such as EIP-AHA summit, AAL Forum and eHealth Week.

¹³⁸ <http://www.universaal.info/>

¹³⁹ <https://www.fiware.org/>

¹⁴⁰ http://ec.europa.eu/newsroom/document.cfm?doc_id=40787

The Commission considers that proposals requesting a contribution from the EU of up to EUR 1.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: Proposal should present appropriate indicators to measure their progress and impact in these areas:

- Identification of the critical success factors of open platform development, deployment, and spread;
- Increased knowledge on the differences and synergies between open platforms, with regard to both their features and their interoperability on different levels (data / information / applications / services);
- Evidence for the socioeconomic benefit of open service platforms;
- Engagement of required stakeholders to ensure the reliability of the data collected and to maximize the value of results achieved;
- Increased levels of participation by service platform providers and platform users in networking and knowledge exchange events;
- Contribution to the effective implementation of relevant policy initiatives in the field;
- Enhanced synergies with other European projects to make joint progress on favourable framework conditions to scaling-up digital innovation for active and healthy ageing across the EU, including standardisation.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCC-03-2018: Support to further development of international cooperation in digital transformation of health and care

Specific Challenge: Citizens in ageing populations wish to stay in their homes for as long as possible. They are however at risk of age related impairments such as poor health, cognitive impairment, frailty and social exclusion with considerable negative consequences for their independence, quality of life, that of those who care for them, and for the sustainability of health and care systems.

There is an increasing global interest in cooperation on research and innovation addressing this issue with digital solutions and services. It is however necessary to identify the future areas for international cooperation which have the highest potential as well as support the identification and networking of the potential funding organisations which can promote future cooperation. In line with the strategy for EU international cooperation in research and

innovation (COM(2012)497), international cooperation is encouraged, in particular with the US, Canada, Japan, South Korea and China.

Scope: The action should develop and deliver a roadmap for international cooperation which outlines key relevant research and innovation areas in digital solutions and services for active and healthy ageing. The selection of topics and potential funding schemes should be based on a clear methodology which also takes into account the European added value and identifies relevant existing and emerging initiatives which can form the basis for such a cooperation. The action should also ensure that relevant stakeholders are engaged during the process through regional and international workshops and a set of communication and dissemination actions.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Increased awareness of relevant research and innovation initiatives by European and International stakeholders;
- Increased international cooperation in research and innovation on ICT for active and healthy ageing through a roadmap of priority areas and potential funding schemes;
- Increased networking of European and international stakeholders interested in international cooperation in the field;
- Improve competitiveness of European industry by opening up international open innovation possibilities and gaining access to future markets.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCC-04-2018: Digital health and care services – support for strategy and (early) adoption

Specific Challenge: Health and care service providers and users are increasingly facing complex decisions when exploring and investing in new health and care solutions. There is a need to support cross-border cooperation in preparation of procurement of research and innovative digital solutions, including on how to balance innovation risks with improved outcomes. Further support is also needed for implementing high quality policies, strategies and practises in a concerted manner and providing more confidence in addressing key areas of interventions and related unmet needs, procedures and other measures. In addition there is a

need to facilitate an appropriate dialogue with the supply side and academic stakeholders to understand the constraints and possibilities.

Scope: Create favourable framework conditions for cross-border Communities of Practise (CoP) and create a network that will assist the health & care research and innovation ecosystems in taking investment decisions on future procurement of research and innovation and, eventually, on (large scale) deployment of eHealth systems and new care delivery models. The network should support existing ecosystems, create capacities, promote, co-ordinate, collaborate with other innovation accelerators and investors, and focus on adoption and scale of health innovation European wide. To facilitate sufficient knowledge brokerage all appropriate actors in the innovation chain and systems should be engaged

The consortium should represent a well-designed network of procurers and demand side actors e.g., European regions, national care authorities, NGOs, patient and consumer organisations that have proven experience in the field and the capacity to engage and consult objectively all relevant actors. The consortium should also connect to investors, National Promotional Banks and Economic Development Agencies.

Additionally, diverging expectations and risk management in innovation chain should be addressed by offering a set of support activities beyond the innovation procurement procedures including access to finance and investor networks.

Approaches addressing consumer health should be interlinked in those cases where the institutional health and care services are expected to contribute.

The consortium is expected to assist those procurers that intend to prepare for a cross-border innovation procurement e.g., guiding them to address well-defined unmet needs of users in health and care, use the repositories of best practises and implementation guidelines and providing opportunities for networking.

The findings in earlier co-ordination and support actions for procurers e.g., EPP eHealth¹⁴¹, Inspire¹⁴² and EAFIP¹⁴³ should be taken on-board. Networking with supply and consumer market actors, investors and business accelerators should be well established (e.g. eHealth hub¹⁴⁴ [5], EIT-KIC¹⁴⁵, EIP-AHA¹⁴⁶, AAL¹⁴⁷, ENoLL¹⁴⁸, National Promotional Banks, Economic Development Agencies). The progress in Blueprint Digital Transformation of

¹⁴¹ European Procurers Platform - eHealth - Transforming the market for eHealth Solutions <http://innovationinhospitals.com/>

¹⁴² International Network Supporting Procurement of Innovation via Resources and Education, <http://inspirecampus.eu/>

¹⁴³ European Assistance for Innovation Procurement (EAFIP) <http://eafip.eu/>

¹⁴⁴ eHealth Hub: Integrated Support for eHealth SMEs and stakeholders, <https://ec.europa.eu/digital-single-market/en/news/ehealth-hub-integrated-support-ehealth-smes-and-stakeholders>

¹⁴⁵ European Institute of Innovation & Technology - Health, <https://eit.europa.eu/eit-community/eit-health>

¹⁴⁶ European Innovation Partnership on Active and Healthy Ageing, http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing

¹⁴⁷ <http://www.aal-europe.eu/>

¹⁴⁸ European Network of Living Labs <http://openlivinglabs.eu/>

health and care¹⁴⁹ and EU-US MoU on health IT innovation eco-systems¹⁵⁰ should be incorporated.

The proposal should include parallel activities building up on the competences and capacities of the network including but not limited to:

1) Co-ordinate the development of a multi-collaborative growth policy & strategy of the European health & care procurers and other demand side actors in the quadruple helix¹⁵¹ systemic context. The knowledge brokerage should facilitate easy migration of competences benefitting the ecosystems at various maturity levels in the innovation chain in thematic Communities of Practise and other professional networks.

In particular, the following elements should be taken into account:

- facilitating the development of key areas of interventions in knowledge brokerage settings to get validated and accepted in health & care delivery services integrating data strategy as a fuel of novel digital health services;
- linking research institutions, university hospitals in the context of thematic CoP;
- education of new collaborative innovation principles and practises;
- building upon national initiatives, however, taking into account the Lisbon treaty¹⁵² and
- developing the existing or building up repositories of methodologies and set-ups of CoPs

2) Tailored assistance for procurers, regions, cities, national authorities and users to foster sustainable adoption e.g., by developing case specific innovation/business models, giving legal aid, addressing regulation, managing risks, sharing best practises, training and education, access to finance, addressing procurement events etc., interlinking with innovation acceleration of digital health and care industries, other actors.

3) The network should undertake activities that investigate the feasibility and facilitate the concrete preparation of a cross-border PCP for at least one shared common user and procurement need.

¹⁴⁹ Blueprint Digital Transformation of health and care: <http://ec.europa.eu/research/conferences/2016/aha-summit/index.cfm?pg=blueprint>

¹⁵⁰ EU-US EHEALTH/ HEALTH IT MOU UPDATED ROADMAP Webinar New Roadmap Work-stream 'Supporting Transatlantic eHealth/Health IT Innovation Ecosystems', 2016 https://www.healthit.gov/sites/default/files/final_eu-us_updated_roadmap_webinar_22516_v2-1_as_delivered.pdf

¹⁵¹ Open Innovation, Open Science, Open to the World – a vision for Europe, EC, 2016, p.12

¹⁵² Treaty of Lisbon amending the treaty on European Union and the treaty establishing the European Community (2007/C 306/01), see notably Articles 2C(k), 2E(a), 5a, 136a (section on Public Health), 188c(b) <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:12007L/TXT&from=en>

The Commission considers that proposals requesting a contribution from the EU of up to €3M over three years would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting other amounts or duration.

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Concerted approach and solutions to the challenges faced by the health ecosystems as perceived by service providers and users in several countries. Increased opportunities for health and care services providers to address unmet needs. Reduced fragmentation of service providers' demands.
- Evidences of support and collaboration with consortia developing unmet needs for innovation procurement and implementation aspects beyond the innovation procurement procedures.
- Concrete preparation of a cross-border PCP for at least one shared common procurement need.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SC1-HCC-05-2018: Support to a Digital Health and Care Innovation initiative in the context of Digital Single Market strategy

Specific Challenge: The Communication on the mid-term review of the implementation of the Digital Single Market Strategy (COM(2017)228) identified three priorities on digital transformation of health and care (DTHC): citizens' access to their data; data infrastructure; interaction between citizens and healthcare providers for better health management. That document indicated that specific measures would be elaborated in a dedicated Communication to be adopted in the months to follow.

Progressing significantly at EU scale on the referred priorities requires aligning the efforts of many relevant players across Europe, namely their efforts on research and innovation, in line with activities supported by H2020, as well as efforts on deployment, political coordination, stakeholder awareness and mobilisation, etc. Such coordinated European action on is already supported through various frameworks including the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA), the eHealth network of Member State representatives, the eHealth stakeholders group, the health and care activities under the Digitising European Industry platform and other. It is also the focus of actions under European programs including H2020 (notably its societal challenge 1), the Active and Assisted Living Joint Programme, the IMI and ECSEL Joint Undertakings and the Knowledge and Innovation Community on Health from the European Institute of Technology.

Scope: The action should address the activities indicated below, in close coordination with European Commission services, while considering the coordination activities and programs mentioned above, relevant projects and actions supported by the EU, and other relevant initiatives.

1) Delivery on the third DTHC priority of the DSM (focusing on user-centred integrated care), which should represent approximately 75% of the total effort of the action. This will concentrate on supporting and extrapolating the lessons from practical experiences across Europe that are particularly impactful, successful and replicable. The focus will be on large scale deployment of digital solutions for chronic diseases and integrated care (that absorb the majority of healthcare budgets and where there is a big scope for improvement) and patient-centred care, considering a limited set of implementation scenarios which seem particularly impactful. The experiences to be considered may cover public and non-public initiatives, including from the reference sites and other participants of the EIP on AHA, as well as relevant European projects (finished or not) on integrated care. Three tasks will be undertaken:

1.1. Support the identified initiatives and projects, assessing their impact, analysing their strengths and weaknesses, and providing advice for further deployment, including on available funding from public (EU or other) and private sources as well as other types of assistance. In all cases, and notably for EU funding and assistance, the aim should be to maximise their leverage effect and demonstrable impact.

1.2. Replicate the lessons from the selected initiatives and projects, through a common framework for assessing impact (with particular consideration to the MAFEIP¹⁵³), twinning activities, and collaboration actions between relevant initiatives and stakeholders. The later may include a variety of instruments including pre-commercial and innovation procurement. Success and failure factors will be analysed and compared in view to assess their potential replicability. This work should build on the H2020 support action funded under SC1-HCO-17-2017¹⁵⁴, and any other relevant efforts to link initiatives in the scope of the third DTHC priority of the DSM.

1.3. Scale up the deployment across Europe of DTHC solutions, analysing, elaborating on and promoting enabling factors and "building blocks", which may lead to European reference frameworks. These may relate e.g. to mHealth, smart homes, smart hospitals, legislation and practices on data management, recognition of professions and professional acts, reimbursement schemes, health technology assessment, incentive and penalty schemes, performance and outcome-based approaches, subsidy schemes, interoperability and standards, skills and literacy measures, etc. This work will build up on the scale-up strategy of the EIP on AHA and any other efforts to scale at European level initiatives in the scope of the third DTHC priority of the DSM.

¹⁵³ See www.mafeip.eu

¹⁵⁴ See <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-hco-17-2017.html>

2) Collaboration platforms on key aspects of the three DTHC priorities of the DSM, which should represent approximately 20% of the total effort of the action. This requires to identify relevant stakeholders and initiatives across Europe and engage them to collaborate, jointly analyse key challenges and solutions, elaborate common strategic agendas and commitments for action in three areas:

2.1. Citizens' access and management of data relevant to their health and wellbeing (first DTHC priority). This will address public and private initiatives allowing active citizen involvement with regard to data relevant to their health (access, manage, sharing, donating, etc). It will be important to reach out to relevant stakeholders, e.g. health authorities, patient and healthcare provider associations, data protection authorities, data platforms, etc. Account should be taken of schemes to share data, including across borders, such as the health Digital Service Infrastructure under the Connecting Europe Facility (CEF¹⁵⁵), and other relevant ongoing projects and actions funded by the EU (e.g. topic SC1-DTH-08-2018).

2.2. Aggregated demand for infrastructure capacity to handle health data (capture, transfer, process, store, etc) by researchers, developers of products and services and other players involved in the secondary use of data (second DTHC priority). The focus will be on the interaction between the referred demand and the supply for generic data infrastructure capacity, considering in particular the initiatives on EuroHPC (high performance computing), European Open Science Cloud (EOSC) as well as future related activities supported by the H2020 and the (CEF) programs. Special attention should be paid to security, privacy and identification aspects. Account should be also taken of the most relevant ongoing projects and actions funded by the EU (under H2020, CEF, structural funds, etc) focusing on health data.

2.3. Interaction between citizens and healthcare providers (third DTHC priority), including feedback from patients and on health outcomes, exploitation of real world data, and other aspects meant to improve quality of care and health management in general. This will refer to various initiatives already existing in this area.

3) Vision of EU coordination and support on DTHC beyond 2020, which should represent approximately 5% of the total effort of the action. Considering inputs gathered through the implementation of the two other work packages and additional feedback from relevant stakeholders, advise on future EU support on DTHC goals, including possible financial support under the next Multi-annual Financial Framework (e.g. support for research and innovation, cohesion, strategic investment), as well as legislative, policy, or other types of intervention.

The proposal should include partners with demonstrated experience of delivering on the areas mentioned above, who are widely acknowledged for their expertise and results, while providing a broad representation of constituencies relevant to DTHC, as well as of regions across Europe.

¹⁵⁵ <https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/CEF+Digital+Home>

Beyond the profile and credentials of their partners, the proposal should demonstrate capacity to reach out to and effectively engage relevant stakeholders across Europe, influence their policies and practices as well as stimulate cooperation amongst them.

Moreover, the proposal should be able to credibly deliver on the expected impacts identified below. This will require relevant expertise on a variety of domains and an appropriate level of resources convincingly allocated to the action.

The Commission considers that proposals requesting a contribution from the EU up to 4 M€ over two years would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Effective support to and engagement of stakeholders active on the third DTHC priority of the DSM, resulting in tangible impact from the beginning of the action and sustainably throughout its duration.
- Functional collaboration platforms on key aspects of the three DTHC priorities of the DSM and instrumental contribution to the implementation of EU policy on DTHC in the context of the DSM.
- Actionable strategic vision for EU policy on DTHC beyond 2020, including appropriate mobilisation of EU instruments.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

Conditions for the Call - Digital transformation in Health and Care

Opening date(s), deadline(s), indicative budget(s):¹⁵⁶

Topics (Type of Action)	Budgets (EUR million)	Deadlines
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¹⁵⁶ The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.

The Director-General responsible may delay the deadline(s) by up to two months.

All deadlines are at 17.00.00 Brussels local time.

The deadline(s) in 2019 are indicative and subject to a separate financing decision for 2019.

The budget amounts for the 2018 budget are subject to the availability of the appropriations provided for in the draft budget for 2018 after the adoption of the budget 2018 by the budgetary authority or, if the budget is not adopted, as provided for in the system of provisional twelfths.

The budget amounts for the 2019 budget are indicative and will be subject to a separate financing decision to cover the amounts to be allocated for 2019.

*Horizon 2020 - Work Programme 2018-2020
Health, demographic change and wellbeing*

	2018	2019	
Opening: 07 Nov 2017			
SC1-DTH-03-2018 (RIA)	25.00		24 Apr 2018
SC1-DTH-07-2018 (RIA)	35.00		
SC1-DTH-08-2018 (RIA)	30.00		
SC1-HCC-01-2018 (CSA)	1.00		
SC1-HCC-03-2018 (CSA)	2.00		
SC1-HCC-04-2018 (CSA)	3.00		
SC1-HCC-05-2018 (CSA)	4.00		
Opening: 26 Jul 2018			
SC1-DTH-10-2019-2020 (PCP)		22.00	14 Nov 2018
Opening: 16 Oct 2018			
SC1-DTH-01-2019 (RIA)		35.00	24 Apr 2019
SC1-DTH-05-2019 (PPI)		10.00	
SC1-DTH-09-2019 (IA)		19.00	
SC1-DTH-11-2019 (IA)		20.00	
SC1-HCC-02-2019 (CSA)		1.50	
Overall indicative budget	100.00	107.50	

In recognition of the opening of the US National Institutes of Health's programmes to European researchers, any legal entity established in the United States of America is eligible to receive Union funding to support its participation in projects supported under the following topics: SC1-DTH-01-2019, SC1-DTH-03-2018, SC1-DTH-05-2019, SC1-DTH-07-2018, SC1-DTH-08-2018, SC1-DTH-09-2019, SC1-DTH-10-2019, SC1-DTH-11-2019, SC1-HCC-01-2018, SC1-HCC-02-2019, SC1-HCC-03-2018, SC1-HCC-04-2018, SC1-HCC-05-2018.

Indicative timetable for evaluation and grant agreement signature:

For single stage procedure:

- Information on the outcome of the evaluation: Maximum 5 months from the final date for submission; and

- Indicative date for the signing of grant agreements: Maximum 8 months from the final date for submission.

Eligibility and admissibility conditions: The conditions are described in General Annexes B and C of the work programme. The following exceptions apply:

SC1-HCC-03-2018	Due to the specific objectives of the call, in addition to the minimum number of participants as set out in the Rules of Participation, proposals shall include at least one participant from the country or region targeted by the action which can demonstrate the necessary knowledge and can help mobilise the relevant international funding bodies. The work should also support the ongoing G7 work on innovation and demographic change.
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Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in General Annex H of the work programme.

Evaluation Procedure: The procedure for setting a priority order for proposals with the same score is given in General Annex H of the work programme.

The full evaluation procedure is described in the relevant [guide](#) published on the Participant Portal.

Grant Conditions:

SC1-DTH-10-2019-2020	The funding rate for PCP actions is limited to 90% of the total eligible costs to leverage co-financing from the procurers in this specific case.
SC1-DTH-05-2019	The funding rate for PPI actions is limited to 35% of the total eligible costs to leverage co-financing from the procurers in this specific case.

Consortium agreement:

SC1-DTH-01-2019, SC1-DTH-03-2018, SC1-DTH-05-2019, SC1-DTH-07-2018, SC1-DTH-08-2018, SC1-DTH-09-2019, SC1-DTH-10-2019- 2020, SC1-DTH-11- 2019, SC1-HCC-01-	Members of consortium are required to conclude a consortium agreement, in principle prior to the signature of the grant agreement.
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Horizon 2020 - Work Programme 2018-2020
Health, demographic change and wellbeing

2018,	SC1-HCC-02-	
2019,	SC1-HCC-03-	
2018,	SC1-HCC-04-	
2018,	SC1-HCC-05-	
2018		

Call - Trusted digital solutions and Cybersecurity in Health and Care

H2020-SCI-FA-DTS-2018-2020

This call aims at multidisciplinary technologies and solutions in health and care with a focus on cybersecurity to assure data privacy, security and protection of health and care infrastructures. It addresses the need for secure and user-driven ICT-based solutions in early risk detection and interventions with big data approaches that enable aggregation of a variety of new and existing data sources such as medical records, registries, social platforms and other environmental, physiological and behavioural data, including data from large scale pilots on smart living environments. This call will contribute to the Focus Areas on 'Digitising and transforming European industry and services' and 'Boosting the effectiveness of the Security Union'.

Focus Area on Digitising and transforming European industry and services

Platforms and Pilots

The Digitising European Industry initiative includes the launch of a set of initiatives supporting the building of the digital industrial platforms of the future¹⁵⁷. European industry needs to come to agreements on functions and interfaces for those platforms, reference architectures and interaction protocols that have the potential to create markets and market opportunities leading to ecosystems and standards.

Proposals are expected to make a significant step forward in platform building, interoperability between existing platforms, integration of relevant digital technologies such as IoT, AI, photonics, robotics, cloud and Big Data, and validation via pilots and experimentation facilities. Starting from suitable reference architectures, platform interfaces are defined, tested via piloting, supported via ecosystem building to prepare their roll-out, and evolved into standards.

Various platform development activities exist at EU or national level, e.g. the Reference Architectural Model Industrie 4.0 (RAMI 4.0) and the Industrial Data Space. To develop the next-generation digital platforms, proposals need to bring various initiatives together and act as linking pins. Proposals should build on existing platforms, pilot sites, testbeds, and experimental environments that have been developed in these various initiatives when applicable¹⁵⁸.

Proposals need to address all of the following four activities, namely platform building, large-scale piloting, ecosystem building, and standardisation.

¹⁵⁷ COM(2016) 180 final, 19 April 2016

¹⁵⁸ Relevant ongoing initiatives at EU level include the set of Large Scale Pilots called for under the Internet of Things Focus Area in 2016 (IoT-01-2016) and the Factories of the Future projects under FoF-11-2016.

In platform building, proposals need to develop next-generation digital platforms, which build on the state-of-the-art, reuse what is available, and integrate different technologies, such as IoT, AI, robotics, cloud and Big Data. Platforms should aim at openness and interoperability between platforms to avoid lock-in, preventing dominant positions of individual players, and comply with standards and regulation. Proposals need to target solutions for SMEs and mid-caps, taking into account interoperability with emerging and future solutions. This may require the mapping of reference architecture models for integrating existing sectorial platforms. The interfaces of the platform need to be described via open specifications and reference implementations need to be developed. A major aim is to offer platform functionalities that can be generically reused in multiple contexts to support various types of applications and services.

In large-scale piloting, pilots are set up that make use of the digital platforms, develop prototype applications on top of the platforms, and validate the platforms in both reduced, controlled environments and in real-life use cases. Pilots may adapt platforms to specific application needs and validate their relevance for such needs, in order to foster take-up and large scale deployment. The pilots should cover innovative application scenarios with high socio-economic impact. Demonstration of cooperation between large-scale pilots in different domains and combination of services from different sectors/domains are welcome. The key need is to deliver interoperable solutions that provide an experience that customers or businesses require, to test them in complex regulatory environments, and to give guidance for secure and safe implementation.

In ecosystem building, the take-up of digital platforms is fostered by expanding the ecosystem of players involved and through opportunities for entrepreneurs by promoting new market openings allowing also smaller and newer players to capture value. For instance, small and innovative ICT players can develop services/applications with a clear societal and economic value, on top of the digital platforms. Moreover, additional small-scale pilots can be conducted by SMEs, validating the digital platforms and prototype applications. Experiments running on top of the pilots, under specific scenarios, will allow for the validation and acceptance by any actors in the ecosystem and users in particular.

In standardisation, contributions should be made to suitable standardisation bodies or pre-normative activities, as outlined in the Communication on Priorities of ICT Standardisation for the Digital Single Market¹⁵⁹.

Projects for grants awarded under topics DT-ICT-07-2018-2019, DT-ICT-08-2019, DT-ICT-09-2020, DT-ICT-10-2019, DT-ICT-11-2019, DT-ICT-12-2020 (located in the 'Information and Communication Technologies' part of the Work Programme) and DT-TDS-01-2019 (located in the SC1-Health, demographic change and wellbeing part of the Work programme) should support a critical mass of large-scale piloting and ecosystem building activities. For these grants, beneficiaries may strengthen these activities by providing financial support to third parties in line with the conditions set out in General Annex K of the Work Programme. Consortia need to define the selection process of organisations, for which financial support

¹⁵⁹ COM(2016) 176 final, 19 April 2016

will be granted (typically in the order of EUR 50 000 – 150 000 per third party¹⁶⁰). Maximum 20% of the EU funding can be allocated to this purpose. The financial support to third parties can only be provided in the form of grants. The respective options of Article 15.1 and Article 15.3 of the Model Grant Agreement will be applied.

Proposals should contain an outline business case and industrial exploitation strategy. They also need to define clear business models and justify how the results support those business models.

Expected Impact

Projects are expected to have a high impact on citizens, industry, businesses or public services. In particular:

- Increased prospects for future digital industrial platforms by validation of technological choices, sustainability and reproducibility, of architecture models, standards, and interoperability, as well as of verification of non-functional characteristics such as security and privacy.
- Strengthened links with other, bottom-up programmes and initiatives, supported by regional, national and European policies and funds.
- Increased number of services and applications operated by European companies, especially small businesses and entrepreneurs.
- Significant and measureable contribution to standards or pre-normative activities.
- Increased number of platforms, applications, business processes and innovative business models validated via large-scale piloting.
- Emergence of sustainable ecosystems around digital platforms.

Proposals should describe how the proposed work will contribute to the impact criteria above, in addition to the expected impacts under the specific topic addressed, and provide KPIs, the baseline and targets to measure impact.

Proposals are invited against the following topic(s):

DT-TDS-01-2019: Smart and healthy living at home

Specific Challenge: Citizens in a rapidly ageing European population are at greater risk of cognitive impairment, frailty and multiple chronic health conditions with considerable negative consequences for their independence, quality of life and for the sustainability of health and care systems. The challenge is to foster large-scale deployment of integrated digital

¹⁶⁰ In line with Article 23 (7) of the Rules for Participation the amounts referred to in Article 137 of the Financial Regulation may be exceeded when this is necessary to achieve the objectives of the action.

solutions which will bring improved quality of life to citizens while demonstrating significant efficiency gains in health and care delivery across Europe.

Scope: A mix of advanced ICT ranging from biophotonics to robotics, from artificial intelligence to big data and from IoT to smart wearables can address these challenges. A platform for smart living at home should integrate these technologies in an intelligent manner.

The pilots should build on open platforms, standardised ontologies, APIs and results from IoT-based smart living environments, service robotics and smart wearable & portable systems and clearly go beyond current state of the art in terms of scale, the capabilities for personalisation, adaptation, and user acceptance.

Pilots in the selected areas should clearly cover the supply and demand sides. For further expanding with other users, developers of additional applications, replication of the pilot through new sites, and complementary assessment of the acceptability of the use cases where appropriate, the actions in this topic may involve financial support to third parties as outlined in the chapeau 'Platforms and Pilots'.

A clear methodology and impact indicators for socio-economic impact assessment from using the platform should be included, where possible using the MAFEIP¹⁶¹ framework. The number of users involved and duration of pilot services should be sufficient to ensure significance in impact analysis, with a minimum of 4 pilot sites in 4 countries.

The proposed pilots should also demonstrate feasibility of integration with other relevant application domains such as energy, transport, or smart cities, including interoperability, along with data security and integrity, and models for data sharing and valorisation are to be developed in order to create incentives for data aggregation across different platforms and application areas. Regulatory aspects and legal aspects of data ownership should be addressed. Relevant ethics and gender issues should be taken into account.

Proposals should address one of the two following areas:

1. Intelligent and personalised digital solutions for sustaining and extending healthy and independent living

The objective is to develop and deploy innovative and user-led digital solutions capable of supporting and extending healthy and independent living for older individuals who are facing permanently or temporarily reduced functionality and capabilities. Innovative ways for ensuring user-friendly and accessible interface design and new intuitive ways of citizen interaction and trust creation are needed. Special emphasis should be given to viable concepts that ensure security and privacy by design, data protection, safety, security and trust in the resulting system and service delivery inside and outside the home.

2. Personalised early risk detection and intervention

The objective is to develop and deploy innovative and user-led solutions building on big

¹⁶¹ See www.mafeip.eu

data for personalised risk detection, advanced health monitoring and early interventions for people facing increased health and social risks. Proposals should design and demonstrate innovative personalised treatments and therapies based on early detection and risk avoidance. Because of the personal and sensitive nature of health data, special attention needs to be paid to trust, privacy and data protection.

For this topic, the four activities and impact criteria described in the chapeau 'Platforms and Pilots' have to be applied. Pilot projects are expected to contribute to the consolidation and coherence work that will be implemented by the CSA supporting the activities defined under "DT-ICT-14-2019: Digital Platforms/Pilots Horizontal Activities" below. This requires that they contribute to clustering their results of horizontal nature (interoperability approach, standards, security and privacy approaches, business validation and sustainability, methodologies, metrics, etc.).

The Commission considers that proposals requesting a contribution from the EU between 15 and 20 EUR million for Innovation Actions would allow the areas to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. At least one proposal should be funded for each of the above-mentioned areas

Expected Impact:

- Emergence of European-led platform for smart and healthy and independent living at home;
- Increased competitiveness of the European ICT industry in the domain, through enhanced interoperability, best practices for viable business and financing models and scalable markets;
- Demonstrate links and build synergies with Member States' and regional initiatives in this area;
- Improved and evidence-based efficiency of health and care systems with demonstrated added-value of underlying technologies;
- Improved quality of life and health status for involved users and carers, with demonstrated added-value of underlying technologies;
- User accepted, validated innovative solutions addressing accessibility, privacy, security, vulnerability, liability, and trust in connected data spaces.

Type of Action: Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

Focus Area on Boosting the effectiveness of the Security Union

Proposals are invited against the following topic(s):

SU-TDS-02-2018: Toolkit for assessing and reducing cyber risks in hospitals and care centres to protect privacy/data/infrastructures

Specific Challenge: Digital technologies such as Big data, Internet of Things, Robotics, Artificial Intelligence, High Performance Computing, Cloud and Cybersecurity offer new opportunities to transform healthcare systems and delivery, Connected medical devices, in particular if linked to Clinical Information Systems, can bring increased patient safety and efficiency into healthcare system(s). However, ICT infrastructures and data have become critical for the functioning of the hospitals and care systems and due to increasing connectivity, the exposure to risks of cyber-crime is constantly increasing. Healthcare ICT infrastructures are now considered to be part of the Critical Information Infrastructure. Cyberattacks are a potential danger to the safety of patients and to the privacy of sensitive health data.

Scope: Development and implementation of innovative methods, tools, guidelines or best practices addressing the need for cybersecurity in hospitals including remote care and homecare settings e.g. for assessing risks and vulnerabilities of hospitals w.r.t cyberattacks; innovative cybersecurity measures; identification/authentication systems within hospitals taking into account cross-border requirements and usability; addressing cybersecurity in the whole lifecycle of a medical device including hardware with embedded software, such as e.g. pacemakers, ...); solutions addressing the need for cybersecurity certification of products/devices and services in the health and care domain; standards for security-by-design covering the whole lifecycle of eHealth applications; cybersecurity in remote healthcare provisions including homecare settings and in IT infrastructures supporting integrated care; secure information sharing between healthcare organisations (including cross border); security for cloud solutions supporting healthcare services; cybersecurity for Internet of Things (IoT) components supporting healthcare organisations in Europe.

The Commission considers that proposals requesting a contribution from the EU of between EUR 3 and 5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Proposals under this topic may be subject to security scrutiny if they could potentially lead to security-sensitive results that should be classified (see guide for classification).

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Improved security of Health and Care services, data and infrastructures;
- Less risk of data privacy breaches caused by cyberattacks;

- Increased patient trust and safety.

Type of Action: Research and Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

SU-TDS-03-2018: Raising awareness and developing training schemes on cybersecurity in hospitals

Specific Challenge: ICT infrastructures and data have become critical for the functioning of the hospitals and care systems. Due to increasing connectivity, the exposure to risks of cyber-crime is constantly increasing. Cyber-attacks are a potential danger to the safety of patients and to the privacy of sensitive health data. Some cybersecurity threats are caused by human errors or ignorance.

Scope: Awareness raising of staff working in healthcare settings on security and data privacy is important to reduce cybersecurity vulnerabilities and exposure.

Training of IT staff working in healthcare settings is of high priority in order to enforce the knowledge on information security processes and data protection procedures. This may include proactive managerial and technological strategies to reduce vulnerabilities e.g. best practices to minimize the potential for becoming a victim of phishing and ransomware or strategies to respond to attacks,.... Appropriate training on the permitted use of patient health data/ information according to the requirements of relevant data protection law(s) is also a priority.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 1 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Proposals under this topic may be subject to security scrutiny if they could potentially lead to security-sensitive results that should be classified (see guide for classification).

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Less human errors causing cybersecurity threats;
- Less risk of data privacy breaches;
- Reduced cybersecurity vulnerability of Health and Care services, data and infrastructures;
- Increased patient trust and safety.

Type of Action: Coordination and support action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

Conditions for the Call - Trusted digital solutions and Cybersecurity in Health and Care

Opening date(s), deadline(s), indicative budget(s):¹⁶²

Topics (Type of Action)	Budgets (EUR million)		Deadlines
	2018	2019	
Opening: 07 Nov 2017			
SU-TDS-02-2018 (RIA)	35.00		24 Apr 2018
SU-TDS-03-2018 (CSA)	1.00		
Opening: 26 Jul 2018			
DT-TDS-01-2019 (IA)		60.00 ¹⁶³	14 Nov 2018
Overall indicative budget	36.00	60.00	

Indicative timetable for evaluation and grant agreement signature:

For single stage procedure:

- Information on the outcome of the evaluation: Maximum 5 months from the final date for submission; and
- Indicative date for the signing of grant agreements: Maximum 8 months from the final date for submission.

Eligibility and admissibility conditions: The conditions are described in General Annexes B and C of the work programme.

Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in General Annex H of the work programme.

¹⁶² The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.

The Director-General responsible may delay the deadline(s) by up to two months.

All deadlines are at 17.00.00 Brussels local time.

The deadline(s) in 2019 are indicative and subject to a separate financing decision for 2019.

The budget amounts for the 2018 budget are subject to the availability of the appropriations provided for in the draft budget for 2018 after the adoption of the budget 2018 by the budgetary authority or, if the budget is not adopted, as provided for in the system of provisional twelfths.

The budget amounts for the 2019 budget are indicative and will be subject to a separate financing decision to cover the amounts to be allocated for 2019.

¹⁶³ of which EUR 25.00 million from the 'Information and Communication Technologies' WP part.

Evaluation Procedure: The procedure for setting a priority order for proposals with the same score is given in General Annex H of the work programme.

The full evaluation procedure is described in the relevant [guide](#) published on the Participant Portal.

Grant Conditions:

DT-TDS-01-2019	For grants awarded under this topic, Innovation Action beneficiaries may provide support to third parties as described in General Annex K of the Work Programme . The support to third parties can only be provided in the form of grants. The respective options of Article 15.1 and Article 15.3 of the Model Grant Agreement will be applied.
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Consortium agreement:

DT-TDS-01-2019, SU-TDS-02-2018, SU-TDS-03-2018	Members of consortium are required to conclude a consortium agreement, in principle prior to the signature of the grant agreement.
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SME instrument & Fast-Track-to-Innovation

The respective calls for the EIC-SME instrument call (H2020-EIC-SMEInst-2018-2020) and EIC-Fast-Track-to-Innovation (H2020-EIC-FTI-2018-2020) are found under the Horizon 2020 Work Programme Part – ***Towards the next EU Framework Programme for Research and Innovation: European Innovation Council (EIC) Pilot*** (part 17 of this work programme).

Other actions¹⁶⁴

1. Subscription fee: Human Frontier Science Programme Organisation

An annual subscription to the international Human Frontier Science Programme Organisation (HFSPPO)¹⁶⁵ will allow EU non-G7 Member States to fully benefit from the Human Frontier Science Programme (HFSP) and provide increased visibility for European research, as well as contributing to the implementation of the Union's strategy for international cooperation¹⁶⁶ in research and innovation.

Type of Action: Subscription

Indicative timetable: 2018 and 2019

Indicative budget: EUR 5.16 million from the 2018 budget (precise amount is EUR 5.158.000) and EUR 5.26 million from the 2019 budget (precise amount is EUR 5.261.000)

2. Studies, activities of the Scientific Panel for Health, conferences, events and outreach activities

A number of specific contracts will be signed under existing framework contracts in order: (i) to support activities of the Scientific Panel for Health¹⁶⁷; (ii) to support the dissemination and exploitation of project results; (iii) to contribute to the definition of future challenge priorities; and (iv) to organise conferences, events and outreach activities. Should existing framework contracts prove unsuitable or insufficient to support the abovementioned activities, one or more calls for tender may be launched as appropriate.

Subject matter of the contracts envisaged: studies, technical assistance, conferences, events and outreach activities.

Type of Action: Public Procurement - specific contracts under an existing Framework Contract or direct service contracts

Indicative timetable: Some 10 contracts expected for 2018 (indicative); and 10 contracts expected for 2019 (indicative)

Indicative budget: EUR 3.50 million from the 2018 budget and EUR 3.50 million from the 2019 budget

¹⁶⁴ The budget amounts for the 2018 budget are subject to the availability of the appropriations provided for in the draft budget for 2018 after the adoption of the budget 2018 by the budgetary authority or, if the budget is not adopted, as provided for in the system of provisional twelfths.

The budget amounts for the 2019 and 2020 budget are indicative and will be subject to separate financing decisions to cover the amounts to be allocated for 2019 and for 2020.

¹⁶⁵ The European Union is a member of the HFSP Organisation (HFSPPO) and has funded HFSP under previous Framework Programmes

¹⁶⁶ COM(2012)497

¹⁶⁷ The Scientific Panel for Health is mandated by Regulation (EU) No 1291/2013 establishing Horizon 2020

3. External expertise

This action will support the use of appointed independent experts for the monitoring of actions (grant agreement, grant decision, procurements, financial instruments), for ethics checks, and for the evaluation of the EDCTP2 annual work plans. A special allowance of EUR 450/day will be paid to the expert appointed in his/her personal capacity who acts independently and in the public interest.

Type of Action: Expert Contracts

Indicative timetable: 2018 and 2019

Indicative budget: EUR 3.50 million from the 2018 budget and EUR 3.50 million from the 2019 budget

4. Grant to the Global Alliance for Chronic Diseases¹⁶⁸

The European Commission will make a contribution towards activities of the Global Alliance for Chronic Diseases (GACD). This will enable the European Commission to take part in GACD, which brings together leading health research funding agencies of key countries (currently Australia, UK, Canada, China, India, Mexico, USA, Brazil, Japan, Thailand, Argentina and South Africa) to coordinate research activities addressing on a global scale the prevention and treatment of chronic, non-communicable diseases such as cardiovascular diseases, diabetes, mental health and cancer. Recommendations of GACD are expected to have a fundamental value for future orientation of public health research policy. This will also contribute to the implementation of the Union's strategy for international cooperation¹⁶⁹ in research and innovation.

Legal entities:

GACD Action, Gibbs Building, 215 Euston Road, London NW1 2BE, United Kingdom

Type of Action: Grant to identified beneficiary - Coordination and support actions

Indicative timetable: Second quarter 2018

Indicative budget: EUR 0.24 million from the 2018 budget

5. Commission expert group for the impact assessment of the planned Commission communication on infectious diseases

An expert group will be established to perform an impact assessment for the preparation of the planned Commission communication on infectious diseases ('countering the threat from

¹⁶⁸ This grant will be awarded without call for proposals in line with Article 190(1)(e) of the Rules of applications of Regulation (EU, Euratom) 966/2012, Regulation No 1268/2012 and Article 11(2) of the Rules for participation and dissemination in "Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)", Regulation (EU) No 1290/2013

¹⁶⁹ COM(2012)497

emerging and re-emerging infectious diseases: towards the establishment of the European Biomedical Outbreak Research initiative').

A special allowance of EUR 450/day will be paid to the experts appointed in their personal capacity who act independently and in the public interest for each full working day spent assisting the Commission, in terms of Article 21 of Decision C(2016)3301. This amount is considered to be proportionate to the specific tasks to be assigned to the experts, including the number of meetings to be attended and possible preparatory work. The group will consist of highly qualified, specialised, and independent experts selected on the basis of objective criteria, following an open call for expression of interest.

Type of Action: Expert Contracts

Indicative timetable: 2018

Indicative budget: EUR 0.17 million from the 2018 budget

6. Subscription fee: World RePORT international health research database

An annual subscription to the international health research database [World RePORT](#) will allow any health research stakeholder from any country in the World to freely access this interactive open-access database that maps geographically the health research projects supported by the largest funding organizations such as [Bill & Melinda Gates Foundation \(BMGF\)](#), [National Institutes of Health \(NIH\)](#), [Canadian Institutes of Health Research \(CIHR\)](#), [European Commission \(EC\)](#), [European & Developing Countries Clinical Trials Partnership \(EDCTP\)](#), [Institut National de la Santé et de la Recherche Médicale \(INSERM\)](#), [Max-Planck-Gesellschaft \(MPG\)](#), [Medical Research Council \(MRC\)](#), [Institut Pasteur](#), [Swedish International Development Cooperation Agency \(Sida\)](#), [Swedish Research Council \(SRC\)](#) and [Wellcome Trust](#). It will also provide increased visibility for European research, as well as contributing to the implementation of the Union's strategy for international cooperation in research and innovation¹⁷⁰, in particular on information gathering.

Type of Action: Subscription

Indicative timetable: 2018 and 2019

Indicative budget: EUR 0.20 million from the 2018 budget and EUR 0.20 million from the 2019 budget

7. Mobilisation of research funds in case of Public Health Emergencies

In case of a public health emergency (such as a Public Health Emergency of International Concern (PHEIC) according to the World Health Organization, a public health emergency under Decision 1082/2013/EU or under applicable national frameworks and regulations), research grants may be awarded in line with specific provisions of the Financial

¹⁷⁰ COM(2012)497

Regulation^{171&172}, that allow the awarding of grants without call for proposals in exceptional and duly substantiated emergencies. At that time, the Participant Portal will open a dedicated section where research applications can be received. This will be communicated to the National Contact Points.

Beneficiaries in grants awarded under actions relating to Public Health Emergencies must make available their research data, at the latest within 30 days after it has been generated, through open access or, if agreed by the Commission, by giving access rights to those third parties that need the research data to address the public health emergency. Therefore the relevant option of Article 29.3 will be applied. It is expected that quality-controlled data are shared in accordance with the FAIR¹⁷³ principles. The use of harmonised protocols in collaboration with other actors is recommended for this purpose.

Type of Action: RIA - Grants awarded without a Call for Proposals (Article 128 Financial Regulation and Article 190 of the Rules of Application)

Indicative timetable: Will depend of the Public Health Emergency

Indicative budget: EUR 10.00 million from the 2018 budget and EUR 10.00 million from the 2019 budget

¹⁷¹ Article 128.1 of Regulation (RU, Euratom) 966/2012 "Grants shall be subject to a work programme, to be published prior to its implementation. That work programme shall be implemented through the publication of calls for proposals, except in duly justified exceptional cases of urgency or where the characteristics of the beneficiary or of the action leave no other choice for a given action, or where the beneficiary is identified in a basic act."

¹⁷² Article 190.1 (b) of the Commission Delegated Regulation (EU) No 1268/2012 "Exceptions to calls for proposals: 1. Grants may be awarded without a call for proposals only in the following cases: [...] (b) in other exceptional and duly substantiated emergencies [...]"

¹⁷³ <https://www.force11.org/group/fairgroup/fairprinciples>

CALLS and OTHER ACTIONS for 2020¹⁷⁴

**Call - Better Health and care, economic growth and sustainable health systems
(continued in 2020)**

H2020-SC1-BHC-2018-2020-continued

Draft content for 2020

Mission statements'

The same 5 priority areas of 2018-2019 will apply

[corresponding to the objectives pursued and the expected results]

Indicative timetable

[of the call for proposals]: Tbc

Indicative budget:

[of the call for proposals] : EUR 490 million

Maximum rate of co-financing: 100 %

Topics

[titles only, for non-Focus Area topics]

Priority 1.1 Personalised medicine

SC1-BHC-06-2020 : Digital diagnostics – developing tools for clinical decisions integrating in vitro and in vivo diagnostics

SC1-HCO-01-2018-2019-2020 : Actions in support of the International Consortium for Personalised Medicine

SC1-HCO-03-2020 : Improving EU-13 participation in EU-supported health research programmes

SC1-HCO-14-2020 : ERA-NET Place holder 2

Priority 1.2 Innovative health and care industry

SC1-BHC-08-2020 : New therapies for Non Communicable Diseases

SC1-BHC-11-2020 : New, animal-free regulatory test methods for human safety testing at the horizon of 2030

¹⁷⁴ The budget amounts for the 2020 budget are indicative and will be subject to a separate financing decision to cover the amounts to be allocated for 2020.

SC1-BHC-12-2020 : Boosting the translation of results of health research into validated, innovative applications

Priority 1.3 Infectious diseases and improving global health

SC1-BHC-17-2020 : Global Alliance for Chronic Diseases (GACD) 2

SC1-BHC-20-2020 : Using pre-commercial procurements and public procurement of innovative solutions in health care systems to: - reduce the risk of hospital-acquired infections and/or - improve integrated care

SC1-HCO-07-2020 : ERA-NET Place holder 1

Priority 1.4 Innovative health and care systems - Integration of care

SC1-BHC-24-2020 : Healthcare interventions for the management of the elderly multimorbid patient

Priority 1.5 Decoding the role of the overall environment for health and well-being

SC1-BHC-29-2020 : Environment, climate change and health – novel mitigating measures for improving population health

Other Actions for 2020

1. Subscription fee: Human Frontier Science Programme Organisation

Type of Action: Subscription

Indicative timetable: 2020

Indicative budget: EUR 5.30 million from the 2020 budget

2. Mobilisation of research funds in case of Public Health Emergencies

Type of Action: RIA - Grants awarded without a Call for Proposals (Article 128 Financial Regulation and Article 190 of the Rules of Application)

Indicative timetable: Will depend of the Public Health Emergency

Indicative budget: EUR 10.00 million from the 2020 budget

Call - Digital Transformation in Health and Care

H2020-SC1-DTH-2018-2020-continued

Draft content for 2020

'Mission statement'

The same priority areas of 2018-2019 will apply

[corresponding to the objectives pursued and the expected results]

Indicative timetable

[of the call for proposals]: Tbc

Indicative budget:

[of the call for proposals] : EUR 130 million

Maximum rate of co-financing: 100 %

Topics

SC1-DTH-02-2020: Personalised early risk prediction, prevention and intervention, RIA

SC1-DTH-04-2020: International cooperation in digital solutions and robotics for independent living

SC1-DTH-06-2020: Accelerating the uptake of in-silico methods for testing medicines with dermatological use

SC1-DTH-10-2019-2020: Digital health and care services

SC1-HCC-06-2020: Support to eHealth Innovation ecosystems in Europe

SC1-HCC-07-2020: Support for European eHealth Interoperability roadmap deployment

SC1-HCC-08-2020: Scaling up innovation for active and healthy ageing

SC1-HCC-09-2020: Supporting deployment of eHealth in developing countries for better health outcomes

Call - Trusted digital solutions and Cybersecurity in Health and Care

H2020-SC1-FA-DTS-2018-2020-continued

Draft content for 2020

'Mission statement'

The same priority areas of 2018-2019 will apply

[corresponding to the objectives pursued and the expected results]

Indicative timetable

[of the call for proposals]: Tbc

Indicative budget:

[of the call for proposals] : EUR 25 million from SC1

Maximum rate of co-financing: 100 %

Topics

DT-ICT-12-2020: The smart hospital of the future

DT-TDS-04-2020: Demonstrating the potential and benefits of a European Digital Health Infrastructure for Personalised Medicine

Budget¹⁷⁵

	Budget line(s)	2018 Budget (EUR million)	2019 Budget (EUR million)	2020 Budget (EUR million)
Calls				
H2020-SC1-BHC-2018-2020		445.00	504.00	
	<i>from 08.020301</i>	<i>445.00</i>	<i>504.00</i>	
H2020-SC1-DTH-2018-2020		100.00	107.50	
	<i>from 09.040301</i>	<i>100.00</i>	<i>107.50</i>	
H2020-SC1-FA-DTS-2018-2020		36.00	35.00 ¹⁷⁶	
	<i>from 09.040301</i>	<i>36.00</i>	<i>35.00</i>	
H2020-SC1-BHC-2018-2020-continued				490.00
	<i>from 08.020301</i>			<i>490.00</i>
H2020-SC1-DTH-2018-2020-continued				150.00
	<i>from 09.040301</i>			<i>150.00</i>
H2020-SC1-FA-DTS-2018-2020-continued				25.00
	<i>from 09.040301</i>			<i>25.00</i>
Contribution from this part to call H2020-EIC-FTI-		17.42	17.42	17.42
	<i>from</i>	<i>14.84</i>	<i>14.84</i>	<i>14.84</i>

¹⁷⁵ The budget figures given in this table are rounded to two decimal places.

The budget amounts for the 2018 budget are subject to the availability of the appropriations provided for in the draft budget for 2018 after the adoption of the budget 2018 by the budgetary authority or, if the budget is not adopted, as provided for in the system of provisional twelfths.

The budget amounts for the 2019 and 2020 budget are indicative and will be subject to separate financing decisions to cover the amounts to be allocated for 2019 and for 2020.

¹⁷⁶ To which EUR 25.00 million from the 'Information and Communication Technologies' WP part will be added making a total of EUR 60.00 million for this call.

Horizon 2020 - Work Programme 2018-2020
Health, demographic change and wellbeing

2018-2020 under Part 17 of the work programme	08.020301			
	from 09.040301	2.58	2.58	2.58
Other actions				
Subscription		5.36	5.46	5.30
	from 08.020301	5.36	5.46	5.30
Public Procurement		3.50	3.50	
	from 09.040301	2.00	2.00	
	from 08.020301	1.50	1.50	
Expert Contracts		3.67	3.50	
	from 08.020301	2.17	2.00	
	from 09.040301	1.50	1.50	
Grant to Identified beneficiary		0.24		
	from 08.020301	0.24		
RIA - Grants awarded without a Call for Proposals (Article 128 Financial Regulation and Article 190 of the Rules of Application)		10.00	10.00	10.00
	from 08.020301	10.00	10.00	10.00
Estimated total budget		621.19	686.38	697.72