innovative health initiative

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2024 amended Work Programme

In accordance with Article 25 of the Council Regulation (EU) 2021/2085 and with Articles 6 and 33 of the Financial Rules of the IHI JU.

COCIR Advancing Healthcare · efpia · EuropaBio The European Association for Bioindustries · MedTech Europe from diagnosis to cure · Vaccines Europe

Co-funded by the European Union

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2 List of acronyms, definitions and abbreviations

ACRONYM	MEANING
ABAC	Accrual Based Accounting System
AD (HR)	Administrator
AER	Average error rate
AI	Artificial Intelligence
AMR	Antimicrobial resistance
AST	Assistant
BOA	Back-office arrangements
CA (Budget)	Commitment appropriation
CA (HR)	Contractual Agent
CAD	Coronary Artery Disease
CEPI	Coalition for Epidemic Preparedness Innovations
CIOMS	Council for International Organizations of Medical Sciences
COCIR	European trade association representing the medical imaging, radiotherapy, health ICT and electromedical industries. See https://www.cocir.org/
Council Regulation (EU) 2021/2085	Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe and repealing Regulations (EC) No 219/2007, (EU) No 557/2014, (EU) No 558/2014, (EU) No 559/2014, (EU) No 560/2014, (EU) No 561/2014 and (EU) No 642/2014. See https://eur-lex.europa.eu/eli/reg/2021/2085
COVID-19	Coronavirus disease
CVD	Cardiovascular disease
DG CNECT	Directorate-General for Communications Networks, Content and Technology (European Commission)
DG HR	Directorate-General for Human Resources and Security (European Commission)

ACRONYM	MEANING
DG GROW	Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (European Commission)
DG RTD	Directorate-General for Research and Innovation (European Commission)
DG SANTE	Directorate-General for Health and Food Safety (European Commission)
DHT	Digital Health Technology
DMO	Document Management Officer
DPO	Data Protection Officer
EC	European Commission
ECA	European Court of Auditors
EFPIA	European Federation of Pharmaceutical Industries and Associations. See https://www.efpia.eu/
EFTA	The European Free Trade Association. See https://www.efta.int/about-efta/european-free-trade-association
EHDEN	European Health Data & Evidence Network
EHDS	European Health Data Space
EHR2EDC	Electronic Health Records to Electronic Data Capture
EMA	European Medicines Agency
ESR	Evaluation Summary Report
EU	European Union
EUIBA	European institutions, bodies and agencies
EUR	Euro
EuropaBio	European association representing corporate and associate members across sectors, plus national and regional biotechnology associations which, in turn, represent over 2 600 biotech companies, 2 300 out of them are SMEs. See https://www.europabio.org/
FAIR	Findable, Accessible, Interoperable, and Reusable
FC	Financial contributions

ACRONYM	MEANING
FDA	Food and Drug Administration
FG	Function group
FTE	Full-time equivalent
FP	Full proposal
FWC	Framework contract
GA	Grant agreement
GAP	Grant agreement preparation
GetReal Institute	GetReal Initiative for Real-World Evidence Assessment and Learning
GB	IHI JU Governing Board
GDPR	General Data Protection Regulation
GH EDCTP3	European and Developing Countries Clinical Trials Partnership Programme 3
GWAS	Genome-Wide Association Studies
H2O	Healthcare to outcomes
HERA	European Health Emergency Preparedness and Response Authority
HF	Heart failure
Horizon Europe	Horizon Europe is the EU's key funding programme for research and innovation. See https://ec.europa.eu/info/funding-tenders/find-funding/eu-funding-programmes/horizon-europe_en.
HR	Human resources
HTA	Health technology assessment (bodies)
IaaS	Infrastructure as a service
IAS	Internal audit service of the European Commission
ICT	Information and communications technology
IDEHRA	Integrated data environment for health research and analytics
IHI JU	Innovative Health Initiative Joint Undertaking

ACRONYM	MEANING
IHInet	The intranet of IHI JU
IKAA	In-kind contributions to additional activities
IKOP	In-kind contributions to operational activities
IMI1 JU	Innovative Medicines Initiative Joint Undertaking
IMI2 JU	Innovative Medicines Initiative 2 Joint Undertaking
IT	Information technology
JUs	Joint Undertakings
Chips JU	Chips Joint Undertaking, the former Key Digital Technologies Joint Undertaking (KDT JU). See https://www.kdt-ju.europa.eu/
CMC	Chemistry, manufacturing, and controls
COAs	Clinical outcome assessments
KPI	Key performance indicator
LFS	Legislative financial statement of the European Commission's proposal. See https://eur-lex.europa.eu/resource.html?uri=cellar:7efecf4b-75de-11eb-9ac9-01aa75ed71a1.0001.02/DOC_1&format=PDF
MCID	Minimal clinically important difference
MDCG	Medical Device Coordination Group
MedTech Europe	European trade association for the medical technology industry including diagnostics, medical devices and digital health. See https://www.medtecheurope.org/
MEP	Member of the European Parliament
NCA	National competent authorities
NCD	Non-communicable Diseases
NLP	Natural Language Processing
Non-EU IKOP	Eligible costs incurred by private members, their constituent or affiliated entities, and contributing partners for implementing project activities carried out in third countries outside of the EU Member States and countries associated to Horizon Europe.

ACRONYM	MEANING
OA	Osteoarthritis
OECD	Organisation for Economic Co-operation and Development
OLAF	European anti-fraud office
PA	Payment appropriation
PPI	Patient preference information
PPP	Public-private partnership
PREMs	Patient reported experience measures
PRO	Patient reported outcome
PROMs	Patient reported outcome measures
R&D	Research and development
RAE	Risk assessment exercise
REALM	Real-world evidence analytics for life and health market
REDDIE	Real-world data in decision-making in Europe
RIA	Research and innovation actions
RWD/RWE	Real-world data/real-world evidence
RWE4Decisions	Real-world evidence for decisions
SaaS	Software as a device
SDG	Sustainable Development Goal
SMEs	Small and medium-sized enterprises
SEDIA	Single electronic data interchange area (SEDIA), the funding & tender opportunities portal of the European Commission. See here https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home
SHD	Structural heart disease
SIP	IHI JU Science and Innovation Panel
SOP	Standard operating procedure

ACRONYM	MEANING
SPOC	Single point of contact
SRIA	Strategic research and innovation agenda
SRG	IHI JU States' Representatives Group
T2D	Type 2 Diabetes
TA	Temporary agent
THCS	Transforming health and care systems
TRL	Technology readiness levels
UK	United Kingdom
Vaccines Europe	Specialised vaccines group within the European Federation of Pharmaceutical Industries and Associations (EFPIA). See https://www.vaccineseurope.eu/
WHO	World Health Organization

3 Introduction

3.1 Mission statement of IHI JU

The Innovative Health Initiative Joint Undertaking (IHI JU) is a partnership between the European Union and industry associations representing the sectors involved in healthcare, namely COCIR (medical imaging, radiotherapy, health ICT and electromedical industries); EFPIA, including Vaccines Europe (pharmaceutical industry and vaccine industry); EuropaBio (biotechnology industry); and MedTech Europe (medical technology industry).

IHI JU pioneer an integrated approach to health research, building on the experience gained from the Innovative Medicine Initiative 2 Joint Undertaking (IMI2 JU) on the need for sectorial convergence in cutting-edge health research projects. IHI JU also builds on the learnings from the health activities in the former ECSEL/KDT JU, now Chips JU, such as enabling electronics components and systems, and the establishment of pilot production lines for smart medical devices and implants involving diverse medtech actors, which are of high relevance for future activities under IHI JU.

IHI JU aims to translate health research and innovation into real benefits for patients and society, and ensure that Europe remains at the cutting edge of interdisciplinary, sustainable, patient-centric health research. Health research and care increasingly involve diverse sectors. By supporting projects that bring these sectors together, IHI JU will pave the way for a more integrated approach to health care, covering prevention, diagnosis, treatment, and disease management.

As current health challenges and threats are global, IHI JU should be open to participation from European and international academic, industrial and regulatory actors, in order to benefit from wider access to data and expertise, to respond to emerging health threats and to achieve the necessary societal impact, in particular improved health outcomes for EU citizens.

3.2 Background and link with the Strategic Research and Innovation Agenda (SRIA)

Europe has a rising burden of disease, notably non-communicable diseases, and this is linked to its ageing population. Most countries struggle with long-term expenditure and workforce planning in healthcare, and this problem grows as the age pyramid changes. This challenges the long-term sustainability of EU healthcare systems, which are under increasing fiscal and organisational pressures.

The COVID-19 health crisis has exacerbated the challenges faced by European healthcare systems in combatting and managing (infectious) diseases in a coordinated manner. Simultaneously, it also showed, by the delivery in record time of several COVID-19 vaccines, the critical importance of collaborative R&I to respond rapidly to emerging health threats, as well as the strategic value of public-private partnerships.

Strengthened collaboration between industry sectors, academia and public authorities will not only offer better opportunities to respond to public health needs in Europe, but also provide a strong base to launch, grow, and keep companies in Europe, and attract competitive companies to Europe.

The EU has leading healthcare systems and is a strong global actor in health research. However, it is still relatively weak in translating research results into tangible health solutions that are taken up by healthcare systems in Europe. This can partially be attributed to insufficient early consideration of the needs of society and/or patients and end-users. Thus, these actors must be involved in all stages of research, from project design through to implementation, to develop meaningful innovations.

IHI JU aims to enable the cross-sectoral integration of technologies, know-how, products, services, and workflows for people-centred health care.

IHI JU aims to lay the foundations for the development of safer and more effective healthcare products or solutions that respond to unmet public health needs and that can be taken up by healthcare systems. The goal is a more targeted intervention strategy leading to personalised treatments and improved individual health outcomes, via cost-effective and affordable health solutions.

The research supported by IHI JU should remain at pre-competitive level and does not aim to deliver products or services directly to healthcare systems or the market.

This partnership reflects the importance of the full spectrum of health technologies, as well as the progress in convergence of health technology areas and a significantly more prominent role for digital technologies and data analytics in health research than when IMI2 JU was established. IHI JU will thus pursue its actions responding to the recommendation of the IMI2 JU interim evaluation to "enable the active engagement of other industry sectors with the pharmaceutical industry" [1]. A key element linking all these industry sectors is the need to use and share data involving innovative digital tools to perform people-centred translational R&I for the benefit of the European people and health systems.

The SRIA[2] defines the overall scope of activities of IHI JU, in line with its founding legislation[3], to enable the achievement of its general objectives by 2030:

1. contribute towards the creation of an EU-wide health research and innovation ecosystem that facilitates translation of scientific knowledge into innovations, notably by launching at least 30 large-scale, cross-sectoral projects, focussing on health innovations;

2. foster the development of safe, effective, people-centred and cost-effective innovations that respond to strategic unmet public health needs, by exhibiting, in at least 5 examples, the feasibility of integrating health care products or services, with demonstrated suitability for uptake by health care systems. The related projects should address the prevention, diagnosis, treatment and/or management of diseases affecting the EU population, including contribution to 'Europe's Beating Cancer Plan';

3. drive cross-sectoral health innovation for a globally competitive European health industry and contribute to reaching the objectives of the new Industrial Strategy for Europe and the Pharmaceutical Strategy for Europe.

3.3 Strategy for the implementation of the programme

The key focus of the strategy for 2024 will be to continue to ensure the implementation of the SRIA priorities. This will be achieved through the launch of open and competitive calls for proposals. The work of the Science and Innovation Panel will be central to the development of call topics and the implementation of the scientific priorities. In addition, an essential element of implementing the priorities will be to engage and mobilise industrial partners from all the sectors covered by the programme, as well as all relevant stakeholders such as patients, health care authorities, health care professionals and providers to mention but a few. Efforts will also be committed to establishing synergies with other parts of Horizon Europe, such as missions, partnerships or specific programmes, as well as establishing links with international organisations.

[1] European Commission (2017), The Interim Evaluation of the Innovative Medicines Initiative 2 Joint Undertaking (2014-2016) operating under Horizon 2020. Experts Group Report. Luxembourg: Publications Office of the European Union

[2] https://www.ihi.europa.eu/sites/default/files/uploads/Documents/About/IHI_SRIA_ApprovedJan22.pdf

[3] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2021.427.01.0017.01.ENG

Across all of the activities planned, a key element will be to adopt an assertive communication strategy to target audiences with an emphasis on the openness, transparency, relevance, and coherence of IHI JU activities with its defined objectives and those of Horizon Europe. This is particularly important to promote the new programme and attract high quality applications to IHI JU calls for proposals. A key goal of this outreach strategy will be to engage with and mobilise new players and newcomers.

An important element of the Programme Office work will be to continue to support the projects established under IMI1 and IMI2 programmes. This is important for two reasons, firstly, the monitoring and acceptance of costs associated with these projects will ensure the continued sound financial management of the programme. Secondly, it is very important to continue to disseminate and promote the results of these projects. Meetings, workshops and webinars etc will be organised to mobilise the established projects and disseminate their results to demonstrate the impact of the work supported by IHI JU and its impact on patients and wider society.

4 Work Programme 2024

4.1 Executive summary and message from the Executive Director

2024 will be the third full year of IHI JU implementation. The Programme Office will continue to commit funds to build new multi-sectorial public private projects that take advantage of the ongoing technology convergence in the health sector, advances in digitalisation and the use of ‘big’ data. By doing so, we aim to accelerate the pace of innovation and allow access to the results for a large portion of the EU population, especially patients and their carers.

We will also focus on optimising the dissemination and exploitation of results coming from projects launched under IHI JU and the large legacy of IMI projects that IHI JU is managing.

We will implement all of this taking care to abide by the principles of sound financial management which have permitted a clean opinion from the European Court of Auditors in prior years.

We will continue to proactively communicate about opportunities for funding for IHI JU ensuring the widest possible involvement from all sectors, SMEs and the widening and low- and medium-income countries.

IHI JU will drive new partnerships and seek synergies with those organisations and programmes with like-minded or convergent agendas. The contacts already established in this regard with the other JUs set-up under Horizon Europe (such as GH EDCTP3 JU), the Cancer Mission, HERA and EIT Health will be further developed.

4.2 Operational activities of IHI JU for 2024

4.2.1 Objectives, indicators and risks

Key objectives

The key objectives for IHI JU operations in 2024 are identified by the Governing Board in the Work Programme and by the management team at operational level.

The key operational objectives for 2024 are as follows:

1. execute the Strategic Research and Innovation Agenda priorities, enabling the active engagement of industry sectors covering the pharmaceutical, the biopharmaceutical, biotechnology and medical technology sectors, including companies active in the digital area, and a range of other key stakeholders involved in health care (including SMEs, academia, health care authorities, health care professionals and providers, and patient organisations), in particular through the launch of open and competitive calls for proposals;

2. ensure continuity with and manage the legacy from the Innovative Medicines Initiative 2 Joint Undertaking;

3. ensure sound budget implementation through the effective and efficient management of the programme including calls for proposals, grant award processes and close monitoring of projects;

4. promote the cross sectorial partnership in health through proactive outreach strategies to attract high quality applications to IHI JU's calls for proposals and engage with new players and newcomers;

5. demonstrate the EU added value of IHI JU through assertive communication to target audiences with an emphasis on the openness, transparency, relevance, and coherence of IHI JU activities with its defined objectives and those of Horizon Europe;

6. explore new synergies and implement actions with relevant programmes at Union, national, and regional level, in particular with those supporting the deployment and uptake of innovative solutions, training, education and regional development in the health sector;

7. improve and broaden access to project outcomes by embedding dissemination and exploitation activities in all stages of the project lifecycle.

Indicators

IHI JU is built around the idea that cross-stakeholder and cross-sectorial collaboration will enable significant advancements and breakthrough innovations in the field of healthcare, including the pharmaceutical industry but also new sectors such as biopharmaceutical, medical technologies, and biotechnologies. Therefore, the multi-stakeholder involvement and the cross-sector alliance are fundamental aspects that will be monitored as indicators of good programme performance.

Another important aspect of IHI JU that will be tracked over its lifecycle is the ability of the projects to interact with regulators and potentially improve clinical guidelines.

Additionally, the ability of the projects to generate tools to use in clinical practice/R&D to understand health determinants and the ability to share this knowledge through publications will be observed throughout the programme. In line with the challenges of today's scientific landscape, the performance of IHI JU will also be evaluated by looking at the examples of projects that will be able to generate people-centred integrated healthcare solutions, and to produce innovations enabling the integration and management of health care data as well as the use of artificial intelligence applied to healthcare.

Ultimately, IHI JU will have to demonstrate the ability to translate knowledge into innovation, to address public health needs and to help contribute to a globally competitive EU healthcare industry through the innovations deriving from its funded projects.

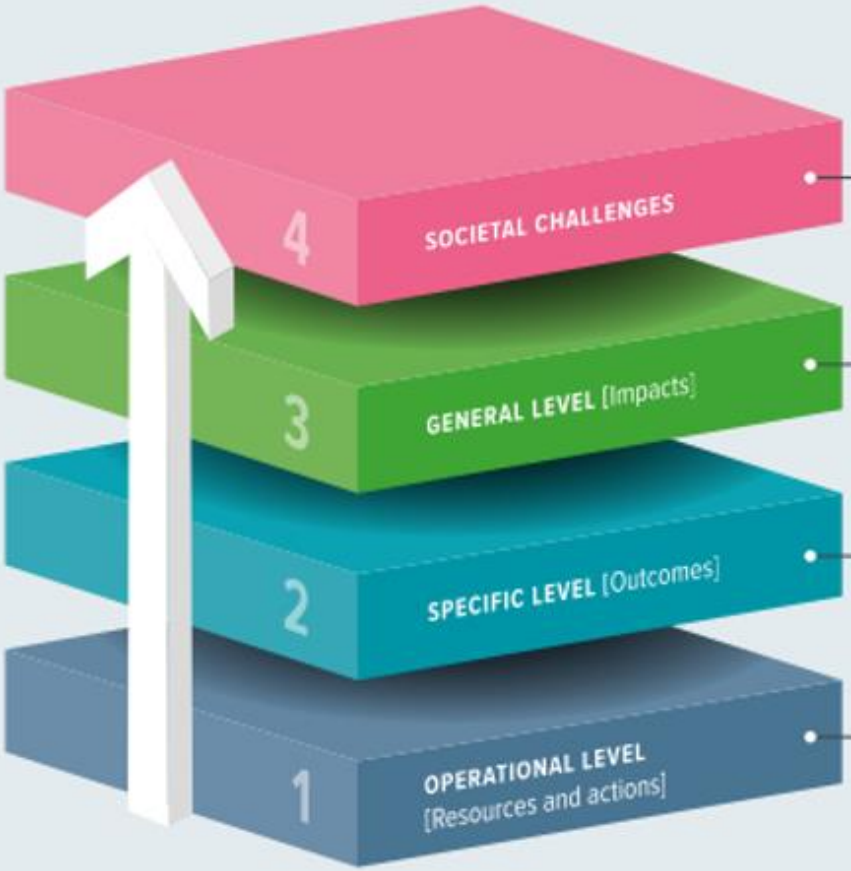
These aspects of IHI JU's nature have been translated into a monitoring framework that consists of a matrix of key performance indicators stratified in 3 levels (in line with the template provided by the EC-RTD):

- Operational objectives, also called "**resources and actions**"
- Specific objectives, also called "**outcomes**"
- General objectives, otherwise called "**impacts**"

This type of structure essentially illustrates how the resources (operational objectives) contribute to the outcomes (specific objectives) and to the impacts (general objectives) to ultimately help reach the higher-level ultimate goals:

- UN Strategic Development Goal #3 (good health and well-being) https://www.un.org/sustainabledevelopment/sustainable-development-goals/
- UN Strategic Development Goal #9 (industry, innovation, and infrastructure) https://www.un.org/sustainabledevelopment/sustainable-development-goals/
- The WHO Europe 2020 Health Priorities https://www.euro.who.int/__data/assets/pdf_file/0011/199532/Health2020-Long.pdf

IHI vision: contribute to societal challenges through ...



- **Ensure healthy lives** [UN SDG #3]
- **Sustainable industry & innovation** [UN SDG #9]
- **European policy for health and well-being** [WHO Health 2020]

- Translate knowledge into innovations*
- Innovation addressing public health needs**
- Competitive EU health industry***

- Understand health determinants and disease areas
- Knowledge generation and sharing via joint publications
- People-centred, integrated health care solutions
- Improved clinical guidelines
- Health care data management, integration, AI

- Multi-stakeholder involvement
- Cross-sector collaboration
- Engagement with regulators

* **IHI General Objective 1:** Contribute toward the creation of an EU-wide health research and innovation ecosystem that facilitates translation of scientific knowledge into innovations

** **IHI General Objective 2:** Foster the development of safe, effective, people-centric and cost-effective innovations that respond to strategic unmet public health needs

*** **IHI General Objective 3:** Drive cross-sectoral health innovation for a globally competitive European health industry

The IHI JU specific key performance indicators (KPIs) are linked to the IHI JU vision and have been developed ensuring that there is clear alignment between the overall objectives of IHI JU and the measures used to monitor progress throughout the life of the programme. The KPIs have been elaborated[4] and guided by the so-called RACER Principles[5].

KPI name	Unit of measurement	Baseline[6]	Target[7] 2023	Target 2025	Target 2027	Ambition >2027	Status
Resources (input), processes and activities							
1.1. Involvement of multiple health care stakeholders	Share of projects involving more than two types of health care stakeholders [research higher or secondary education organisations (private or public), small & medium enterprise (SME), large company (for-profit legal entity), non-governmental organisations (NGOs), healthcare professional organisation/healthcare provider, patient / citizen organisation, regulators or regulatory body, notified body, health technology assessment body (HTA), healthcare payer, charity and foundation, public authority] as project participants or advisors	50%	55%	60%	65%	70%	
1.2. Cross-sectoriality of the partnership	Share of projects bringing together private members and/or contributing partners (or their affiliated or constituent entities) from two or more technology sectors[8]	25%	70%	80%	85%	90%	
1.3. Engagement of regulators	Number of projects interacting with regulators[9] to contribute to new or improved guidelines or methodologies	13	0	5	10	20	

[4] See the KPIs adopted by the IHI Governing Board on the IHI JU website here: http://www.ihi.europa.eu/sites/default/files/uploads/Documents/About/IHI_KPIs_2022.pdf.

[5] The RACER principles are 1- Relevant, i.e. closely linked to the objectives to be reached. They should not be overambitious and should measure the right thing (e.g. a target indicator for healthcare could be to reduce waiting times but without jeopardising the quality of care provided); 2- Accepted (e.g. by staff, stakeholders). The role and responsibilities for the indicator need to be well defined (e.g. if the indicator is the handling time for a grant application and the administrative process is partly controlled by Member States and partly by the EU then both sides would assume only partial responsibility). 3-Credible for non-experts, unambiguous and easy to interpret. Indicators should be as simple and robust as possible. If necessary, composite indicators might need to be used instead – such as country ratings, well-being indicators, but also ratings of financial institutions and instruments. These often consist of aggregated data using predetermined fixed weight values. As they may be difficult to interpret, they should be used to assess broad context only. 4 - Easy to monitor (e.g. data collection should be possible at low cost). 5 - Robust against manipulation (e.g. administrative burden: If the target is to reduce administrative burdens to businesses, the burdens might not be reduced, but just shifted from businesses to public administration).
Source: page 250 of "*Better Regulation Guidelines*" EU Commission: https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox_en

[6] Baselines are derived (where possible) from the Innovative Medicines Initiative (IMI2) as the predecessor to IHI.

[7] Reporting methodology: cumulatively reporting from the beginning of IHI until 31/12/2030.

[8] The IHI JU private members COCIR, EFPIA, EuropaBio and MedTech Europe have members from several technology sectors. Contributing partners might also cover further technology sectors.

[9] In this document, the term 'regulators' refers to the different bodies involved in the processes regulating medical products (e.g., scientific assessment, production of scientific guidelines, scientific advice to manufacturers, granting/refusal/suspension of marketing authorisations, post-market surveillance, withdrawal/recalling of devices put on the market, authorisation and oversight of clinical trials). It includes the European Commission, National Competent Authorities (NCA), the Medical Device Coordination Group (MDCG), and the European Medicines Agency (EMA). Notified bodies (NB), while designated to perform a regulatory function (verification of medical device/in-vitro diagnostics conformity), cannot be considered as regulators in the strict sense of this definition. However, the potential input and expertise of notified bodies may still be relevant for the design and implementation of the activities of the proposed initiative.

KPI Name	Unit of measurement	Baseline	Target 2023	Target 2025	Target 2027	Ambition >2027	Status
Outcomes							
2.1. Cross-stakeholder collaboration	Share of multi-stakeholders' publications identified through bibliometric data analysis [research / higher or secondary education organisations (private or public), small & medium enterprise (SME), large company (for-profit legal entity), non-governmental organisations (NGOs), healthcare professional organisation / healthcare provider, patient / citizen organisation, regulators or regulatory body, notified body, health technology assessment body (HTA), healthcare payer, charity and foundation, public authority]	65%	65%	66%	67%	70%	
2.2. Public-private collaboration	Share of publications across public and private stakeholders identified through bibliometric data analysis (academic, pharmaceutical, biopharmaceutical, medical technologies, biotechnologies)	65%	65%	66%	67%	70%	
2.3. Project outputs for use in clinical practice and health research development and innovation (R&D&I)	Number of: • new tools for studying new potential drug targets such as new pharmacological tools, therapeutic modalities, and patient-derived assays available to the scientific community; • new tools to test diagnostically and/or therapeutically relevant hypotheses in pre-clinical models and/or clinically in uncharted areas of disease biology; • new tools for prediction, prevention, interception, surveillance, diagnosis, treatment, and management options to prepare for major epidemic outbreaks; • new biomarkers of disease (relevant for diagnosis, efficacy, safety, or prevention) identified and experimentally validated; • new taxonomies of disease or new stratifications to define patient sub-populations.	100	0	50	120	150	

KPI Name	Unit of measurement	Baseline	Target 2023	Target 2025	Target 2027	Ambition >2027	Status
Outcomes							
2.4. Integrated health care solutions considering end-users' needs	Number of project outputs that combine people-centred integrated solutions (pre-competitive tools, methods, solutions as well as products/services or combined products)	No baseline available	0	3	7	10	
2.5. Methodologies for value assessment of integrated solutions	Number of methodologies for the assessment of the added value of combinations of products/services or combined products (including development of patient reported outcomes / experience measures and statistical methods/tools), submitted to health care authorities and organisations[10]	No baseline available	0	2	3	5	
2.6. New or improved clinical guidelines	Number of projects contributing to the development of new or improved clinical guidelines	13	0	5	10	20	
2.7. Management of health data	Number of common standards, protocols and frameworks developed by the projects to enable better access to data, sharing and analysis of health-related data	No baseline available	0	3	7	10	
2.8. Demonstration of data integration	Number of pilots developed by the projects demonstrating integration of data provided by the private and public sectors	No baseline available	0	5	10	20	
2.9. Demonstration of AI in health care	Number of pilots developed by the projects demonstrating feasibility of use of artificial intelligence in health care	No baseline available	0	1	2	3	

[10] Health care authorities and organisations to which it is referred here are HTA bodies, and regulatory authorities, payers and public authorities

- HTA agencies/bodies: http://www.adhophta.eu/toolkit/assets/tools/AdHopHTA_toolkit_tool24_document.pdf; https://www.eunethta.eu/about-eunethta/eunethtanetwork/)
- National and regional public procurement organisations
- National payer and reimbursement organisations (incl. health insurance companies)
- National healthcare authorities: examples are: Dutch NZA; http://www.euregha.net/ (membership list of regional and local health authorities); https://eurohealthnet.eu/list-of-members/ (first part of the membership, not the research members)

KPI Name	Unit of measurement	Baseline	Target 2023	Target 2025	Target 2027	Ambition >2027	Status
Impacts							
3.1. Creation of sustainable resources and infrastructures that facilitate the translation of knowledge into innovations	Number of established new research networks, new clinical networks, further public-private collaborations on health R&D&I, research infrastructures, biobanks, collaborative platforms etc. (that outlive the project and are accessible to broader scientific community)	10	0	4	7	15	
3.2. Development of preventive or therapeutic strategies in different therapeutic areas to address unmet public health needs	Share of projects that aim to develop new or improved existing methodologies also across disciplines addressing public health needs[11] included in the list of the WHO Europe Health 2020 priority areas[12]	No baseline available	90%	90%	90%	90%	

[11] Definition in article 125(1) of the Council Regulation (EU) 2021/2085: *"For the purpose of this Regulation, an unmet public health need shall be defined as a need currently not addressed by the health care systems for availability or accessibility reasons, for example where there is no satisfactory method of diagnosis, prevention or treatment for a given health condition or if people access to healthcare is limited because of cost, distance to health facilities or waiting times".*

[12] https://www.euro.who.int/__data/assets/pdf_file/0011/199532/Health2020-Long.pdf https://www.who.int/europe/publications/i/item/WHO-EURO-2021-1919-41670-56993

KPI Name	Unit of measurement	Baseline	Target 2023	Target 2025	Target 2027	Ambition >2027	Status
Impacts							
3.3. Cross-sector activities established by the partnership that will help contribute to a globally competitive EU healthcare industry	Number of activities in which cross-sector collaboration drives health innovation, such as: • Spin-off companies, entities or activities created based on outputs of the project (e.g., new commercial or non-profit entities) • Collaboration agreements between large companies[13] & SMEs[14] established for purposes that go beyond the scope of the project during and/or after project lifetime. • Other activities where the joint contribution of different partners has generated cross-sectoral health innovation. Examples of collaboration activities across health industry sectors that contributed to the transition to a green and digital economy (as outlined in the new Industrial Strategy for Europe[15])	No baseline available	0	5	10	20	

[13] For-profit legal entities with an annual turnover of EUR 500 million or more (Article 123(5) of Council Regulation (EU) 2021/2085)

[14] Small and medium-sized enterprises (SMEs) are defined in the "EU recommendation 2003/361" (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003H0361&from=EN) as of page 4 and in the European Commission "User guide to SME definition" (https://ec.europa.eu/regional_policy/sources/conferences/state-aid/sme/smedefinitionguide_en.pdf) especially in page 13

[15] "European industrial strategy 2019-2024" (https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en) and "Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery" (https://ec.europa.eu/info/sites/default/files/communication-industrial-strategy-update-2020_en.pdf)

Risks

Risk management is a proactive process for identifying and assessing any event that could pose a threat to the achievement of the IHI JU objectives and determining how the corresponding risks should be managed. Therefore, risk management is an integral element of the strategic planning and monitoring cycle.

Following the risk assessment exercise carried out by the Programme Office, one critical risk was identified. This risk relates to the external environment (outside IHI JU): an operational risk linked to the IHI JU reputational risk connected to external stakeholders diverging points of views and agendas.

In order to control the risks identified, the Programme Office continuously monitors and reviews them, considering the corresponding mitigating measures identified and taking further actions where necessary to ensure controls remain effective. Relevant IHI JU financial needs and the budget for 2024 have also been appropriately estimated. The staff is regularly informed on the objectives, activities and new planning.

4.2.2 Scientific priorities, challenges and expected impacts

The scope of the scientific priorities 2024 will contribute to the achievement of the general and specific objectives of IHI JU as defined in the Council Regulation (EU) 2021/2085. They will do this by tackling the challenges and making progress towards the outcomes and expected impacts as described in one or more of the five SRIA[16] scope areas/specific objectives. IHI JU is the ideal mechanism to pioneer the integration of technologies and interventions to optimise research, health products and services, as well as healthcare delivery, to ultimately move from siloed healthcare interventions to holistic disease management and patient care.

The scientific priorities reflect IHI JU's objectives, which focus on the pre-competitive area, thereby creating a safe space for efficient collaboration between companies active in different health technologies.
The objectives are not aimed at delivering products or services directly to healthcare systems or the market as such.

In 2024 the scientific priorities will continue to focus on cross-sectoral approaches, methods, and tools to facilitate the creation of new products and services to prevent, intercept, diagnose, treat, and manage diseases and foster recovery more efficiently in various disease areas, focusing on unmet public health needs as defined in the Council Regulation (EU) 2021/2085[17]. In addition, and importantly, the scientific priorities will also cover initiatives which, while not focused specifically on disease areas, have a significant potential to generate results that could have a transformational impact on innovation processes in healthcare.

To achieve these ambitious objectives, IHI JU will continue to grow its pipeline of ideas from a range of sources and stakeholders in the health community, as well as from industry partners, the European Commission, and potential contributing partners.

[16] https://www.ihi.europa.eu/sites/default/files/flmngr/IHI_Strategic_Research_and_Innovation_Agenda_3.pdf

[17] an unmet public health need shall be defined as a need currently not addressed by the healthcare systems for availability or accessibility reasons, for example where there is no satisfactory method of diagnosis, prevention or treatment for a given health condition or if people's access to health care is limited because of cost, distance to health facilities or waiting times.

To exploit the full potential of IHI JU, the industry sectors will continue the joint Think Big reflection process started in 2023 to explore the opportunities of systemic and prospective cross-sector integration, and the boundaries of the common pre-competitive space. This reflection process involves research, medical and digital thought leaders from pharmaceutical and medical technology companies and has identified several areas where public-private cross-sector collaboration can create a step change in disease prevention, precision medicine, and management of chronic diseases. The "Think Big" themes focus on opening new avenues for R&D, addressing patient and societal needs, supporting healthcare systems and ensuring the future resilience of the healthcare industries. In 2024 IHI will launch the first topics generated by these reflections. In addition, IHI JU will continue to collect ideas from the wider health and research community for potential IHI topics via the IHI JU dedicated portal[18].

All ideas will be reviewed by the Science and Innovation Panel (SIP), which notably comprises experts from the scientific community and various stakeholder groups. The SIP will determine how well they fit IHI JU's mission and its objectives as described in the SRIA, and if they are suitable starting points for future topics of calls for proposals to be launched in 2024 (and beyond).

The activities funded by IHI JU will be designed taking into consideration synergies with other health-oriented initiatives. These include synergising with existing and future partnerships of Cluster 1 of Horizon Europe, as well as complementing the actions of the EU4Health[19] programme and HERA[20] and upstream of the EIT Health and the European partnership on transforming health and care systems (THCS)[21], wherever relevant. It is also expected that IHI JU activities will contribute to the Union priorities for health research and innovation, such as the Pharmaceutical and the Industrial Strategies for Europe[22], Europe's Beating Cancer Plan[23], to digital policies such as the European Health Data Space[24] , AI Act[25] and Data Act[26] and to the European Green Deal[27].

Participants in activities funded by IHI JU will have to ensure that the products and services they develop based or partly based on the results of clinical studies undertaken as part of an indirect action are affordable, available and accessible to the public at fair and reasonable conditions. For this, the general conditions relating to the IHI JU calls included in this work programme will specify additional exploitation obligations applicable to specific indirect actions.[28]

Activities funded by IHI JU will cover the whole health innovation chain. Activities will be funded via the launch of calls for proposals and selection of projects (actions) that contribute to the SRIA. Due to their highly interlinked nature, it is expected that most of the activities will address more than one of the SRIA areas (corresponding to the IHI JU specific objectives), albeit with a focus on one of them.

Specific Objective 1 (SO1) addresses the challenge that for many health conditions, we lack full understanding of the underlying mechanisms, including the predisposition to disease, how environmental and genetic factors affect the occurrence and course of the diseases, what affects treatment success, etc.

[18] https://www.ihi.europa.eu/shape-our-future-research/propose-ideas

[19] https://hadea.ec.europa.eu/programmes/eu4health/about_en

[20] https://ec.europa.eu/health/health-emergency-preparedness-and-response-hera/overview_en

[21] https://www.thcspartnership.eu/

[22] https://ec.europa.eu/health/system/files/2021-02/pharma-strategy_report_en_0.pdf and https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en

[23] https://ec.europa.eu/health/system/files/2022-02/eu_cancer-plan_en_0.pdf

[24] https://ec.europa.eu/health/ehealth-digital-health-and-care/european-health-data-space_en

[25] https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai

[26] https://digital-strategy.ec.europa.eu/en/policies/data-act

[27] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

[28] In accordance with Article 125(3) of the Council Regulation (EU) 2021/2085

Consequently, it is difficult to develop adequate prevention strategies, enhanced prediction, accurate and timely diagnostics, and targeted therapeutic interventions for both communicable and non-communicable diseases. A transformative change in the perception, medical ontology and treatment of disease is needed, moving to approaches anchored on qualified biomarkers (also across classical diagnosis) and precision therapies. Accordingly, IHI will launch, for example, a topic focussed on **Clinical validation of biomarkers for diagnosis, monitoring disease progression and treatment response**, to foster a biomarker-driven approach to precision medicine by increasing the availability of validated biomarkers in real-world settings. Further initiatives will also be considered to advance the approach of precision medicine and for enhancing disease prediction and prevention.

For example, the topic **Novel endpoints for osteoarthritis (OA) by applying big data analytics**, by fostering a more efficient use of various research tools or paradigms offered by emerging industry sectors (e.g. innovative imaging methods, or artificial intelligence) will contribute to the SO1 outputs of increased understanding of health and disease mechanisms and its impacts as benefit for the patients as early disease interventions better tailored to the patients' needs and more cost-effective treatment strategies.

In addition, the topic **A city-based approach to reducing cardiovascular mortality in Europe**, will consider primary and secondary prevention strategies, early detection, timely diagnosis and treatment for cardiovascular diseases. This will contribute both to the above outputs and impacts as well as to SO1 output of identification of common environmental factors, including social, that impact disease risk and progression.Specific Objective 2 (SO2) addresses the challenge of integrating fragmented health research and innovation efforts, across health industry sectors and other stakeholders, for enabling the development, in areas of unmet public health need, of tools, methods, technologies and processes for improved prediction, prevention, interception, diagnosis, treatment and management of diseases. For success it will be necessary to meet the needs of end-users, pursue harmonised approaches to data generation and exploit the significant potential of digital research and development (R&D) for transformative breakthroughs in healthcare. All topics launched in 2024 will contribute to addressing these challenges including the topic **Improving clinical management of heart disease from early detection to treatment.** Another important challenge is to how to foster hospital efficiencies, decrease staff burden and increase understanding of the root causes for high staff turnover. For example, technical and data-driven solutions have the potential to support the healthcare workforce, but their adoption still faces many challenges. To make progress in this area IHI will launch the topic **User-centric technologies and optimised hospital workflows for a sustainable healthcare workforce.**

Specific Objective 3 (SO3) addresses the patient-centricity of innovations and the challenge of effectively engaging with all relevant healthcare actors (patients and civil society, healthcare professionals, healthcare providers, regulators, health technology assessment bodies and payers) for the design and development of new and/or integrated health solutions. Despite significant advances in technology in recent years, there are not yet widespread improvements in healthcare systems. There is an acute need especially for chronic disorders to step-up disease management and take advantage of innovative integrated health technology solutions to ensure patients improve their health outcomes. For example, it would be very valuable to develop innovative and multi-stakeholder approaches helping patients to stay on treatment, via leveraging of scalable technology. Accordingly, IHI will launch the topic **Support healthcare system resilience through a focus on persistency in the treatment of chronic diseases.**

In addition, the topic **Patient-centred clinical-study endpoints derived using digital health technologies**, will contribute to SO3 outputs in particular methodological approaches to elicit and integrate patient preferences into the development process of integrated health care solutions, and SO3 impact of innovative health solutions developed according to criteria that matter to patients and citizens contributing to achieving a people-centred health care.

Overall, the rest of activities in scope of the scientific priorities of 2024 are expected to contribute to SO3 since, as stated in the IHI JU SRIA, "*Patients and end-users need to be involved in all stages of research, from project design through to implementation, to develop meaningful innovations*".

Specific Objective 4 (SO4) addresses the issue that the potential of real-world data/big data exploitation for public health research and innovation remains largely untapped. Technological developments have made it possible to collect health data at much larger scale than was possible previously, and from additional sources e.g. from wearable and portable sensory devices. Indeed, the overall data volume of connected devices and Internet of Things (IoT) is expected to grow over 480% between 2021 and 2025. Consequently, the development of new products and services that rely on data-driven technologies, as well as the regulatory processes, are rapidly evolving. Many challenges and uncertainties remain to fully harness the opportunities created by these exciting developments in data science. Also, there are fundamental shortcomings of the current mode of data collection which may impact both quality and consistency of the data and the representativeness in the data of the overall population with disease.

IHI will launch initiatives in 2024 addressing some of these important challenges. For example, it would be desirable to develop and pilot methodologies and tools in cooperation with downstream decision-makers (e.g., regulators, HTA bodies, payers) enabling full use of real-world data from various sources and multiple stakeholders, public and private ones. To achieve this outcome IHI will launch the topic **Development of evidence based practical guidance for sponsors on the use of real world data/real world evidence.**

Furthermore, the recent rapidly evolving developments in artificial intelligence (AI) and its use open exciting opportunities for unlocking the power of data to foster development of innovative cross-sectorial innovations for the benefit of healthcare, but this requires its de-risking for use in decision-making. It is expected that many of the IHI activities in 2024 will contribute to addressing aspects of this challenge.

Finally, the current legislative proposal from the Commission for a European Health Data Space (EHDS)[29] will create the health-specific ecosystem needed for unleashing the full power of digitalisation, data, and data exchange for the benefit of healthcare systems and patients in Europe. It is expected that the activities launched by IHI during 2024 will contribute to the achievement of the impacts of this ambitious initiative and to its future translation in practice.

Specific Objective 5 (SO5) addresses the need for new and improved evaluation methodologies and models for a comprehensive assessment of the added value of innovative and integrated healthcare solutions as effects on costs and outcomes for patients, health systems and societies. It is expected that many of the activities launched by IHI during 2024 will contribute to the achievement of this objective. In addition, specifically the topic30 **Modelling regulatory sandbox mechanisms and enabling their deployment to support breakthrough innovation**, aims to support the successful implementation of regulatory sandboxes through developing a comprehensive and shared understanding of their value and as such will contribute to the SO5 output as new or improved methodologies and tools to assess the added value of emerging and converging technologies and SO5 impact of fostering faster entry to the market of cost-effective innovative solutions developed by industry.

As relevant the IHI JU office may organise webinars/workshops to support the implementation of the 2024 scientific priorities.

Impacts achieved in 2024 will be monitored using the predefined key performance indicators, as well as via bibliographic analysis to capture projects' scientific outputs in terms of publications and collaborations.

[29] https://health.ec.europa.eu/ehealth-digital-health-and-care/european-health-data-space_en
30 Regulatory sandbox was a theme discussed at the 2024 IHI Regulatory Science Summit.

4.2.3 Calls for proposals

a. General presentation of the 2024 calls for proposals

During 2024, IHI JU will launch single-stage and two-stage open and competitive calls for proposals.

The topic ideas and indicative budgets are drawn up from a range of sources, including industry partners, potential contributing partners, and other stakeholders in the health community and in consultation with the SIP and the SRG. The Programme Office leads the drafting of the topic texts and the Work Programme. The latter may be amended as needed.

For IHI JU call 6:

The submission deadline for short proposals (SPs) will be 16/04/2024, and the deadline for full proposals (FPs) will be 10/10/2024.

Scientific evaluation of the SPs and FPs under the two-stage call will be completed by 2024.
Grant Agreement Preparation (GAP) will be completed within 3 months from the notification to applicants of the evaluation results of the full proposal, and maximum eight months from the final date of submission of the FPs, in line with the applicable time to grant (TTG).

For IHI JU call 7:

The submission deadline for full proposals (FPs) will be 22/05/2024.

Scientific evaluation of the single-stage call will take place in Q2 2024. GAP will be completed within 3 months from the notification to applicants of the evaluation results of the full proposal, and maximum eight months from the final date of submission of the FPs, in line with the applicable time to grant (TTG).

For IHI JU call 8:

The submission deadline for short proposals (SPs) will be 10/10/2024, and the deadline for full proposals (FPs) will be 23/04/2025.

Scientific evaluation of the SPs under the two-stage call will be completed by 2024 and FPs in Q2 2025.
Grant Agreement Preparation (GAP) will be completed within 3 months from the notification to applicants of the evaluation results of the full proposal, and maximum eight months from the final date of submission of the FPs, in line with the applicable time to grant (TTG).

b. Conditions of the calls and call management rules

For call management, IHI JU will utilise the EC IT infrastructure available under Funding & Tender opportunities – Single Electronic Data Interchange Area (SEDIA).

The General Annexes of the Horizon Europe Work Programme 2023-2025 shall apply *mutatis mutandis* to the calls for proposals covered by this Work Programme, including the “Restrictions for the protection of European communication networks” under General Annex B. In accordance with Article 5(2)(a) of the Council Regulation (EU) 2021/2085, in duly justified cases, derogations related to the specificities for IHI JU may be introduced in the relevant Work Programme. Where necessary, this will be done when the topic texts are identified in this Work Programme.

To maximise the efficiency of the calls management, IHI JU will continuously explore and implement simplifications and improve its processes while maintaining the highest standards of the evaluation process, in line with the applicable Horizon Europe rules.

All proposals must conform to the conditions set out in Regulation (EU) 2021/695 of the European Parliament and of the Council of 28 April 2021 establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination.

GENERAL CONDITIONS RELATING TO THE IHI JU CALLS	
Admissibility conditions	The conditions are described in General Annex A.
Eligibility conditions	The conditions are described in General Annex B.
Financial and operational capacity and exclusion	The conditions are described in General Annex C.
Award criteria	The criteria are described in General Annex D.
Documents	The documents are described in General Annex E.
Procedure	The procedure is described in General Annex F.
Legal and financial set-up of the grant agreements	The conditions are described in General Annex G.

Any specificity for IHI JU is highlighted in the below sections:

STANDARD ADMISSIBILITY CONDITIONS, PAGE LIMITS AND SUPPORTING DOCUMENTS

General Annex A (‘Admissibility’) to the Horizon Europe Work Programme 2023-2025 shall apply *mutatis mutandis* for the calls for proposals covered by this Work Programme.

In addition, page limits will apply to proposals as follows:

- for a single-stage call, the limit for RIA full proposals is 50 pages;
- at the first stage of a two-stage call, the limit for RIA short proposals is 20 pages;
- at the second stage of a two-stage call, the limit for RIA full proposals is 50 pages.

STANDARD ELIGIBILITY CONDITIONS

General Annex B to the Horizon Europe Work Programme 2023-2025 shall apply *mutatis mutandis* for the calls for proposals covered by this Work Programme unless otherwise provided in this Work Programme.

Per the above and by way of derogation from General Annex B of the Horizon Europe Work Programme 2023-2025:

According to Article 119 of the Council Regulation (EU) 2021/2085, for indirect actions selected under calls for proposals covered by this Work Programme:

- applicant consortia must ensure that at least 45% of the action's eligible costs and costs for additional activities related to the action are provided by contributions (IKOP, FC, IKAA) from private members which are members of IHI JU, their constituent or affiliated entities, and contributing partners;
- While the constituent or affiliated entities of the members other than the union of IHI JU can contribute any of those contribution types, contributing partners can only contribute IKOP and FC, not IKAA;
- further to the above, the applicant consortium must submit a self-declaration that the required percentage of 45% contributions will be provided;
- the eligibility condition above and the self-declaration requirement do not apply to the first stage of a two-stage application;
- at project level, the maximum amount of non-EU IKOP is set to:
    - One hundred percent (100%) for IHI JU Call 6
    - Twenty percent (20%) for IHI JU Call 7[31]
    - One hundred percent (100%) for IHI JU Call 8

This is justified as a means to ensure the achievement of project objectives based on Article 119(5) of Council Regulation (EU) 2021/2085, and to ensure full openness to non-EU IKOP in these calls[32].

[31] Even if this threshold of 20% is not intended as an eligibility condition *per se*, proposals recommended for funding that will feature a non-EU IKOP amount higher than the 20% of IKOP, will be requested to remove the exceeding part. If this is the case, this non-EU IKOP reduction exercise will need to comply with eligibility criteria whereby at least 45% of the action's eligible costs and costs for additional activities related to the action are provided by contributions (IKOP, FC, IKAA) from private members which are members of IHI JU, their constituent or affiliated entities, and contributing partners.

[32] It has to be noted that, pursuant to Article 119(4) of Council Regulation (EU) 2021/2085, at the level of the IHI JU programme, non-EU IKOP must not exceed 20% of in-kind contributions to operational costs provided by private members which are IHI JU members, their constituent or affiliated entities, and contributing partners. Furthermore, at the level of the IHI JU programme, IKAA shall not constitute more than 40% of in-kind contributions provided by private members which are IHI JU members.

ENTITIES ELIGIBLE FOR FUNDING

In relation to the single-stage calls for proposals covered by this Work Programme, the relevant provisions of the General Annex B to the Horizon Europe Work Programme 2023-2025 shall apply *mutatis mutandis*.

By way of derogation, in relation to the two-stage calls for proposals covered by this Work Programme, the following provisions shall apply:

- Legal entities identified in the topic text of the call for proposals shall not be eligible for funding from IHI JU. Nevertheless:

- These entities will be entitled to provide contributions as IHI JU members other than Union or contributing partners or as constituent or affiliated entities of either.

- Legal entities participating in indirect actions selected under this type of calls for proposals shall not be eligible for funding where:

    a) they are for-profit legal entities with an annual turnover of EUR 500 million or more;

    b) they are under the direct or indirect control of a legal entity described in point (a), or under the same direct or indirect control as a legal entity described in point (a);

    c) they are directly or indirectly controlling a legal entity referred to in point (a).

In line with Article 5(2)(a) (additional conditions in duly justified cases) and Article 119(3) (private contributions to amount of at least 45% of an indirect action's eligible costs and costs of its related additional activities) of the Council Regulation (EU) 2021/2085, under two-stage submission procedures, the following additional condition applies:

- The applicants which are IHI JU members other than the Union, or their constituent entities and affiliated entities, and contributing partners and that are pre-identified in the topics – under the section 'Industry consortium' – of a call for proposals shall not apply at the first stage of the call. The applicant consortium selected at the first stage shall, in preparation for the proposal submission at the second stage, merge with the pre-identified industry consortium.

In addition, in line with Articles 11 and 119(1) and (3) of the Council Regulation (EU) 2021/2085, legal entities providing in-kind contributions as constituent entities or affiliated entities of IHI JU private members or as contributing partners that are:

- Not eligible for funding in two-stage calls for proposals; or
- Not established in a country generally eligible for funding in accordance with Part B of the General Annexes to the Horizon Europe Work Programme 2023 – 2025,

may exceptionally sign the grant agreement.

This is subject to the following conditions:

- Their participation is considered essential for implementing the action by the granting authority; and
- They participate without requesting any funding.

The essentiality of non-EU legal entities for implementing the action shall be ascertained by the granting authority.

LIST OF COUNTRIES AND APPLICABLE RULES FOR FUNDING

With reference to Article 23 of the Council Regulation (EU) 2021/2085, the eligibility of participants in a proposal submitted to a call for proposals for any of the topics in this Work Programme will take into account any application of Art 22(5) of the Horizon Europe Regulation as well as Union legislation and guidance relevant for its application triggered for topics from other Horizon Europe Work Programmes for proposals with similar scope.

TYPES OF ACTION: SPECIFIC PROVISIONS AND FUNDING RATES

General Annex B ('Eligibility') to the Horizon Europe Work Programme 2023-2025 shall apply *mutatis mutandis* for the calls for proposals covered by this Work Programme.

EVALUATION RULES

General Annex D ('Award Criteria') to the Horizon Europe Work Programme 2023-2025 shall apply *mutatis mutandis* for the calls for proposals covered by this Work Programme with the following additions: The relevant calls for proposals launched under this Work Programme shall specify whether the call for proposals is a single-stage or two-stage call, and the predefined submission deadline.

Award criteria and scores:

Experts will evaluate the proposals on the basis of criteria of 'Excellence', 'Impact' and 'Quality and efficiency of the implementation' according to the type of action, as follows:

	Excellence Aspects to be taken into account:	**Impact** Aspects to be taken into account:	**Quality and efficiency of the implementation** Aspects to be taken into account:
First stage evaluation of two-stage procedure	-Clarity and pertinence of the project's objectives, and the extent to which the proposed work is ambitious, and goes beyond the state of the art. -Soundness of the overall methodology.	-Credibility of the pathways to achieve the expected outcomes and impacts specified in the work programme, and the likely scale and significance of the contributions due to the project.	-Quality and effectiveness of the outline of the work plan. -Capacity of each participant, and extent to which the consortium as a whole brings together the necessary expertise.
Single-stage and second stage of two-stage procedure	-Clarity and pertinence of the project's objectives, and the extent to which the proposed work is ambitious, and goes beyond the state of the art. -Soundness of the proposed methodology, including the underlying concepts, models, assumptions, interdisciplinary approaches, appropriate consideration of the gender dimension in research and innovation content, and the quality of open science practices, including sharing and management of research outputs and engagement of citizens, civil society and end users where appropriate.	-Credibility of the pathways to achieve the expected outcomes and impacts specified in the work programme, and the likely scale and significance of the contributions due to the project. -Suitability and quality of the measures to maximise expected outcomes and impacts, as set out in the dissemination and exploitation plan, including communication activities.	-Quality and effectiveness of the work plan, assessment of risks, and appropriateness of the effort assigned to work packages, and the resources overall. -Capacity and role of each participant, and extent to which the consortium as a whole brings together the necessary expertise. -Clearly defined and effective integration of in-kind and financial contributions, including those of IHI JU private members, their constituent or affiliated entities to enable a successful public-private partnership.

For all evaluated proposals, each criterion will be scored out of 5. Half marks may be given.

For the evaluation of proposals under both single-stage and two-stage submission procedures:

- the threshold for individual criteria will be 3;
- the overall threshold, applying to the sum of the three individual scores, will be 10;
- proposals that pass individual thresholds and the overall threshold will be considered for funding, within the limits of the available budget. Proposals that do not pass these thresholds will be rejected.

Under the single-stage evaluation process, evaluated proposals will be ranked in one single list. The highest ranked proposals, within the framework of the available budget, will be invited to prepare a Grant Agreement.

Under the two-stage evaluation procedure, and on the basis of the outcome of the first stage evaluation, the applicant consortium of the highest ranked short proposal (first stage) for each topic will be invited to discuss with the relevant industry consortium the feasibility of jointly developing a full proposal (second stage).

If the first-ranked consortium and industry consortium decide that the preparation of a joint full proposal is not feasible, they must formally notify IHI JU within 30 days from the invitation to submit the second stage proposal. This notification must be accompanied by a joint report clearly stating the reasons why a second stage proposal is considered not feasible. In the absence of a joint notification within the deadline, it is deemed that the first ranked applicant consortium and the industry consortium are going to submit the joint second stage proposal. Accordingly, the second and third-ranked short proposals will be formally rejected.

If the preliminary discussions with the higher ranked proposal and the industry consortium fail, the applicant consortia of the second and third-ranked short proposals (first stage) for each topic may be invited by IHI JU, in priority order, for preliminary discussions with the industry consortium. The decision to invite lower-ranked consortia to enter into discussions with the industry consortium will take into account the content of the report from the joint report from the first-ranked consortium and industry consortium.

Under the two-stage evaluation procedure, contacts or discussions about a given topic between potential applicant consortia (or any of their members) and any member of the relevant industry consortium are prohibited throughout the procedure until the results of the first stage evaluation are communicated to the applicants[33].

As part of the panel deliberations, IHI JU may organise hearings with the applicants to:

1. clarify the proposals and help the panel establish their final assessment and scores, and/or;
2. improve the experts' understanding of the information presented.

In cases clearly identified in the relevant call for proposals where a given topic is composed of two or more sub-topics, one short proposal per sub-topic will be invited.

The IHI JU evaluation procedure is confidential.

The members of the applicant consortia shall avoid taking any actions that could jeopardise confidentiality.

[33] Failure to observe this restriction may result in IHI JU rejecting either the breaching participant or the full proposal per Article 141 point 1, letter (c) of the REGULATION (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, amending Regulations (EU) No 1296/2013, (EU) No 1301/2013, (EU) No 1303/2013, (EU) No 1304/2013, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision.

Following each evaluation stage, applicants will receive an ESR (evaluation summary report) regarding their proposal.

INDICATIVE TIMETABLE FOR EVALUATION AND GRANT AGREEMENT PREPARATION

Information on the outcome of the evaluation (single-stage, or first stage of a two-stage):

- Single-stage: Maximum 5 months from the submission deadline at the single-stage.
- Two-stage: Maximum 5 months from the submission deadline at the first stage.

Information on the outcome of the evaluation (second stage of a two-stage):

- Maximum 5 months from the submission deadline at the second stage.

Indicative date for the signing of grant agreement:

- Single-stage: Maximum 8 months from the submission deadline.
- Two-stage: Maximum 8 months from the submission deadline at the second stage.

General Annex G ('Legal and Financial setup of the Grant Agreements') to the Horizon Europe Work Programme 2023-2025 shall apply *mutatis mutandis* for the calls for proposals covered by this Work Programme.

BUDGET FLEXIBILITY

General Annex F to the Horizon Europe Work Programme 2023-2025 shall apply *mutatis mutandis* to the calls for proposals covered by this Work Programme.

SUBMISSION TOOL

Proposals in response to a topic of an IHI JU call for proposals must be submitted online, before the call deadline, by the coordinator via the Submission Service section of the relevant topic page available under Funding & Tender opportunities – Single Electronic Data Interchange Area (SEDIA). No other means of submission will be accepted.

PROPOSALS INCLUDING CLINICAL STUDIES[34]

Under the single-stage submission procedures and for the second stage of the two-stage submission procedures: Applicants envisaging including clinical studies must provide details of their clinical studies in the dedicated annex using the template provided in the submission system[35].

SPECIFIC CONDITIONS ON AVAILABILITY, ACCESSIBILITY AND AFFORDABILITY (3A)[36]

When the specific topic condition so requires, the following conditions shall apply:

- The participants must, during the lifetime of the project and for a period of four years after project end, use their best efforts to ensure that those products or services that are developed by any of the participants and are totally or partly based on the results of clinical studies performed as part of the

[34] Clinical study covers clinical studies/trials/investigations/cohorts and means, for the purpose of this document, any systematic prospective or retrospective collection and analysis of health data obtained from individual patients or healthy persons in order to address scientific questions related to the understanding, prevention, diagnosis, monitoring or treatment of a disease, mental illness, or physical condition. It includes but is not limited to clinical studies as defined by Regulation 536/2014 (on medicinal products), clinical investigation and clinical evaluation as defined by Regulation 2017/745 (on medical devices), performance study and performance evaluation as defined by Regulation 2017/746 (on *in vitro* diagnostic medical devices).

[35] Template for providing essential information in proposals involving clinical studies - https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/temp-form/af/information-on-clinical-studies_he_en.docx

[36] Article 125(3) of the Council Regulation (EU) 2021/2085.

activities of the selected project, will be broadly[37] available and accessible, at fair and reasonable conditions.

- In particular, and always to the extent permitted by applicable competition law:

  a) At the proposal stage[38], and as part of the Plan for the Dissemination, Exploitation, and Communication Activities ('PDECA') which forms part of the proposal, the applicant consortium must identify potential and expected project results that may be subject to the 3A conditions and broadly outline their strategy to achieve the above objectives.[39]

  b) At the project interim review stage, if relevant[40], the PDECA should be updated with a revised 3A strategy. This update should be based on the progress of the clinical studies conducted or to be conducted as part of the project and include any pertinent action to be implemented both during the project and over the four years after project end.

  c) At the end of the project, the PDECA should be updated, to provide the expected planning for further product development and (if already scheduled) product launch, within the timeframe of four years after the project end and in order to meet those objectives laid out under point 1 above.[41]

  d) Within 12 months from the project end date, and on a yearly basis thereafter for a period of 3 years (totalling four years from project end), a confidential report[42] must be submitted to IHI JU by the owner of the project result describing the status of the development of the product and of any other exploitation actions, planned or undertaken, concerning the products/services.

JU RIGHT TO OBJECT TO TRANSFER/EXCLUSIVE LICENSING

According to the Horizon Europe rules, and in order to protect Union interests, the right for IHI JU to object to transfers of ownership of results or to grants of an exclusive licence regarding results should apply to participants. Therefore, the provisions set out in General Annex G to the Horizon Europe Work Programme 2023-2025 on the right to object apply generally. It should be noted that in accordance with the Council Regulation (EU) 2021/2085 and the Horizon Europe model Grant Agreement, the right to object applies also to participants that have not received funding from IHI JU and for the periods set therein. In choosing whether to exercise the right to object, IHI JU will, on a case-by-case basis, make a reasoned decision in compliance with the legal basis.

[37] This covers EU Member States and countries that are associated to Horizon Europe at the time of call opening.
[38] As mentioned, for those 3A specific projects, the 3A content in the PDECA will be checked during the evaluation stage. Omission/inadequate treatment of 3A would be identified as a shortcoming. The content however, once considered adequate, will not be utilised for positive scoring and will not contribute towards any evaluation criteria.
[39] Suggested components would be 1) Identification of planned clinical studies that might generate results for which the provisions are relevant; 2) Confirmation that the consortium members are aware of the provisions and will consider them accordingly. 3)Tentatively identifying markets/areas where the product/service could be made affordable, accessible, available. These points could be checked at the evaluation stage.
[40] As discussed, this interim point allows a realistic appraisal of the 3A possibilities during the project lifetime, particularly as to the viability of specific expected 3A results.
[41] Per the Model Grant Agreement ('MGA') Article 16, the beneficiaries must complete the Results Ownership List ('ROL') which identifies each result generated in the project and the owner thereof. The ROL should inform on the relevant results for which owners implement the 3A strategy in the PDECA for the four years following the project.
[42] Cognisant of IP sensitivities, confidential info, and commercial realties, the IHI JU suggests that the confidential report PDECA could, if needed, be composed of two parts:

1. **A high-level abstract**, to be made publicly available (not containing confidential information), comprising:
   a) Broad summary of the result's development to this point, including a detailed description of the result and the potential product or service that could incorporate or partly incorporate the result;
   b) Broad description of expected downstream actions (including product and service applications);
   c) broad assessment of expected impact of the above downstream actions towards ensuring affordability, availability, and accessibility.
2. **A Confidential Annex** in which:
   a) The owning beneficiary explains if the result is a product or service (or is expected to become one within 4 years) or not, and if yes, further confirms:
      i. The planned measures to be taken to effect the 3A obligations;
      ii. That the owning beneficiary will undertake all necessary actions to adhere to the 3A provisions to the best of its capacity;
      iii. That the owing beneficiary will keep the IHI JU updated on a yearly basis on the progress.

FINANCIAL SUPPORT TO THIRD PARTIES

Financial support for third parties in IHI projects is allowed for call 08. The additional conditions contained in General Annex B to the Horizon Europe Work Programme 2023-2025 for Financial Support to Third Parties shall apply *mutatis mutandis.*

c. Country-specific eligibility rules

Following the Horizon Europe Programme Guide, participation in IHI JU indirect actions will be open but eligibility for funding will be however limited to legal entities established in an EU Member State, Associated Country or Low- and Middle-Income Countries (please consult the list in the Horizon Europe Programme Guide[43]).

4.2.4 Calls for tenders and other actions

In 2024, the Programme Office will not launch operational call for tenders.

4.2.5 Follow-up activities linked to past calls: monitoring, evaluation and impact assessment

IMI/IHI calls	Total	Ongoing at 01.01.2024	Of which	
	Projects		Total reports	Project ending in 2024
IMI1 call 1	15			
IMI1 call 2	8			
IMI1 call 3	7			
IMI1 call 4	7			
IMI1 call 5	1			
IMI1 call 6	2	1	1	1
IMI1 call 7	2			
IMI1 call 8	4			
IMI1 call 9	4			
IMI1 call 10	1			
IMI1 call 11	8			
Total IMI1	**59**	**1**	**1**	**1**

[43] https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

IMI/IHI calls	Total	Ongoing at 01.01.2024	Of which	
	Projects		Total reports	Project ending in 2024
IMI2 call 1	1	1	1	1
IMI2 call 2	8			
IMI2 call 3	5			
IMI2 call 4	1			
IMI2 call 5	6			
IMI2 call 6	4			
IMI2 call 7	7	2	2	2
IMI2 call 8	4	1	1	1
IMI2 call 9	6	1	1	1
IMI2 call 10	8	2	2	1
IMI2 call 11	3			
IMI2 call 12	7	3	3	3
IMI2 call 13	13	8	8	6
IMI2 call 14	4	3	3	1
IMI2 call 15	7	5	5	1
IMI2 call 16	5	4	4	1
IMI2 call 17	3	3	3	0
IMI2 call 18	6	6	6	1
IMI2 call 19	2	2	2	2
IMI2 call 20	6	6	6	0
IMI2 call 21	8	4	4	3
IMI2 call 22	3	2	2	2
IMI2 call 23	6	6	6	0
Total IMI2	123	59	59	26
IHI call 1	5	5	5	0

IMI/IHI calls	Total	Ongoing at 01.01.2024	Of which	
	Projects		Total reports	Project ending in 2024
IHI call 2	2	2	2	0
IHI call 3	9	8	0	0
IHI call 4 (*)				
IHI call 5(*)				
IHI call 6 (*)				
IHI call 7 (*)				
Total IHI *	16	15	7	
Totals IMI+ IMI2 +IHI	198	75	67	26

***** Numbers on projects/reports will be further defined after the conclusion of the respective IHI JU calls

Monitoring and analysis of project results

67 project periodic and final reports will be submitted in 2024. These reports will be used to track progress against their stated objectives and deliverables as laid out in the relevant description of the action.

This reporting will also enable an assessment of project achievements and the impact of results. In addition to the usual ex-ante controls, a combination of internal management information systems, external databases, independent evaluations and, if necessary, commissioned studies and surveys will be used to measure the progress and identify significant achievements of IMI projects.

In 2024, the analysis of the IMI project scientific outputs in terms of publications and collaboration among IMI researchers will be continued. Where feasible, monitoring and analysis approaches will be refined in line with observations from the European Court of Auditors (ECA) to ensure the highest possible standards.

Impact assessment of the IMI and IHI projects

The Programme Office remains focused on continuing to assess the performance of the IMI2 programme and has started monitoring the IHI programme, drawing from experience with the initial IHI projects.

In this context, the Programme Office is contributing to Phase 2 of the impact assessment activity under the specific contract "*Evaluation study of the European Framework Programmes for Research and Innovation for a Resilient Europe – RTD/2021/SC/021",* launched by the European Commission. As an outcome of this effort, we expect the publication of the "Interim evaluation of the Innovative Health Initiative (IHI) and its predecessor the Innovative Medicines Initiative (IMI2)" in 2024, supported by two case studies: "From Innovative Medicine Initiative to Innovative Health Initiative – the early experience" and "IMI2 and IHI: Driving Innovation in Digital Health".

4.2.6 Cooperation, synergies and cross-cutting themes and activities

The Council Regulation (EU) 2021/2085 states that IHI JU should seek and build close collaborations and synergies with other relevant initiatives at Union, national and regional level, in particular with other European partnerships, to achieve greater scientific, socioeconomic and environmental impact and ensure uptake of results. The SRIA lists the European partnerships of potential relevance, notably the partnerships in Cluster 1 of Horizon Europe and EIT Health, wherever relevant. It is also expected that IHI JU activities will contribute to and/or complement the actions of the EU4Health[44] programme, HERA[45], the Digital Europe programme[46] that will deploy digital capacities and infrastructure related to the health area, and the European Green Deal[47] by contributing to the development of a greener and more sustainable healthcare sector.

[44] https://hadea.ec.europa.eu/programmes/eu4health/about_en

[45] https://ec.europa.eu/health/health-emergency-preparedness-and-response-hera/overview_en

[46] https://ec.europa.eu/info/funding-tenders/find-funding/eu-funding-programmes/digital-europe-programme_en

[47] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

Therefore, in 2024 it is planned that IHI JU will continue to explore possible synergies with other Union, national or regional health-oriented programmes, to involve representatives of other European partnerships and initiatives during the process of idea generation and topic drafting, and to identify the areas in which complementary or joint activities would address the challenges more effectively and efficiently.
In particular, IHI JU will liaise the partnerships created in Cluster 1 of Horizon Europe (notably GH EDCTP3 JU, THCS and Era4Health), Chips JU, the EIT Health and the Marie Skłodowska-Curie Staff Exchanges action[48]. IHI JU will continue exploring how to best complement the actions of the EU4Health[49] programme, HERA[50] and Coalition for Epidemic Preparedness Innovations (CEPI)[51], wherever relevant. It is also expected that IHI JU activities will complement those of the Digital Europe programme[52] that will deploy digital capacities and infrastructure related to the health area. Finally, IHI JU will engage more specifically with regional stakeholders, starting with EUREGHA[53] the reference network for European Regional and Local Health Authorities, and RSCN[54] representing all accredited active and healthy ageing reference site regions.

IHI JU will seek the advice of the GB in order to identify the most relevant programmes and initiatives.
The SIP will support IHI JU in advising on the creation of synergies. The SRG will support IHI JU by reporting on the status of national or regional policy, programmes and activities of relevance.

In addition to attempting to establish institutional collaborations, IHI JU will continue to engage with its key stakeholders such as patients, regulators and SMEs.

Patients

The IHI JU's goal is to translate health research and innovation into tangible benefits for patients and society by enabling the faster development of people-centred, safe, effective, cost-effective and affordable health solutions that respond to unmet health needs. To achieve this, it is essential to involve all stakeholders including patients in the co-design, co-development and co-implementation of those innovative solutions. IHI JU's aim is to champion a patient-centric approach and especially encourage all funded projects to work in partnership with patients wherever possible.

Patients play an important role when designing and implementing the SRIA, alongside researchers from the public and private sectors including the European life science industry, academia, and regulators. Therefore, IHI JU will strive to embed the patient perspective at all levels, from agenda setting for research in medical innovation and proposal evaluation processes, to project planning, and implementation. Therefore, the systematic involvement of patients in IHI JU's projects and activities will be further supported, facilitated, and strengthened.

Specifically, IHI JU plans to: ensure that patient input is considered at the idea generation and topic writing stage; ensure that the IHI Patient Pool is engaged for the evaluation of proposals submitted under IHI calls and the review of ongoing projects, as needed; explore the possibility to organise an educational webinars/workshops on patient engagement; communicate on patient engagement needs and opportunities at call launch; facilitate patient engagement in consortia; identify the most effective channels for communicating information on calls, IHI events, and the most impactful project results to patients and other relevant organisations; share best practices of patient engagement in IHI JU projects; continue to produce materials for the promotion of patient engagement in IHI JU.

[48] https://marie-sklodowska-curie-actions.ec.europa.eu/actions/staff-exchanges

[49] https://hadea.ec.europa.eu/programmes/eu4health/about_en

[50] https://ec.europa.eu/health/health-emergency-preparedness-and-response-hera/overview_en

[51] https://cepi.net/

[52] https://ec.europa.eu/info/funding-tenders/find-funding/eu-funding-programmes/digital-europe-programme_en

[53] https://www.euregha.net/

[54] https://www.rscn.eu/

Small and medium-sized enterprises

Small and medium-sized enterprises (SMEs) are important IHI JU stakeholders as they can help bring the latest health innovations to the market, leading to tangible benefits for patients and society. An objective of IHI JU is to enhance the research and innovation capabilities and performance of SMEs by promoting their involvement in IHI JU funded projects. To facilitate this objective, IHI JU will emphasise the importance of SME involvement during IHI JU info days, consortium-building brokerage meetings, topic webinars and other relevant events.

Regulatory bodies

The regulatory environment is key to ensuring that safe and effective health innovations are developed to address public health needs. To ensure that the science generated by IMI/IHI projects is translated into people-centred healthcare solutions, IHI JU will continue engaging with all relevant regulatory authorities. Notably in addition to continued successful collaboration with the European Medicines Agency (EMA), IHI JU will pursue its efforts to engage more broadly with the national competent authorities (NCA) and the Medical Device Coordination Group (MDCG) to reflect the cross-sectoral nature of the partnership.

IHI JU will seek to increase the awareness of applicants and projects' consortia about regulatory needs to be considered when relevant. It will also continue to provide support to consortia through guidance and information sessions to encourage early interactions with regulators whenever relevant to ensure greater impact of projects by translating research outcomes into regulatory practice.

The regulators' perspective will be embedded in the scientific priorities and calls for proposals, most notably through the representation of regulators in the SIP, as well as consideration of the list of regulatory science research needs established by EMA[55]. Furthermore, in 2024 the Office will hold an IHI Regulatory Science Summit. Building on the successful IMI-EMA-FDA regulatory science summits held within IMI, this meeting will provide a forum for discussion strategic research areas of common interests between funding members and medicines/devices regulators, identify challenges and gaps where IHI could be ideally placed to be at the forefront of generating actionable solutions. This will inform proposed ideas for IHI topics that contribute to regulatory science.

Using feedback and advice from the members of the SIP and the SRG, IHI JU will lead efforts to further reach out to regulators to promote the programme and encourage their participation in the programme notably by taking part in IHI projects and fostering cooperation wherever possible.

IHI JU will also strengthen engagement with other international agencies and will seek to enhance collaboration with health technology assessment (HTA) bodies. For instance, in addition to having the HTA's perspective embedded in the scientific priorities and calls for proposals, most notably through the representation of HTA bodies in the SIP, IHI JU will encourage consortia to engage with HTA bodies when relevant in order to better understand the evidence requirements for reimbursement decision-making.

[55] https://www.ema.europa.eu/en/documents/other/regulatory-science-research-needs_en.pdf

4.3 Support to operations of IHI JU in 2024

4.3.1 Communication, dissemination and exploitation

Dissemination and information about projects results

Although the responsibility for maximising the impact of their own research and innovation lies primarily with the project consortia, promoting the successes of projects is a core element of both the IHI JU communications and dissemination strategies.

The Programme Office identifies results and successes in a variety of ways, including through formal routes (project periodic reports, interim reviews) and informal routes (direct contacts with project participants, monitoring of project websites and social media, etc.). IHI JU will continue to support and supplement the dissemination of projects' public deliverables via a variety of channels.

In addition, IHI JU will continue to explore how to make better use of EU-specific dissemination tools and channels for the promotion of IMI projects and their results by actively participating in both the European Commission's Dissemination and Exploitation Network (D&E Net) and the Feedback 2 Policy Network, and by intensively promoting the Innovation Radar, the Horizon Results Portal, the Horizon Results Booster and the Horizon Standardisation Booster among both IHI staff and IMI/IHI projects.

In 2024, IHI JU expects to receive approximately 26 final project reports.

For finished projects, the IHI JU will organise open meetings under the heading "In conversation with…" where project participants will be able to share the main results of their project with the public.
When necessary, the Programme Office may organise cross-project meetings, or meetings in thematic areas to facilitate the identification of significant impacts and learnings from the projects and ensure that this information is disseminated via the channels previously described.

Lastly, IHI JU will continue to fulfil its role/obligation to look after policy conformity, effectiveness and efficiency of the dissemination and exploitation at the level of each project in the portfolio.

Communication

Unfolding IHI's new communication strategy

One of the communications team's main objectives will be to report on how both the newly launched IHI and the IMI ongoing projects will or have met the challenges they were set to address by: writing news articles, organising impact-focused events, and acting as a sounding board for the communications activities of the projects themselves, building a continuum between the JU's communication and dissemination activities.

The communications team will join forces with the operations team in supporting the call for proposals cycle from ideation to project award, targeting our current stakeholders and opening our reach to the new sectors that have been brought on board. Targeted thematic workshops, IHI JU info days, brokerage events and call-specific webinars, as well as external events will remain a crucial instrument to address this objective.

The communication team's third strategic objective will be to establish the IHI brand and raise stakeholders' awareness regarding the partnership's new research focus, new structures and new processes, in close collaboration with IHI partners and governance structures.

In order to amplify the reach of new calls for proposals, project success stories and results, IHI JU will keep working in close collaboration with the communication units of the founding partners and our governance bodies, with special emphasis on the SRG.

At the same time, the communications team will remain alert to issues that could damage IHI JU's reputation and respond accordingly by providing timely feedback on stakeholders' views and reactions.

Communication channels

IHI JU will continue to develop content for the following channels with the aim of providing all interested stakeholders with access to relevant and specific information on the work of IHI JU and its projects:

- events;
- website;
- newsletter;
- social media (LinkedIn, X, Mastodon);
- videos;
- multipliers (e.g. European Commission & industry partners, SIP, SRG, National Contact Points, relevant scientific associations, patient organisations, healthcare professional associations, etc.);
- media (general and specialist, mainly in Europe but also elsewhere);
- direct mailings;
- publications;
- direct contacts with opinion leaders.

4.3.2 Procurement and contracts

In order to reach its objectives and adequately support its operations and infrastructures, IHI JU will allocate part of its administrative budget to procure the necessary services and supplies.

To make tender and contract management as effective and efficient as possible, IHI JU resorts extensively to multi-annual framework contracts and EU inter-institutional tenders. In 2024, IHI JU will implement one such framework contract via a specific contract for infrastructure as a service (IaaS) and IT development and support of SOFIA, the intranet, collaborative platforms and other IHI JU specific applications. In 2024 IHI JU will continue the roll-out of the public procurement corporate e-procurement tool to simplify, harmonise, modernise and digitise the procurement processes.

Most essential framework contracts are already in place and will be renewed beyond 2024. Nevertheless, in Q2 2024 IHI JU will sign a framework contract in cascade for the provision of meeting rooms and will launch a middle-value negotiated procedure for the provision of a centrally located venue for the organisation of the IHI Brokerage Event 2024 and related services (i.e. catering) in November 2024. Under the BOA procurement, synergies with other JUs will be created by launching inter-JU joint procurement e.g., data protection register services or ICT services under the back-office arrangements. The joint procurements are planned on an annual basis and monitored by the Steering Committee set up for the governance of BOA procurement.

4.3.3 Other support operations

a. Relevant functions and administrative synergies within back office arrangements[56]

The JUs have a well-established experience of close collaboration in several areas, including HR, IT, procurement, data protection etc. A lot of information and sharing of best practices is taking place on a regular basis among the peers. For example, the Executive Directors, Heads of Administration, HR officers, legal officers etc. meet regularly to discuss and share experiences. As several JUs are also located in the same premises, the collaboration is concrete serving the business needs – for instance in joint business continuity planning, managing the joint office building and sharing common infrastructure and meeting rooms. In 2024 IHI JU will continue to provide office space for GH EDCTP3 JU's use. This will bring important cost-benefits to the Programme Office and is enabled by the new hybrid working mode implemented in accordance with the EC guidelines.

In alignment with the Council Regulation (EU) 2021/2085, a number of areas will be implemented within the back-office arrangements (BOA). In 2024 the implementation under the service level agreements will be for the accounting services, procurement, HR and ICT. The experience from the implementation will be used to explore further collaboration within the BOA in additional areas like anti-fraud measures, legal and corporate services. This will further enhance the already close collaboration of JUs in order to gain additional cost-efficiencies.

b. IT operations

The IHI JU IT team's strategic objective is to deliver value to the organisation and to be a key enabler of new organisational initiatives with the goal of supporting and shaping the present and future of the Programme Office.

IHI JU is part of common governance of IT operations and infrastructure, together with seven other JUs located in the same premises. This provides efficiency, economy of scale and gains in the operation of the organisation. Following the revision of the concept note, the service level agreement for BOA IT will be finalised in 2024. IHI is in co-lead with Clean Hydrogen JU for the BOA IT.

Another very important key success factor is cooperation, shared services and knowledge sharing within ICTAC (Information and Communication Technologies Advisory Committee, part of the European Union Agencies Network) and with EC services.

To achieve the aforementioned goals, the IT team will focus its 2024 activities on the following areas:

Stable, secure and agile IT infrastructure and office automation, more and more focused on the modern (anywhere, anytime) way of working

The Programme Office will continue with the adoption of software-as-a-service (SaaS) solutions from the market and the European Commission.

Microsoft 365 will eventually become the main office automation and core IT infrastructure tool.
The Programme Office will continue with the evaluation of the existing legacy "on-premise" (IaaS) components with the aim to gradually retire most of them. Migrating to cloud services will simplify the management of the IT infrastructure, lower the cost of hosting and maintenance and improve overall user satisfaction.

[56] Article 13 of the Council Regulation (EU) 2021/2085

Close collaboration with CERT-EU and uttermost use of their services like regular cybersecurity exercises, penetration tests, security assessments, raising end-user awareness including phishing campaigns, knowledge transfer etc. will remain a main pillar of IT security in 2024.

Migration of sTesta to the new architecture, proposed by EC DIGIT, will be completed by March 2024. This is a modern and scalable solution, shared with another 12 EUIBAs which will allow cost saving and smooth operation in the cloud.

Business operations information systems

The main business operations (management of the evaluation of proposals and grants) will continue to be based on the EC eGrants tools. The IT team will monitor satisfactory functioning for all end-users, in close liaison with the European Commission services, including Single Point of Contact (SPOC) functions.

SOFIA, the IHI JU grant management IT system, will be maintained as:

- the main tool for the ongoing IMI1 JU projects
- a complementary tool for information missing in eGrants IMI2 and IHI JU specificities - annual reporting of in-kind contributions, overview of project outputs for JU-specific KPIs, IHI specific “project profile” module including addressed WHO priorities, participants’ affiliations and stakeholder types etc.

The Programme Office will also continue the further development of the IHI JU data warehouse and Qlik sense analytical platform with a particular focus on the integration of IHI JU data and data quality. The IT team will support existing tools and the migration to new European Commission tools.

Collaboration, communication and administration management information systems

One of the most important projects with IT co-lead for 2024 will be the new IHInet build on the SharePoint platform, with Document Centre and Collaboration Workspace, which will replace the current Liferay-based Intranet and traditional Windows shared drive.

New Regulation on Information Security

The adoption of the new Regulation on cybersecurity and information security will enforce the establishment of an internal cybersecurity risk management, governance and control framework that ensures an effective and prudent management of the cybersecurity risks.

IHI JU will evaluate the requirements in the final text of the regulation and will work to find the most effective way to create this framework.

c. Record management, data protection and access to documents

Document management at IHI JU is governed by several regulations. On the one hand, several regulations define the necessary registration and retention, while on the other hand the data protection regulation and the information security policy define access restrictions and deposition of documents.

Therefore IHI JU will continue its efforts undertaken in the wake of the entry into effect of the *vademecum* on record management adopted in 2021[57], establishing a new records management policy for IHI JU based on the European Commission decision C(2020)4482[58].

The Record Management Working Group[59] established in IHI JU will continue to take the necessary steps to ensure that all records, data, information, IT systems, transmission (handling) and storage are secure and suitable for both electronic and paper media, are used by IHI JU and fulfil the requirements set in applicable regulations and decisions.

To keep awareness among staff at a high level, IHI JU will continue with procedural guidance and trainings on these matters.

Record management

Record management covers all information, both electronic and physical, necessary to ensure evidence of IHI JU's activities ensuring an appropriate level of accountability, transparency, and retention of IHI JU's legacy. Effective record management helps to meet IHI JU's transparency obligations, in particular by facilitating public access to documents and implementing the principle of accountability of public actions.

[57] By Executive Director Decision 19/2021 Ares(2021)5474488

[58] Commission Decision on records management and archives C(2020)4482.

[59] The composition of the group: Head of Administration and Finance, Document Management Officer (DMO), Data Protection Officer (DPO), IT Manager with the Internal Control and Risk Manager as an observer (non-statutory).

Data protection

For IHI JU, the data protection rules are laid down in Regulation (EU) 2018/1725 on the protection of natural persons regarding the processing of personal data by the Union institutions ('EUDPR')[60].

IHI JU, in compliance with EUDPR, is liaising with the relevant services of the European Data Protection Supervisor and contributing to the activities of the inter-institutional data protection networks and working groups to raise awareness among the staff and stakeholders. Internally, the IHI JU data protection will continue to develop new data protection policies covering horizontal services and encompassing such areas as internal control, procurement, IT, HR, and governance.

Work will continue in maintaining and developing the JU's Record of Processing Activities as mandated by EUDPR, scrutiny and creation of privacy statements in support of the records, and curating the Personal Data Breach Register. The IHI Data Protection Team will also provide further data protection training sessions to cover core topics and keep the IHI staff informed and trained on the data protection legal framework.

Further, the IHI Data Protection Team will continue to advise, where appropriate, on the General Data Protection Regulation ("GDPR") which, in contrast to the EUDPR, applies to the JU's members (other than the Union as well as non-EU organisations and businesses) and governs IHI projects.

Access to information

IHI JU will continue to address requests for access to documents according to Regulation (EC) No 1049/2001, in a spirit of openness and transparency, in order to bring its activities and outputs closer to the public and to retain a high-level of public confidence in IHI JU by giving the opportunity to the public to monitor its work.

d. Accounting

The IHI Accounting Officer appointed in 2022 will continue to provide accounting services under BOA accounting. The performance of the accounting services will be monitored carefully in order to ensure business continuity and sound implementation of accounting tasks.

e. Feedback to policy

European partnerships are a key element of the policy approach of Horizon Europe.

The SRIA of IHI JU has been designed to deliver on Union priorities targeted by Horizon Europe and ensure a clear impact for the Union and its people, which can be achieved more effectively in partnership rather than by the Union alone. More specifically, IHI JU's projects aim to contribute to EU policies, most notably Horizon Europe (of which IHI JU is a part), as well as Europe's Beating Cancer Plan, the new Industrial Strategy for Europe, the Pharmaceutical Strategy for Europe and the European Health Data Space. In addition, IHI JU aims to contribute to the United Nations Sustainable Development Goal (SDG) 3 on ensuring healthy lives and promoting well-being for all at all ages.

Of importance, IHI JU will encourage the exploitation of research and innovation results and actively disseminate and exploit results, in particular for leveraging private investments and for policy development.

60 OJ L 295, 21.11.2018, p. 39–98

4.3.4 Human resources

a. HR management

In 2024, the total number of IHI JU staff will be 54 (of which 39 temporary agents and 15 contract agents). The new IHI JU Executive Director will take up duties on 16 January 2024, and until then, Dr Hugh Laverty, IHI Head of Scientific Operations will keep acting as IHI Executive Director.

The Programme Office will start its third year of activity, which should lead to a decrease in staff turnover in comparison to the previous transition years. Nevertheless, the overall reduction in the number of human resources combined with the necessity to manage (i) a large and complex legacy from IMI1 JU and IMI2 JU projects and (ii) new IHI projects will result in a significant impact on the management of the Programme Office's human resources. This will unavoidably lead to an increased pressure on staff. Therefore, the management team of IHI JU will need to continue exploring measures to minimise potential impacts on well-being of staff and to ensure business continuity.

Selection and recruitment

In 2024, the HR priorities will remain:

I) the successful and timely management of the selection procedures to guarantee that the best talents, with the necessary set of competences and skills are recruited; and

II) the efficient on-boarding of statutory staff, trainees and interims. To this end, the HR team will set up measures to attract the best candidates and will ensure alignment throughout the organisation establishing a strong link between HR processes and business results, connecting the Programme Office's overall strategic goals with staff performance management.

IHI JU will also foster its traineeship programme to provide young university graduates with the opportunity to gain hands-on professional experience in scientific fields related to IHI JU and to develop and strengthen their skills and competences.

The new e-selection tool SYSTAL, fully operational in 2023, will keep contributing to the achievement of the above-mentioned objectives.

Gender balance and equality will remain important elements in IHI JU's selection and recruitment procedures (today the ratio is 31% male and 69% female with an equal distribution in the IHI JU management team).

To guarantee business continuity, some interims might also be recruited to cope with peaks of work and absences during the year. Finally, further development and improvement of recruitment practices and employer branding may be envisaged.

Career development

To ensure that IHI JU existing talents are retained, the HR team will further explore internal mobility opportunities, staff engagement actions, career coaching, and other career development activities (e.g. job shadowing, staff exchanges, learning opportunities, etc.). Particular attention will continue to be given to the performance management cycle (appraisal and reclassification exercises). To optimise the daily management of the HR activities, and to streamline these two exercises, in 2024, the HR team will continue organising tailor-made training courses for managers and staff and launch a new e-appraisal tool to facilitate the procedure and follow up of the different steps and phases.

The HR team will keep overseeing duties and responsibilities assigned to staff in order to achieve the fulfilment of IHI JU's objectives and tasks.

Learning & Development

To help the development and the personal and professional growth of IHI JU staff and to keep staff knowledge up-to-date, the HR team will further develop the learning and development framework, paying particular attention to the training needs of the staff and the Programme Office.

The HR team will also continue advising management on means and actions to enhance operational efficiency and effectiveness. Tailor-made training courses and coaching programmes for managers will be organised to keep them abreast with managerial skills and techniques, and to support them in their day-to-day management of staff and operational activities; particular attention will be given to performance management.

The Programme Office is committed to preserve a physically and psychologically healthy work environment where work is meaningful, and people are surrounded by the right environment to succeed. To this end, the Programme Office will:

(i) keep paying particular attention to the wellbeing of its staff, by developing tailor-made wellbeing activities to increase wellness in the workplace (e.g. wellbeing lunchtime sessions, workshops, etc);

(ii) develop teambuilding activities to strengthen collaboration among staff members, to enhance the team spirit and culture; and

(iii) remain vigilant and reiterate its strong commitment to a zero-tolerance towards psychological and sexual harassment and disrespectful work environment.

Legal matters

IHI JU will continue working closely with the relevant European Commission services and the Standing Working Party (group following the Staff Regulation and its implementing rules) to ensure the adoption of the implementing rules and to strengthen its legal framework, also adopting internal guidelines. The COVID-19 outbreak showed that new ways of working are possible and the revision of some existing rules will be needed to adapt to the “new normal”.

In addition to the above, the human resources team will deal with core functions such as: day-to-day management of administrative workflows and processes, salary, compensation and benefits, performance management, career development, reclassification, learning and development, safety and wellbeing at work; employees’ motivation and communication.

b. Strategy for achieving efficiency gains and synergies

In the context of the common back office arrangements (BOA) foreseen by the Council Regulation (EU) 2021/2085, IHI JU is acting as back-up JU in the field of HR and fully contributing to it.

The objective of the BOA HR is to maximise synergies among the JUs, harmonise procedures by valorising best practices, ensure coherent HR support services, achieve efficiencies and economy of scale, increase the negotiation power of JUs towards contractors and service providers.

The collaboration will also continue with the agency network and the EC HR support services (DG HR and PMO) with participation of the HR function to different working groups.

The JUs that are under the Council Regulation (EU) 2085/2021[61] will contribute to the BOA HR, together with EuroHPC and SESAR 3 that will participate on specific initiatives in line with their internal priorities and according to their own specificities[62].

Scope of the BOA HR

In the abovementioned context, the Executive Directors of the JUs give mandate to the BOA HR to start implementing actions in three main areas of HR support in 2024:

Recruitment

Alignment and harmonisation of the JUs' recruitment processes: aiming at valorising the JUs' best practices by establishing a common selection and recruitment procedure that will then be applied across the board when launching a joint selection procedure. This project will include for example common templates, scoring guides, platforms and tools that will provide a consolidated ground for individual and common recruitments.

Organisation of the JUs' joint selection procedures: in order to increase efficiency gains, JUs will organise joint selection procedures for common profiles with the same grades as far as possible. This practice is already in place, but it will be further strengthened during 2024.

Establishment and sharing of reserve lists: the JUs will keep sharing their reserve lists to shorten the recruitment process and the time-to-recruit but also to capitalise on the work performed by other JUs and to achieve efficiency gains.

HR Legal Framework

The different JUs share a common legal framework in the HR domain so additional synergies can be achieved by enhancing the existing collaboration in this area. The focus in 2024 will be on:

Inter-JU network of Confidential Counsellors (CCs): currently the JUs are sharing the JU network of confidential counsellors and organising joint calls for expression of interest to expand the network, together with training courses, information campaigns and joint actions to ensure the wellbeing of the JUs' staff and to raise awareness on psychological and sexual harassment and to prevent conflicts.
In 2024, this initiative will be extended to a larger number of JUs notably the newly established JUs that will have the possibility to join the inter-JU network of CCs and benefit from it.

Establish a common HR strategy in well-identified areas where the JUs have a strong interest in speaking with one voice towards staff and towards other EU institutions, for example: learning and development, staff motivation and mobility, new ways of working, employee health and wellbeing, work-life balance, recruitment and selections.

JUs will keep sharing common practices via the bi-weekly HR Officers meetings and the well-established JUs will keep supporting the smooth on-boarding of the newly established JUs by providing advice, support and templates to them.

HR Digitalisation

JUs will keep sharing IT tools (e.g. SYSTAL, SYSPER, etc) and focusing on the harmonisation and use of existing IT Tools and SYSPER modules to increase efficiency, sharing common and good practices as well as identifying and coordinating the plan for future deployments.

[61] Circular Biobased Europe, Clean Aviation, Clean Hydrogen, Europe's Rail, EDCTP3 Global Health, Smart Networks and services, Chips JU, Innovative Health Initiative.

[62] SESAR JU despite being part of the Council Regulation (EU) 2085/2021, is exempted by the provisions related to the Back-office arrangements.

c. Staff Establishment Plan

Function group and grade	2022				2023		2024	
	Authorised budget		Actually filled as of 31/12		Authorised budget		Authorised budget	
	Permanent posts	Temporary posts	Permanent posts	Temporary posts	Permanent posts	Temporary posts	Permanent posts	Temporary posts
AD 16								
AD 15								
AD 14		1		0		1		1
AD 13								
AD 12		2		1		2		2
AD 11		2		2		2		2
AD 10		1		2		1		1
AD 9		7		4		7		6
AD 8		6		3		6		6
AD 7		3		3		4		4
AD 6		10		6		9		10
AD 5		2		11		3		3
TOTAL AD		**34**		**32**		**35**		**35**
AST 11								
AST10								
AST 9								
AST 8		1		1		1		1
AST 7								
AST 6								
AST 5								
AST 4		4		2		3		3
AST 3				1				
AST 2								
AST 1								

Function group and grade	2022				2023		2024	
	Authorised budget		Actually filled as of 31/12		Authorised budget		Authorised budget	
	Permanent posts	Temporary posts	Permanent posts	Temporary posts	Permanent posts	Temporary posts	Permanent posts	Temporary posts
TOTAL AST		**5**		**4**		**4**		**4**
AST/SC 6								
AST/SC 5								
AST/SC 4								
AST/SC 3								
AST/SC 2								
AST/SC 1								
TOTAL AST/SC								
TOTAL AD+AST+ AST/SC								
GRAND TOTAL	**39**		**36**		**39**		**39**	

Contract Agents	FTE corresponding to the authorised budget 2022	Executed FTE as of 31/12/2022	Headcount as of 31/12/2022	FTE corresponding to the authorised budget 2023	FTE corresponding to the authorised budget 2024
Function Group IV	4	3	3	4	5
Function Group III	11	10	10	11	10
Function Group II					
Function Group I					
TOTAL	**15**	**13**	**13**	**15**	**15**

Seconded National Experts	FTE corresponding to the authorised budget 2022	Executed FTE as of 31/12/2021	Headcount as of 31/12/2021	FTE corresponding to the authorised budget 2023	FTE corresponding to the authorised budget 2024
TOTAL	1	0	0	0	0

Recruitment forecasts 2024 following retirement/mobility or new requested posts					
Job title in the JU	**Type of contract (Official, CA, TA)**		**TA/Official**		**CA**
			Function group/grade of recruitment internal (Brackets) and external (single grade) foreseen for publication		**Recruitment Function Group (I, II, III and IV)**
	Due to foreseen retirement/ mobility	**New post requested due to additional tasks**	**Internal (brackets)**	**External (brackets)**	
	0	0			

4.4 Governance activities in 2024

Planned activities

- Support the Governing Board (GB), the Science and Innovation Panel (SIP), the States' Representatives Group (SRG) and provide all the necessary information for the performance of their respective tasks.
- Align planning activities (strategy, annual Work Programme and related budget) and the associated monitoring and reporting activities.
- Improve responsibilities and accountability.
- Enhance communication and transparency.

4.4.1 Governing Board

The GB gathers representatives of IHI JU members. It is the main decision-making body, and as such it has the responsibility of ensuring that IHI JU achieves its objectives and oversees the operations of IHI JU and the implementation of its activities.

Three meetings are planned for 2024. The chairperson may be invited to attend the SRG meetings as an observer.

4.4.2 States' Representatives Group

The SRG acts as an advisory body. It must be consulted and, in particular, it must review information and provide opinions on the following matters: Work Programme (and subsequent amendment(s)), the progress of IHI JU and achievement of its targets.

The SRG will report to the GB on a range of matters, and in particular by means of an annual report describing the status of relevant national or regional research and innovation programmes and initiatives, and identifying potential areas of cooperation.

Two meetings of the SRG are planned for 2024. The chairperson and the vice-chairperson will participate in the GB meetings as observers and in the SIP meetings as permanent panellists.

In Q1 2024, elections for the new SRG chairperson and SRG vice- chairperson will take place.

4.4.3 Science and Innovation Panel

The SIP is the scientific advisory body. It provides the GB with science-based advice on a range of matters, notably by means of reports to the GB, in particular on the annual scientific priorities, the draft call topics, the planning of additional activities and synergies with other Horizon Europe activities, including other European partnerships as well as other EU and national programmes. The permanent panellists include representatives of the European Commission, industry partners and the SRG as well as representatives from the scientific community and the wider healthcare community appointed by the GB for a period of three (3) years following an open selection process (the call for expressions of interest was launched in January 2022).

Two meetings are planned for 2024. The chairperson may be invited to participate in the GB meetings as an observer whenever issues falling within the scope of the SIP tasks are discussed.

4.5 Strategy and plans for the organisational management and the internal control system in 2024

4.5.1 Internal Control Framework

The priority objective of 2024 will be to maintain an effective internal control system so that reasonable assurance can be drawn that:

1) resources assigned to the activities are used according to the principles of sound financial management

2) risk of errors in operations is minimised; and

3) the control procedures put in place give the necessary assurance concerning the legality and regularity of the underlying transactions.

This is achieved by IHI JU via a combination of systems, procedures, and supervision, notably including ex--ante and ex-post controls of transactions and the monitoring of financial performance. The implementation of recommendations from audits by the European Court of Auditors and the Commission's Internal Audit Service also play a key role in this area.

Due consideration will be given to:

- optimising and updating internal procedures and processes in order to ensure efficiency, effectiveness and better synergies;
- a risk management process is integrated in the annual planning cycle by performing a risk assessment exercise and following up with risk mitigation action plans;
- incorporating to a broad extent the horizontal guidelines and controls to ensure compliance, a harmonised approach across the implementation of the programme, fair and equal treatment towards beneficiaries, and to gather reasonable assurance.

4.5.2 Ex-ante and ex-post controls

Ex-ante controls

Ex-ante controls are rigorously implemented by IHI JU for each transaction (commitments and payments). Standard ex-ante control measures are in place for FP7, Horizon 2020 and for Horizon Europe programmes. They are tailored to the different forms of costs and combine trust-based baseline checks and risk-based targeted controls. Together, ex-ante and ex-post controls (see the following section) provide the Authorising Officers with the necessary elements of assurance on the research and innovation budget under their responsibility. To that purpose, IHI JU will start implementing the control strategy for the Horizon Europe programme (including ex-ante and ex-post controls and anti-fraud) in 2024.

Specific attention will be paid to:

- raising beneficiaries' awareness of the financial and administrative aspects of the H2020 and Horizon Europe rules and how to avoid errors in cost reporting;
- validation of financial and technical reports;
- ex-ante controls for interim and final payments;
- following up recovery orders where needed.

Ex-post controls

For IMI1 JU projects running under the Seventh Framework Programme

The Programme Office will carry on with the implementation of its ex-post audit strategy as a means to ensure the legality and regularity of operational expenditure through risk-based audit if deemed necessary according to the Programme Office risk-based audit strategy. The ex-post audit strategy complements ex-ante controls embedded in IHI JU's management processes and includes the rejection of any costs found to be in breach of the requirements of IMI JU Grant Agreement. Rejection of systematic errors identified in ex--post audits will continue to be extended to unaudited financial statements ('Form C') of the audited participants.

Ex-post audits of accepted declarations of in-kind contributions by EFPIA companies will not be carried out in 2024 as the work plan on ex-post audits of EFPIA companies under IMI JU has reached its end in 2021 and the majority of EFPIA companies' in-kind contributions have been covered by ex-post audits. Controls of in-kind contributions by EFPIA companies will also be based on the review of audit certificates provided by independent auditors for the final reporting period. Risk-based ex-post audits of accepted declarations of in--kind contributions may nevertheless be initiated should a specific need arise.

For IMI2 JU projects running under the H2020 Framework Programme

Ex-post controls of grants are aligned with the harmonised strategy adopted for the entire H2020 Programme. The Commission Common Audit Service (CAS) will carry out the H2020 ex-post audits in accordance with the common H2020 audit strategy. The Programme Office contributes to the implementation of the H2020 audit strategy in close cooperation with the CAS and ensures that its ex-post audit strategy is complied with, including its audit coverage ratio. If necessary, risk-based ex-post audits will be launched according to the Programme Office risk-based audit strategy. The harmonised legal framework will enable the Programme Office to draw an additional element of assurance from the extension of systematic errors identified in ex-post audits to unaudited financial statements of common audited beneficiaries across H2020.

In line with Article 4.4 of the applicable Regulation (Council Regulation (EU) No 557/2014), controls of in-kind contributions by EFPIA companies will be based on the review of audit certificates provided annually by independent auditors and their validation by the Authorising Officer. In case of remaining uncertainties, ex-post audits of accepted declarations of in-kind contributions may be performed.

For IHI JU projects running under the Horizon Europe Framework Programme

Article 31 "Ex-post audits" of the Council Regulation (EU) 2021/2085 stipulates that audits of expenditure on indirect actions shall be carried out in accordance with Article 53 "Audits" of the Horizon Europe Regulation (Regulation (EU) 2021/695 of the European Parliament and of the Council), in particular in line with the audit strategy referred to in Article 53(2) of that Regulation (EU) 2021/695. The Programme Office will contribute to the implementation of the Horizon Europe Control strategy as adopted by the HE Executive Committee on 12 September 2023[63] in close cooperation with CAS. The Programme Office together with the other JUs aim to adopt a common implementation approach of the HE Control strategy by the end of 2023 ensuring a common implementation as of 2024. The harmonised legal framework will enable the Programme Office to draw an additional element of assurance from the extension of systematic errors identified in ex-post audits to unaudited financial statements of common audited beneficiaries across Horizon Europe.

[63] Ref. Ares(2023)4508864

In line with Article 11.2 of the Council Regulation (EU) 2021/2085, controls of in-kind contributions to additional activities by members other than the Union will be based on the review of audit certificates provided annually by independent auditors and their validation by the Authorising Officer.

4.5.3 Audits

Internal and external audits

IHI JU audit arrangements are set up in accordance with Article 28 and 54 of the IHI JU Financial Rules. The audits provide reasonable assurance about the state of effectiveness of risk management, control and governance processes and serve as a building block for the Executive Director's (Authorising Officer's) annual Declaration of Assurance.

In 2024 the European Commission Internal Audit Service (IAS) in the function of IHI JU's internal auditor will continue implementing the Strategic Internal Audit Plan (2023-2025)[64] as well as the 2024 Audit plan[65] and finalise the audit engagement on the topic of IHI JU *Governance and relations with stakeholders*.

In 2024, the Programme Office focus on:

- coordinating and supporting IAS's audit work and ensuring an adequate level of assurance from internal audit.

External audits are carried out by the ECA. The ECA will audit and issue opinions on the legality and regularity of the underlying transactions, revenue, and reliability of accounts. In accordance with the IHI JU Financial Rules, IHI JU's 2023/2024 annual accounts will be audited by a selected external audit company that IHI JU contracts. The ECA will draw up its annual audit opinion on the basis of their work and issue a special annual report on JUs. In view of the overall corporate objective of receiving an unqualified ('clean') ECA audit opinion and positive statement of assurance, the key activities will focus on:

- liaising and supporting ECA auditors throughout the full audit cycle of financial years 2023 and 2024 and following up on preliminary findings and recommendations.

4.5.4 Anti-fraud

The objective of 2024 will be to carry on the implementation of the IHI JU Anti-Fraud Strategy and the action plan.

IHI JU contributes to the revision and implements the Common Anti-Fraud Strategy in the Research and Innovation Family and the common action plan.

IHI JU will continue to actively participate in the FAIR committee and other anti-fraud activities related forums and trainings. IHI JU will pursue close collaboration with the services of the European Anti-Fraud Office (OLAF) and establish cooperation with EPPO.

[64] Ares(2023)638585 of 27/01/2023

[65] Ares(2024)1821382 of 08/03/2024

5 Amended Budget 2024[66]

The budget for the financial year 2024 is revised based on the information available. The following elements are incorporated into the amended 2024 budget:

- Carry overs from previous years:

From 2022, there is a carry over of unused commitment appropriations totaling EUR 72,353,086. This amount breaks down as follows:

- EUR 71,211,094: De-committed funds from Calls 1, 2 and 3 launched in 2022 and evaluation experts, available for new Calls.
- EUR 700,000: Carry overs stemming from recoveries from beneficiaries (2022 and 2023), available for reimbursement to four EFPIA companies associated with the IMI2 DRIVE project.
- EUR 441,992: Carry overs stemming from recoveries from beneficiaries (2022 and 2023), available for adjustments identified during ex-post audits, and potential late payments interest related to FP7 and H2020 projects.

The total budget of Call 8 is EUR 47,550,000, funded with fresh credits of 2024 budget.

- Implementing distinct budget lines (3200 and 3208) to identify appropriations ineligible for UK-based entities.

The total payment appropriations remain unchanged, of EUR 197,951,000.

The administrative budget remains unchanged, EUR 9,680,000, in commitment and payment appropriations.
The amount is split evenly (50%-50%) between European Commission (EC) and industry partners.
The EC will contribute EUR 4,840,000, while industry partners will contribute the remaining EUR 4,840,000.
The breakdown of the industry contribution is as follows:

- IMI2 EUR 3,146,000 (contributed by EFPIA).
- Horizon Europe EUR 1,694,000 (contributed by EFPIA, EuropaBio, COCIR and MedTech).

Table 1. Distribution of industry contributions per founding source

Industry contribution to the total administrative budget for 2024 (EUR)	**4,840,000**	**%**
IHI JU	1,694,000	35%
IMI2	3,146,000	65%

[66] Subject to approval of the European Union Budget (DB) for 2024 by the Budgetary Authority (comprised of the Council of the European Union and the European Parliament) as proposed by the European Commission.

Table 2. IHI JU Statement of revenue

IHI JU - STATEMENT OF REVENUE (EUR)								
	Heading Revenue	**Budget 2024.1**		**Budget 2024 amendment 1**		**Amended budget 2024.1**		***Comments***
Chapter/Line		**Commitment Appropriation (CA)**	**Payment Appropriation (PA)**	**Commitment Appropriation (CA)**	**Payment Appropriation (PA)**	**Commitment Appropriation (CA)**	**Payment Appropriation (PA)**	
10	**European Commission contribution**							
1000	European Commission contribution (including EFTA contribution) for current year for IMI2	3,146,000	86,646,000			3,146,000	86,646,000	Commitment appropriations include EUR 3,146,000 for administrative costs. Payment appropriations include EUR 3,146,000 for administrative costs and EUR 83,500,000 for operational costs.
1002	European Commission contribution (including EFTA contribution) for current year for IHI	181,694,000	84,194,000			181,694,000	84,194,000	Commitment appropriations include EUR 1,694,000 for administrative costs and EUR 180,000,000 for operational costs. Payment appropriations include EUR 1,694,000 for administrative costs and EUR 82,500,000 for operational costs.
1001	European Commission - appropriations carried over from previous years		22,271,000	72,353,086		72,353,086	22,271,000	Commitment and payment appropriations include carry overs from financial year 2022.
10	**European Commission contribution - total**	**184,840,000**	**193,111,000**	**72,353,086**	**-**	**257,193,086**	**193,111,000**	
20	**JU members other than the Union contribution**							
2000	EFPIA contribution for current year for IMI2	3,146,000	3,146,000			3,146,000	3,146,000	EFPIA contribution to IHI administrative costs
2002	EFPIA contribution for current year for IHI	832,000	832,000			832,000	832,000	EFPIA contribution to IHI administrative costs
2001	EFPIA - appropriations carried over from previous years							
	EFPIA contribution - total	**3,978,000**	**3,978,000**	**-**	**-**	**3,978,000**	**3,978,000**	
2010	EuropaBio contribution for current year	15,000	15,000			15,000	15,000	EuropaBio contribution to IHI administrative costs
2011	EuropaBio - appropriations carried over from previous years							
	EuropaBio contribution - total	**15,000**	**15,000**	**-**	**-**	**15,000**	**15,000**	
2020	COCIR contribution for current year	423,500	423,500			423,500	423,500	COCIR contribution to IHI administrative costs

2021	COCIR - appropriations carried over from previous years							
	COCIR contribution - total	**423,500**	**423,500**	**-**	**-**	**423,500**	**423,500**	
2030	MedTech Europe contribution for current year	423,500	423,500			423,500	423,500	MedTech contribution to IHI administrative costs
2031	MedTech Europe - appropriations carried over from previous years							
	MedTech Europe contribution - total	**423,500**	**423,500**	**-**	**-**	**423,500**	**423,500**	
20	**JU members other than the Union contribution - total**	**4,840,000**	**4,840,000**	**-**	**-**	**4,840,000**	**4,840,000**	
Total revenue		**189,680,000**	**197,951,000**	**72,353,086**	**-**	**262,033,086**	**197,951,000**	

Table 3. IHI JU Statement of expenditure per chapters

IHI JU STATEMENT OF EXPENDITURE (EUR)								
		Budget 2024		**Budget 2024 amendment 1**		**Amended budget 2024.1**		
Title Chapter	**Heading**	**Commitment Appropriations (CA)**	**Payment Appropriations (PA)**	**Commitment Appropriation (CA)**	**Payment Appropriation (PA)**	**Commitment Appropriation (CA)**	**Payment Appropriation (PA)**	**Comments**
1	**Staff expenditure**							
11	Staff in active employment	6,128,000	6,128,000			6,128,000	6,128,000	Salaries and allowances of current staff (TAs and CAs), SNE, promotion and indexation
12	Expenditure relating to staff recruitment	5,000	5,000			5,000	5,000	Miscellaneous expenditure on staff recruitment: publication of vacancy calls, medical visits to take up duties, services provided by the European Personnel Selection Office (EPSO)
13	Missions and duty travels	144,000	144,000			144,000	144,000	Missions' expenditure
14	Socio-medical infrastructure	262,000	262,000			262,000	262,000	Other staff costs: EU school, medical check-up, trainings
15	External Services	125,000	125,000			125,000	125,000	Interim staff expenses
17	Receptions, events and representation	10,000	10,000			10,000	10,000	Representation expenses
Total Title 1 (Staff expenditure)		**6,674,000**	**6,674,000**	**-**	**-**	**6,674,000**	**6,674,000**	

Title Chapter	**Heading**	**Commitment Appropriations (CA)**	**Payment Appropriations (PA)**	**Commitment Appropriations (CA)**	**Payment Appropriations (PA)**	**Commitment Appropriations (CA)**	**Payment Appropriations (PA)**	**Comments**
2	**Infrastructure expenditure**							
20	Rental of buildings and associated costs	690,000	690,000			690,000	690,000	Building related expenditure: rent, works, charges, maintenance, repairs, security and surveillance
21	Information, communication technology and data processing	1,090,000	1,090,000			1,090,000	1,090,000	IT purchases, software licences, software development
22	Office equipment (movable property and associated costs)	5,000	5,000			5,000	5,000	Purchases and rental of office equipment, maintenance and repair
23	Current administrative expenditure	124,000	124,000			124,000	124,000	Office supply, newspaper subscriptions, translation services, bank charges and miscellaneous office expenditure
24	Telecommunication and postal expenses	47,000	47,000			47,000	47,000	Data communication such as telephone, video and audio conferences and postal services
25	Expenditure on formal meetings	100,000	100,000			100,000	100,000	Official meetings such as States Representative Group, Science and Innovation Panel, Governing Board and working groups created by the Governing Board
26	Administrative expenditure in connection with operational activities	310,000	310,000			310,000	310,000	Expenditure in connection with research activities and objectives of IHI (workshops, meetings and events targeting IHI projects)
27	External communication, information and publicity	300,000	300,000			300,000	300,000	External communication and events such as Info Days, stakeholder forums
28	Service contracts	340,000	340,000			340,000	340,000	Ex-post audits, studies, audits, accounting services
Total Title 2 (Infrastructure expenditure)		**3,006,000**	**3,006,000**	**-**	**-**	**3,006,000**	**3,006,000**	
TOTAL ADMINISTRATIVE EXPENDITURE (Title 1+ Title 2)		**9,680,000**	**9,680,000**	**-**	**-**	**9,680,000**	**9,680,000**	

		Budget 2024		Budget 2024 amendment 1		Amended budget 2024.1		
Title Chapter	**Heading**	**Commitment Appropriations (CA)**	**Payment Appropriations (PA)**	**Commitment Appropriations (CA)**	**Payment Appropriations (PA)**	**Commitment Appropriations (CA)**	**Payment Appropriations (PA)**	**Comments**
3	**Operational expenditure**							
30	Implementing the research agenda of IMI1 and IMI2 JU		83,500,000	1,141,992		1,141,992	83,500,000	Payment appropriations - payments FP7, H2020.
31	Implementing the research agenda of IHI JU,	179,500,000	82,000,000			179,500,000	82,000,000	Commitment appropriations - Calls Horizon Europe. Payment appropriations - payments Horizon Europe.
39	Evaluation experts	500,000	500,000			500,000	500,000	Costs linked to evaluations, experts' contracts.
32 C2	Implementing the research agenda of IHI JU, UK-based entities non eligible		22,271,000	71,211,094		71,211,094	22,271,000	Appropriations carried over from 2022
Total Title 3 (Operational expenditure)		**180,000,000**	**188,271,000**	**72,353,086**	**-**	**252,353,086**	**188,271,000**	
TOTAL EXPENDITURE		**189,680,000**	**197,951,000**	**72,353,086**	**-**	**262,033,086**	**197,951,000**	

2024 Operational budget update

The operational budget for the financial year 2024 is based on the currently available information.

With 2024 budget amendment 1, the unused operational commitment appropriations from 2022 and 2023 of EUR 72,353,086 are carried over to operational commitment appropriations in 2024.

New budget lines (3200 and 3208) will be created to account for appropriations that cannot be used to support UK-based entities being part of the selected proposals.

The total budget for IHI JU Call 8, of EUR 47,550,000, has been allocated on the specific budget line 3108 (fresh credits 2024) [67].

67 The total budget of Call 8 will remain unchanged, but the allocation per fund sources (fresh credits C1, carry overs C2) will be adapted. The adaptation aims to reflect the requirements resulting from the EU-UK association agreement (for which carry overs cannot be used to support UK-based entities being part of selected proposals) and to maximize the use of carry overs fund sources C2, which need to be used first. The final allocation per fund sources will be set after stage 1 evaluation of Call 8, expected by the end of 2024.

Table 4. IHI JU Overview of the operational budget

		Budget 2024		Budget 2024 amendment 1		Amended budget 2024.1		
Title Chapter	**Heading**	**Commitment Appropriations (CA)**	**Payment Appropriations (PA)**	**Commitment Appropriations (CA)**	**Payment Appropriations (PA)**	**Commitment Appropriations (CA)**	**Payment Appropriations (PA)**	**Comments**
3	**Operational expenditure**							
30	Implementing the research agenda of IMI1 and IMI2 JU		83,500,000	1,141,992		1,141,992	83,500,000	Payment appropriations - payments FP7, H2020.
31	Implementing the research agenda of IHI JU	179,500,000	82,000,000			179,500,000	82,000,000	Commitment appropriations - Calls Horizon Europe. Payment appropriations - payments Horizon Europe.
39	Evaluation experts	500,000	500,000			500,000	500,000	Costs linked to evaluations, experts contracts.
32 C2	Implementing the research agenda of IHI JU, UK-based entities non eligible		22,271,000	71,211,094		71,211,094	22,271,000	Appropriations carried over from 2022
Total Title 3 (Operational expenditure)		**180,000,000**	**188,271,000**	**72,353,086**	**-**	**252,353,086**	**188,271,000**	

Table 5. IHI JU breakdown of the appropriations carried over

Description	**Commitment Appropriation (CA)**	**Payment Appropriation (PA)**
Unused Horizon Europe commitment appropriations from 2022 to be carried over for new calls under Horizon Europe	71,211,094	
Unused FP7 commitment appropriations (C2 from and C4) to be carried over to 2024 commitment appropriations FP7 for regularization, ex-post audit implementation and potential late payments interest	141,992	
Unused H2020 commitment appropriations (C2 and C4) to be carried over to 2024 commitment appropriations H2020 for reimbursement to EFPIA companies and regularization, ex-post audit implementation and potential late payments interest	1,000,000	
Total	**72,353,086**	

2024 Administrative budget update

The administrative budget for the financial year 2024 is based on the currently available information. Regarding the administrative budget, the total amount for 2024 remains unchanged, at the level of EUR 9,680,000 in commitment appropriations. For commitment appropriations, a comparison table of the financial years 2023 and 2024 budget is set out below.

Table 6. IHI JU administrative budget 2023/2024

Title Chapter	Heading	Commitment Appropriations (CA)	Commitment Appropriations (CA)	%Var +/-
1	**Staff expenditure**	**2023**	**2024**	**2024 vs 2023**
11	Staff in active employment	5,922,000	6,128,000	3%
12	Expenditure relating to staff recruitment	5,000	5,000	0%
13	Missions and duty travels	144,000	144,000	0%
14	Socio-medical infrastructure	232,000	262,000	13%
15	External Services	175,000	125,000	-29%
17	Receptions, events and representation	10,000	10,000	0%
Total Title 1 (Staff expenditure)		**6,488,000**	**6,674,000**	**3%**

Title Chapter	Heading	Commitment Appropriations (CA)	Commitment Appropriations (CA)	%Var +/-
2	**Infrastructure expenditure**	**2023**	**2024**	**2024 vs 2023**
20	Rental of buildings and associated costs	698,000	690,000	-1%
21	Information, communication technology and data processing	1,090,000	1,090,000	0%
22	Office equipment (movable property and associated costs)	5,000	5,000	0%
23	Current administrative expenditure	124,000	124,000	0%
24	Telecommunication and postal expenses	40,000	47,000	18%
25	Expenditure on formal meetings	80,000	100,000	25%
26	Administrative expenditure in connection with operational activities	250,000	310,000	24%
27	External communication, information and publicity	300,000	300,000	0%
28	Service contracts	425,000	340,000	-20%
Total Title 2 (Infrastructure expenditure)		**3,012,000**	**3,006,000**	**0%**
TOTAL ADMINISTRATIVE EXPENDITURE (Title 1+ Title 2)		**9,500,000**	**9,680,000**	**2%**

Overview of the 2024 budget per budget line

Table 7. IHI JU 2024 budget per budget lines

Budget line Chapter	Description	Commitment Appropriations (CA)	Payment Appropriations (PA)
1	**Staff expenditure**	**EUR**	**EUR**
1100	Staff in active employment and costs linked to employees	3,745,000	3,745,000
1101	Family Allowances	350,000	350,000
1102	Transfer and expatriation allowances	500,000	500,000
1110	Contract Agents	970,000	970,000
1111	Seconded National Experts	-	-
1130	Insurance against sickness	127,000	127,000
1131	Insurance against accidents and occupational diseases	17,000	17,000
1132	Unemployment insurance for temporary staff	50,000	50,000
1133	Pension	32,000	32,000
1140	Birth and death allowances	1,000	1,000
1141	Annual travel costs from the place of employment to the place of origins	65,000	65,000
1144	Fixed local travel allowances		-
1149	Other allowances		-
1172	Cost of organising traineeships within IMI2 JU	10,000	10,000
1175	Translation and typing services		-
1177	Other services rendered	120,000	120,000
1178	Paymaster Office (PMO) fees	75,000	75,000
1180	Sundry recruitment expenses	5,000	5,000
1181	Travelling expenses (including taking up duty)	1,000	1,000
1182	Installation allowance	30,000	30,000
1183	Moving expenses	10,000	10,000
1184	Temporary daily allowance	15,000	15,000
1190	Weightings (correction coefficient)	5,000	5,000
1191	Salaries adaptation		-
11	**Staff in active employment**	**6,128,000**	**6,128,000**
1200	Miscellaneous expenditure on staff recruitment	5,000	5,000
12	**Staff recruitments - miscellaneous expenditure**	**5,000**	**5,000**

Budget line Chapter	Description	Commitment Appropriations (CA)	Payment Appropriations (PA)
1300	Mission expenses	144,000	144,000
13	**Missions and duty travels**	**144,000**	**144,000**
1401	EU school costs	150,000	150,000
1410	Other trainings	50,000	50,000
1420	Supplementary aid for the disabled	1,000	1,000
1430	Medical service	19,000	19,000
1440	Trainings covered by the EC service level agreement	30,000	30,000
1490	Other interventions	12,000	12,000
14	**Socio-medical structure**	**262,000**	**262,000**
1500	External staff expenditure	125,000	125,000
15	**External staff services**	**125,000**	**125,000**
1700	Representation expenses	10,000	10,000
17	**Representation**	**10,000**	**10,000**
Total Title 1 (Staff expenditure)		**6,674,000**	**6,674,000**

Budget line Chapter	Description	Commitment Appropriations (CA)	Payment Appropriations (PA)
2	**Infrastructure expenditure**	**EUR**	**EUR**
2000	Rentals office building	480,000	480,000
2001	Guarantees		
2002	Contributions		
2010	Insurance		
2020	Charges (water, gas, electricity, works)	180,000	180,000
2030	Cleaning and maintenance		
2040	Furnishing of premises	10,000	10,000
2050	Security and surveillance	20,000	20,000
2090	Other expenditure on buildings		
20	**Office building and associated costs**	**690,000**	**690,000**
2101	Hardware, infrastructure and related services	325,000	325,000
2102	Software development, licenses and related services	765,000	765,000
2103	Other expenses maintenance and repair		
21	**Information technology purchases**	**1,090,000**	**1,090,000**
2200	Purchase office equipment	0	0

Budget line Chapter	Description	Commitment Appropriations (CA)	Payment Appropriations (PA)
2201	Rentals office equipment	0	0
2202	Maintenance utilisation and repair	5,000	5,000
2203	Other office equipment		
22	**Office equipment (movable property and associated costs)**	**5,000**	**5,000**
2300	Stationery and office supply	50,000	50,000
2320	Bank charges	0	
2321	Exchange rate losses	0	
2329	Other financial charges	0	
2330	Legal expenses	15,000	15,000
2350	Other operating expenditure	3,000	3,000
2351	Petty expenses	0	
2360	Library stocks purchase of books and subscriptions	51,000	51,000
2370	Translation, interpretation	5,000	5,000
23	**Current administrative expenditure**	**124,000**	**124,000**
2400	Correspondence and communication expenses	47,000	47,000
24	**Telecommunication and postal expenses**	**47,000**	**47,000**
2500	Formal meetings	100,000	100,000
25	**Expenditure on formal meetings**	**100,000**	**100,000**
2600	Administrative costs in connection with operational activities	30,000	30,000
2601	Events targeting IMI projects	0	0
2602	Workshops	280,000	280,000
2603	Knowledge management	0	0
26	**Administrative costs in connection with operational activities**	**310,000**	**310,000**
2700	External communication	60,000	60,000
2701	Events external communication	200,000	200,000
2702	Material	40,000	40,000
27	**External communication, information and publicity**	**300,000**	**300,000**
2800	Ex-post audits	75,000	75,000
2801	Studies, consultancy	120,000	120,000
2802	Audit services	55,000	55,000
2803	Accounting services	90,000	90,000
28	**Service contracts**	**340,000**	**340,000**
2900	Evaluation Experts meetings	0	0
2901	Evaluation Facilities		
2902	Evaluations Exploring New Scientific Opportunities (ENSO)		
29	**Expert contracts and cost of evaluations**	**-**	**-**
Total Title 2 (Infrastructure expenditure)		**3,006,000**	**3,006,000**

Budget line Chapter	Description	Commitment Appropriations (CA)	Payment Appropriations (PA)
3	Operational expenditure	EUR	EUR
3000	Implementing the research agenda of IMI1 JU		
3001	IMI1 JU Call 1		
3002	IMI1 JU Call 2		
3003	IMI1 JU Call 3		
3004	IMI1 JU Call 4		
3005	IMI1 JU Call 5		
3006	IMI1 JU Call 6		
3007	IMI1 JU Call 7		
3008	IMI1 JU Call 8		
3009	IMI1 JU Call 9		
3010	IMI1 JU Call 10		
3011	IMI1 JU Call 11		
3012	Exploring New Scientific Opportunities (ENSO) 2012		
3013	Exploring New Scientific Opportunities (ENSO) 2013		
3020	Implementing the research agenda of IMI2 JU		83,500,000
3021	IMI2 JU Call 1		
3022	IMI2 JU Call 2		
3023	IMI2 JU Call 3		
3024	IMI2 JU Call 4		
3025	IMI2 JU Call 5		
3026	IMI2 JU Call 6		
3027	IMI2 JU Call 7		
3028	IMI2 JU Call 8		
3029	IMI2 JU Call 9		
3030	IMI2 JU Call 10		
3031	IMI2 JU Call 11		
3032	IMI2 JU Call 12		
3033	IMI2 JU Call 13		
3034	IMI2 JU Call 14		
3035	IMI2 JU Call 15		
3036	IMI2 JU Call 16		
3037	IMI2 JU Call 17		
3038	IMI2 JU Call 18		
3039	IMI2 JU Call 19		
3040	IMI2 JU Call 20		
3041	IMI2 JU Call 21		
3042	IMI2 JU Call 22		
3043	IMI2 JU Call 23		
3100	Implementing the research agenda of IHI JU	12,350,000	82,000,000
3101	IHI JU Call 1		
3102	IHI JU Call 2		

3103	IHI JU Call 3		
3104	IHI JU Call 4		
3105	IHI JU Call 5		
3106	IHI JU Call 6	24,600,000	
3107	IHI JU Call 7	95,000,000	
3108	IHI JU Call 8	47,550,000	
3900	Evaluations experts	500,000	500,000
3999	Recovery Ex-post audit		
30 - 31 C1	**Implementing the research agenda of IHI JU**	**180,000,000**	**166,000,000**
Total Title 3 (Operational expenditure) - C1		**180,000,000**	**166,000,000**
Budget line Chapter	**Description**	**Commitment Appropriations (CA)**	**Payment Appropriations (PA)**
3000 - C2	Implementing the research agenda of IMI1 JU appropriations carried over from previous years	141,992	
3020 - C2	Implementing the research agenda of IMI2 JU appropriations carried over from previous years	300,000	21,808,565
3029 - C2	IMI2 JU Call 9- appropriations carried over from previous years	700,000	
3100 - C2	Horizon Europe appropriations carried over, UK-based entities eligible		
30 - 31 C2	**Implementing the research agenda of IHI JU, UK-based entities eligible**	**1,141,992**	**21,808,565**
3200 - C2	Horizon Europe appropriations carry overs, UK-based entities non eligible	71,211,094	462,435
3208 - C2	IHI JU Call 8	[68]	
32 C2	**Implementing the research agenda of IHI JU, UK-based entities non eligible**	**71,211,094**	**462,435**
Total Title 3 (Operational expenditure) - C2		**72,353,086**	**22,271,000**
Total Title 3 (Operational expenditure) C1 +C2		**252,353,086**	**188,271,000**
Total expenditure		**262,033,086**	**197,951,000**

68 The total budget of Call 8 will remain unchanged, but the allocation per fund sources (fresh credits C1, carry overs C2) will be adapted. The adaptation aims to reflect the requirements resulting from the EU-UK association agreement (for which carry overs cannot be used to support UK-based entities being part of selected proposals) and to maximize the use of carry overs fund sources C2, which need to be used first. The final allocation per fund sources will be set after stage 1 evaluation of Call 8, expected by the end of 2024.

6 Annexes

6.1 IKAA Plan for 2024

The IKAA Plan contains additional activities expected to be carried out by IHI JU private members, their constituent or affiliated entities. It is composed of two types of additional activities:

- Project-specific additional activities that contribute towards the achievement of objectives of the IHI JU funded projects, or the dissemination, sustainability, or exploitation of IHI JU project results.

- Programme-specific additional activities that contribute to the uptake of results from funded projects (by IHI JU or its preceding initiatives, i.e. IMI1 JU or IMI2 JU) or have a significant added value for the Union.

The IKAA Plan, including additional activities expected to be carried out in 2024, is composed of the following elements:

Project-specific additional activities related to grants signed of call 1 amount to EUR 15,023,559 (the amount of EUR 15,023,959 was approved by the GB[69] and it is now reduced to EUR 15,023,559 following a minor correction by a private member).

Project-specific additional activities related to grants signed of call 2 and 3 amount respectively to EUR 1,083,250 for call 2 and to EUR 5,589,966 for call 3 and are reflected in the IKAA Plan available on the IHI JU website here.

Project-specific additional activities related to projects selected under the IHI JU call 5 amount to EUR 8,824,100 [70]. The concerned additional activities will be formally included in the IKAA Plan after the respective grant agreements are signed, subject to a separate GB decision before publication on the IHI JU website.

Potential project-specific additional activities for 2024 related to projects that will be selected under calls 4 (launched in 2023) as well as under calls 6 and 7 (launched in 2024) may be planned from (full) proposals submission stage[71]. However, the exact nature of these additional activities and their amounts planned may be known only when the GB approves the list of projects selected for funding.

There will be no project-specific additional activities for 2024 related to projects to be selected under the IHI JU call 8 as the full proposals submission stage is expected in 2025.

Programme-specific additional activities that started in a prior year and were already approved by the GB[72] amount to EUR 18,126,846;

Programme-specific additional activities that started in a prior year and were already approved by the GB but for which the initial estimated total value is increased by EUR 6,609,006 due to extended duration of activities, additional resources and/or more accurate forecasts;

[69] See adopted IKAA Plan in WP 2023 Amendment 1.

[70] IHI-GB-DEC-2024-06 Decision approving the list of proposals selected for funding and reserve list pursuant to the evaluation of the IHI 5th Call for proposals.

[71] "Costs associated with project-specific additional activities must be incurred between the date of submission of the proposal and up to two years after the end date of the indirect action" as per Article 120 of the of the Council Regulation (EU) 2021/2085.

[72] See adopted IKAA Plan in WP 2023 Amendment 1.

Programme-specific additional activities that will start in 2024 amount to EUR 5,810,880 and are identified in the table below.

The IKAA Plan (project and programme levels) amounts to EUR 61,067,607 and is available here. It may be subject to modification following a separate GB decision in 2024 as needed. The updated IKAA Plan will be available on the IHI JU website here.

OVERVIEW ESTIMATED IKAA FOR YEAR 2024[73]						
Title of the additional activities	**Description of the additional activities**	**Category of additional activities**	**Type of additional activities**	**Linked to project**	**Linked to programme**	**Estimated total value (in EUR)**
IMI DIRECT, 2nd Legacy Phase	IMI - DIRECT gathered diverse data from diabetic and pre-diabetic individuals across Europe, developing tests to predict disease onset, progression, and drug response. This aids in personalizing T2D treatment. In its second legacy phase, resources are needed to maintain the DIRECT data analysis platform.	1. Support to additional R&I	Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	No	Yes	120,000
Uptake of results of the IMI2 project ITCC-P4	Sustain, maintain and improve the existing platform and database from the IMI2 ITCC-P4 project to sustain its availability for research in childhood cancers as part of the new non-profit entity.	1. Support to additional R&I	Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	No	Yes	360,000
Uptake of results of the IMI2 project ESCulab	Sustainability, accessibility and functionality of European Lead Factory database and libraries for the post-term period to allow further research supporting identification of drugs for unmet medical need will require that the library is kept up for the beneficiaries taking part in the post-term activities, including compound disposal cost at the end to the post-term period	1. Support to additional R&I	Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	No	Yes	250,000
Activities focused on the uptake of results from IMI2 projects HARMONY & HARMONY Plus	Cash funding provided to assist the set up and membership of the Harmony Foundation, which is a global not-for-profit association founded as a result of the IMI2 projects Harmony & Harmony plus to maintain the data harmonization, data analysis, and related management office tasks associated HARMONY research projects.	1. Support to additional R&I	Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	No	Yes	13,000

[73] This table includes only new programme-specific additional activities expected to be carried out by IHI JU private members, their constituent and affiliated entities in 2024. Therefore, it neither includes project-specific additional activities nor programme-specific additional activities that started in a prior year and were already approved by the GB. The IKAA Plan (project and programme levels) is available here.

OVERVIEW ESTIMATED IKAA FOR YEAR 2024						
Title of the additional activities	**Description of the additional activities**	**Category of additional activities**	**Type of additional activities**	**Linked to project**	**Linked to programme**	**Estimated total value (in EUR)**
Activities focused on the uptake of results from IMI2 projects HARMONY & HARMONY Plus	Cash funding provided to assist the set up and membership of the Harmony Foundation, which is a global not-for-profit association founded as a result of the IMI2 projects Harmony & Harmony plus to maintain the data harmonization, data analysis, and related management office tasks associated HARMONY research projects.	1. Support to additional R&I	Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	No	Yes	500,000
Complementary activities focused on the uptake of results of IMI projects EUPATI & EFOEUPATI	Membership fees provided to support the non-profit EUPATI foundation, which is shaping the evolution of patient involvement across the whole spectrum of the medicines R&D process.	1. Support to additional R&I	Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	No	Yes	27,000
R&I activities linked to the European Rare Diseases Research Alliance (ERDERA)	Cash funding for activities to develop a Rare Disease ecosystem by supporting robust patient need-led research & addressing technical bottlenecks hampering ATMP R&D and manufacturing.	1. Support to additional R&I	Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	No	Yes	3,000,000
Activities to quantify environmental footprint of pharmaceutical products over their life-cycle.	Cash funding to support the creation of a harmonized framework to quantify the estimated environmental footprint of pharmaceutical products over their life-cycle to achieve a consistent approach to comparability, usability and recognition of product environmental footprints in the pharmaceutical sector.	1. Support to additional R&I	Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	No	Yes	446,880
Complementary activities focused on the uptake of results of IMI2 project EHDEN	EHDEN Foundation 4 year membership to continue a strong and growing open science community with Data Partners, SMEs, researchers, public & private, and NGOs.	1. Support to additional R&I	Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	No	Yes	100,000

OVERVIEW ESTIMATED IKAA FOR YEAR 2024						
Title of the additional activities	**Description of the additional activities**	**Category of additional activities**	**Type of additional activities**	**Linked to project**	**Linked to programme**	**Estimated total value (in EUR)**
Uptake of results of the IMI2 project MOBILISE-D with a public-private consortium	Cash funding for a sustainability consortium with IMI Mobilise-D partners to improve uptake of the project outcomes by seeking regulatory acceptance of the digital mobility endpoints and completing analysis of clinical validation and interventional study data to advance health authority discussions.	1. Support to additional R&I	Support to public-private partnership cooperation	No	Yes	200,000
Uptake of results of the IMI2 project MOBILISE-D with a public-private consortium	Cash funding for a sustainability consortium with IMI Mobilise-D partners to improve uptake of the project outcomes by seeking regulatory acceptance of the digital mobility endpoints and completing analysis of clinical validation and interventional study data to advance health authority discussions.	1. Support to additional R&I	Support to public-private partnership cooperation	No	Yes	200,000
Uptake of results of the IMI2 project Mobilise-D with a public-private consortium	Cash funding for a sustainability consortium with IMI Mobilise-D partners to improve uptake of the project outcomes by seeking regulatory acceptance of the digital mobility endpoints and completing analysis of clinical validation and interventional study data to advance health authority discussions.	1. Support to additional R&I	Support to public-private partnership cooperation	No	Yes	200,000
Prototype for development and validation of standardised patient centred digital endpoints	Subscription fee to enable access to the Digital Evidence Ecosystem and Protocols (DEEP) platform, a collaboration ecosystem to develop usable, harmonised and standardised digital endpoints and measures.	3. Demonstrators	Carry out demonstrations of a prototype in an operational environment, with the view to local, regional and Union-wide deployment	No	Yes	250,000
Multi-stakeholder discussion and alignment on RWE use for highly innovative technologies	Membership fee to RWE4Decisions to bring stakeholders together to agree what real-world data could be collected for highly innovative technologies, in order to generate real-world evidence that informs decisions by healthcare systems (HTA bodies / Payers), clinicians and patients.	6. Contribution to the development of new standards, regulations and policies	Contributions to groups that develop new standards/standardisation efforts	No	Yes	144,000
TOTAL PLANNED IKAA starting in 2024						**5,810,880**

OVERVIEW ESTIMATED IKAA FOR YEAR 2024					
Additional Activities type	**Description of the Additional Activities**	**Link to JU objectives***	**Link to JU project/ topic (if applicable)**	**Estimated total duration (in months)**	**Estimated <u>total</u> value (in EUR)**
Support to additional R&I					
Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	**IMI2 Hypo-RESOLVE Legacy Activities** The Hypo-RESOLVE project aimed to change the landscape around hypoglycaemia, by adding to our understanding of the underlying causes of the condition, as well as its predictors and consequences. The legacy activities, starting in 2024, will support the effort for uptake of the valuable results, aiming for better management of hypoglycaemia and better treatment of people with diabetes. This will include continued access to the Hypo-RESOLVE database as well as the Hypo-METRICS study data and biosamples. Further activities will include maintenance of the Hypo-RESOLVE PRO. Payment of the licensing fee required by the service provider managing the Hypo-RESOLVE PRO also constitutes part of the IKAA.	Specific objective d	IMI2 Hypo-RESOLVE	36	120,000
Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	**IMI2 DIRECT, 2nd Legacy Phase** DIRECT collected and analysed clinical, molecular, biochemical, diet, exercise and MRI data from diabetic and pre-diabetic people from all over Europe. They developed and validated tests to predict who will get diabetes, whose condition will deteriorate rapidly after diagnosis, and who will respond well or badly to certain drugs. Their findings will help researchers make further	Specific objective d	IMI2 DIRECT	36	360,000

	progress in personalising medicine for T2D sufferers. Now, in its second legacy phase, the DIRECT data analysis platform still requires resources to be maintained and managed.				
Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	**Sustainability platform for IMI2 ITCC-P4** Sustain, maintain and improve the existing platform and database from the IMI2 ITCC-P4 project to sustain its availability for research in childhood cancers as part of the new non-profit entity.	Specific objective b	IMI2 ITCC-P4	12	250,000
Complementary research and innovation activities with a clear link to the Strategic Research and Innovation Agenda but not funded by Horizon Europe	**Post-term activities of the IMI2 project ESCulab** Sustainability, accessibility and functionality of the European Lead Factory database and libraries for the post-term period to allow further research supporting the identification of drugs for unmet medical needs requires that the library is maintained for the beneficiaries taking part in the post-term activities, including compound disposal cost at the end of the post-term period.	Specific objective b	IMI2 ESCulab	12	13,000
TOTAL PLANNED IKAA starting in 2024					743,000

6.2 IHI call 6

Topic 1: Support healthcare system resilience through a focus on persistency in the treatment of chronic diseases

Expected outcomes

The main outcome of this research collaboration is to better understand why significant advances in technology in recent years have not contributed to widespread improvements in healthcare systems, which still struggle to keep more than 50% of people on chronic disease treatment for longer than 12 months. The goal is to develop and pilot innovative and multi-stakeholder approaches leveraging social innovation activities and scalable technology to improve the health outcomes of people living with chronic diseases by supporting treatment persistency with a particular focus on diabetes, obesity, and cardiovascular disease. Persistency is part of drug adherence and is defined as the length of time between starting treatment and the last dose which immediately precedes discontinuation of medication.

Although novel treatments are becoming more available with major improvements in convenience and efficacy, poor persistency to treatment is still a major challenge in the healthcare system. Insights from pilots under this topic will be shared with relevant stakeholders of the healthcare ecosystem to improve outcomes for people living with chronic diseases. The pilots should include cardiometabolic diseases, such as diabetes, obesity, and cardiovascular disease. Other chronic diseases may be considered in this collaboration if they contribute to the overall understanding of barriers and opportunities. Moreover, it is not the goal to develop new technologies and/or pharmaceutical drugs during the course of the project, but rather to address how insights and new approaches can be applied in clinical practice and implemented in guidelines and recommendations.

The action under this topic must contribute to all of the following outcomes:

- map and share insights from existing projects, pilots and datasets to get to a shared understanding of what the barriers and opportunities in the respective healthcare systems are in order to improve persistency and health outcomes for people living with chronic diseases;
- develop and implement new/revised collaborative models between public and private organisations with the aim of improving persistency and health outcomes;
- generate clinical and scientific evidence to demonstrate results in order to show the value of these new approaches and technologies;
- integrate new insights into the treatment regimen in close collaboration with people living with chronic diseases to improve disease outcomes;
- develop a consistent methodology/framework for measuring persistency using real-world data;
- develop recommendations and consensus reports with relevant healthcare stakeholders;
- optimise communication between healthcare systems and patients to improve persistency.

Scope

The scope of this topic is to improve treatment persistency among people living with chronic diseases. According to the MEDI-VOICE project funded by the European Commission, non-adherence to medication accounted for approximately 200 000 deaths annually in the European Union, and according to a World Health Organisation (WHO) report from 2003, around 50% of people living with a chronic disease do not adhere to the prescribed medication. From a recent analysis by Kvarnström et al (2018) [1], the major barriers for adherence to medication range from a lack of disease knowledge by the patient to logistical barriers like availability of medication and price (see list below), ultimately leading to discontinuation of medication.

The major categories of barriers identified are:

- patient specific, e.g. lack of knowledge, lack of routines, poor health literacy, gender, transition from paediatric to adult care, socioeconomic background;
- disease specific, e.g. lack of symptoms, lack of improvement, illness fatigue;
- treatment specific, e.g. side effects, complexity in dosages, inconvenience;
- healthcare and system specific, e.g., poor communication among stakeholders including e.g., physicians, patients, pharmacies, insurance providers, service providers, policy makers;
- social and culture specific, e.g. stigmas, religious belief, other alternatives;
- logistic and finance specific, e.g., price, renewal of prescription.

To address these barriers, this topic is expected to focus on the healthcare- and system-specific categories. The barriers to persistency identified in the list above are strongly interlinked, and in an effort to better understand the healthcare ecosystem in relation to persistency, it is the goal to especially explore the interface between the patient and healthcare providers. It is well-described that a lack of timely and accurate interaction/communication between patient and healthcare provider is key. Patients may lack education about their disease(s) and when support is minimal and there is insufficient patient counselling available, it can leave the patient with unanswered questions which might lead to discontinuation of their medication. In addition, social components, in particular health equalities including stigma and financial barriers, will also be in focus.

In this topic we propose a strong public-private coalition to help define and drive new models for collaboration across the healthcare ecosystem to improve persistency. This is to the benefit of patients as well as healthcare system sustainability by leveraging scalable technology that may hold the key to improving healthcare at the same time as providing it to many more individuals projected to have chronic diseases. A key component to successful implementation will be the patient voice and user experience.

It is planned to:

- share experiences and insights from existing pilots in specific healthcare environments and disease areas;
- use both observational and diverse clinical research methodologies to demonstrate impact, including health economics and outcomes research;
- drive fit-for-purpose studies to secure the evidence needed to maximise impact – particularly moving from test to scale;
- foster close collaboration between industry and academia within this field to ensure fast and feasible execution in real-world settings;

- build internal understanding & competencies within persistency to inform drug, study and service development;
- build training programmes for healthcare stakeholders;
- analyse how the new learnings/insights might be implemented in clinical treatment guidelines.

Expected impacts

The action under this topic is expected to achieve the following impacts and contribute to the following EU policies/initiatives:

- improving outcomes for patients with chronic diseases by supporting them to stay on the recommended and most efficient treatment, reducing symptoms and side-effects in the best way;
- less co-morbidities for patients on chronic disease treatment;
- reducing inefficiencies and costs in healthcare systems.

These impacts are in alignment with specific objectives 2 and 3 of the IHI JU.

Results from the IMI BEAMER project are expected to be taken into account and incorporated. The action resulting from this topic is expected to reach out and work together with other initiatives, e.g. IMI Gravitate Health and those funded through the Horizon Health call on “Ensuring access to innovative, sustainable and high-quality health care”. Data collection will be in agreement with recommendations from the European Health Data Space (EHDS).

Why the expected outcomes can only be achieved by an IHI JU action

Persistency in chronic disease care is one of the major known cost drivers in the healthcare system. Addressing the underlying barriers and potential improvements requires co-development by a number of different players in the healthcare system. It also requires a neutral platform to discuss solutions and insights to co-create and adopt solutions. It is expected that this is a multidisciplinary and cross-sectorial collaboration between pharma and technology companies, service and platform providers, insurance providers, healthcare professionals and patients.

Pre-identified industry consortium

The pre-identified industry consortium that will contribute to this cross-sectoral IHI JU project is composed of the following pharmaceutical and medical technology industry beneficiaries (‘constituent or affiliated entities of private members’):

- Abbott
- Eli Lilly
- Menarini
- Novo Nordisk (Lead)
- Pfizer
- Sanofi
- Servier

In the spirit of partnership, and to reflect how IHI JU two-stage call topics are built upon identified scientific priorities agreed together with a number of proposing industry beneficiaries (i.e., beneficiaries who are constituent or affiliated entities of a private member of IHI JU), it is envisaged that IHI JU proposals and actions may allocate a leading role within the consortium to an industry beneficiary. Within an applicant consortium discussing the full proposal to be submitted for stage 2, it is expected that one of the industry beneficiaries may become the project leader. Therefore, to facilitate the formation of the final consortium, all beneficiaries, affiliated entities, and associated partners are encouraged to discuss the weighting of responsibilities and priorities regarding such leadership roles. Until the role is formalised by execution of the Grant Agreement, one of the proposing industry beneficiaries shall as project leader facilitate an efficient drafting and negotiation of project content and required agreements.

Indicative budget

- The maximum financial contribution from the IHI JU is up to EUR 11 300 000.

This budget is expected to cover four pilots in different disease areas (including diabetes, obesity, and cardiovascular disease) in different geographies and healthcare systems. It is expected that infrastructure for data collection, de-identification, harmonisation, user interfaces, apps, and other relevant tools will have to be set up and customised. Also, the number of required stakeholders and parties for this collaboration is large and will require a solid governance setup and well-functioning stakeholder management.

- The indicative in-kind and financial contribution from industry beneficiaries is EUR 11 300 000.

Due to the global nature of the participating industry partners, it is anticipated that some elements of the contributions will be in-kind contributions to operational activities (IKOP) from those countries that are neither part of the EU nor associated to the Horizon Europe programme.

The indicative in-kind contribution from industry beneficiaries may include in-kind contributions to additional activities (IKAA).

Indicative duration of the action

The indicative duration of the action is 60 months.

This duration is indicative only. At the second stage, the consortium selected at the first stage and the predefined industry consortium may jointly agree on a different duration when submitting the full proposal.

Contribution of the pre-identified industry consortium

The pre-identified industry consortium expect to contribute to the IHI JU project by providing the following expertise and assets:

- results and insights from existing pilots and studies;
- real-world evidence (RWE) and clinical trial data;
- expertise in medical & science, data collection, epidemiology, evidence generation, publication support, digital health, market access, patient voice, health economics and outcomes research;
- data platforms, digital tools, apps, remote monitoring technology.

Applicant consortium

The first stage applicant consortium is expected, in the short proposal, to address the scope and deliver on the expected outcomes of the topic, taking into account the expected contribution from the pre-identified industry consortium and.

This may require mobilising the following expertise and/or resources:

- access to relevant data on persistency and treatments, such as access to electronic health records and public data;
- expertise in patient journey, clinical practice, and chronic disease management, health economics and outcomes research and health technology assessment within relevant disease areas.

At the second stage, the consortium selected at the first stage and the predefined industry consortium will form the full consortium. The full consortium will develop the full proposal in partnership, including the overall structure of the work plan and the work packages, based upon the short proposal selected at the first stage.

Dissemination and exploitation obligations

The specific obligations described in the conditions of the calls and call management rules under ‘Specific conditions on availability, accessibility and affordability’ do not apply.

References

1. Kvarnström K, et al. Barriers and facilitators to medication adherence: a qualitative study with general practitioners. BMJ Open. 2018

Topic 2: Development of evidence based practical guidance for sponsors on the use of real-world data / real-world evidence

Expected outcomes

- Industry, sponsors, and other stakeholders have access to structured, evidence-based and practical guidance and recommendations on the use of real-world data / real world evidence (RWD/RWE)[74] that could be followed to support the development, and regulatory, health technologies assessment (HTA), and payer decision-making of innovative medicines and health technologies with a focus on medicinal products, medical devices, and therapeutic products that combine a medicinal product with a medical device (drug-device combinations).
- Regulators, HTA bodies and payers will receive more structured and consistent RWD/RWE submissions to inform their decision making.

Scope

The use of real-world evidence to support decision making on the safety of medicinal products is already well established. More recently, RWE has also been used to complement evidence and support marketing authorisation, conformity assessments and HTA submissions. While high-level guidance on the use of RWD/RWE exists, the practical implementation is left up to individual sponsors. Currently, RWD/RWE submissions are usually custom-made to a specific use-case and require significant expertise and effort from the sponsor to prepare, and from the healthcare decision-maker to assess. Much knowledge exists within individual sponsors on these use-cases, but, to date, this has not been leveraged to develop practical guidance which could act as a baseline for future submissions.

To leverage the learning from individual use cases and facilitate the efficient use of RWD/RWE for regulatory, HTA, and payer submissions and to inform healthcare decision-making, structured, evidence-based, and practical guidance is needed.

To address this challenge, the action funded under this topic should:

- Map relevant RWD/RWE initiatives across Europe and their (expected) outcomes. Where relevant, build on, align, and complement these initiatives, including the European Medicines Agency's vision to establish the value of RWE across the spectrum of regulatory use cases by 202575.
- Identify the main challenges faced by industry, sponsors, non-commercial sponsors, health professionals, prescribers, and other stakeholders in the routine use of RWD/RWE for regulatory and HTA decision-making. This is to be done by also taking into account the differences in the regulatory frameworks of medicinal products and medical devices and how stakeholders' experiences, needs, and situations are reflected in these.
- In collaboration with the relevant stakeholders, identify, review, and evaluate existing methodologies, guidelines, and practices for the use of RWD/RWE in healthcare decision-making.

[74] Real World Data (RWD) are defined as "routinely collected data relating to a patient's health status or the delivery of health care from a variety of sources other than traditional clinical trials." Real-world evidence (RWE) is defined as the information derived from analysis of RWD. https://doi.org/10.1002/cpt.1426

[75] Arlett P. et al. Real-World Evidence in EU Medicines Regulation: Enabling Use and Establishing Value. Clinical Pharmacology & Therapeutics 2021 https://doi.org/10.1002/cpt.2479

- Focus on an in-depth study of a broad range of use cases where RWD/RWE has been previously assessed for decision-making for medicinal products, medical devices, and combinations.
  This should include an analysis of methods, designs, and defining variables that enable the grouping and thereafter the utilisation of RWD/RWE sources. Particular attention should be paid to the features that enable efficient assessments.
- Using the results of the study as a foundation, develop a draft of the practical guidance document and recommendations on the use of RWD/RWE to support submissions and decision-making processes, taking into consideration the specific needs of medicinal products and medical devices. Considerations on how RWD/RWE can be used within an ethical framework and respects EU values should be included. In addition, ensure that the guidance respects the EU data quality framework and the relevant RWD specialisation (which is currently under development).
- Test the draft guidance in several pilots to ensure validity and broad acceptability.
  The precise scope of these pilots should be selected by the full consortium during preparation of the full proposal and should address multiple contexts and areas that are not already being addressed, including but not limited to: chronic serious diseases, oncology, and auto-immune diseases.
  They should also cover clinical development and the regulatory, HTA, and payer assessment of medicinal products and medical devices including combinations.
- Based on the learnings from the pilots, finalise the practical guidance document and recommendations on the use of RWD/RWE to support clinical development, regulatory, HTA and payer submissions and inform decision-making processes.
- Broadly disseminate the guidance and recommendations to the stakeholder community. Create training plans to enable dissemination.

Applicants should develop a strategy and plan for generating appropriate evidence as well as for engaging and formally consulting with regulators, HTA agencies and payers in a timely manner, in particular on the draft guidance (e.g. through national competent authorities, the EMA Innovation Task Force, qualification advice).

In addition, while the project will focus on supporting the development of a recommendation for a structured, practical and evidence based guidance, the funded project is also expected to explore synergies with complementary initiatives to advance RWD/RWD in Europe such as the GetReal Institute, REDDIE, More-EUROPA, Oncovalue, Real4Reg, RWE4Decisions, TEHDAS, QUANTUM, CORE-MD, REALM[76] and projects under the ongoing call for proposals HORIZON-HLTH-2024-IND-06-08. It should also be aligned with the ambitions and guidelines set out for the European Health Data Space (EHDS)[77].

[76] www.getreal-institute.org, www.reddie-diabetes.eu, cordis.europa.eu/project/id/101095479, oncovalue.org, www.real4reg.eu, realm-ai.eu

[77] health.ec.europa.eu/ehealth-digital-health-and-care/european-health-data-space_en

Expected impacts

The action under this topic is expected to achieve the following impacts:

- Improved access to innovations that meet the increasingly diverse needs of patients and those of the healthcare systems.
- Better informed decision-making at different levels of the healthcare system (authorities, organisations) using RWD/RWE that will in turn contribute to a better allocation of resources towards cost-effective innovations as well as representation of different patient populations and needs.
- Faster entry to the market of cost-effective medicinal products and devices (including combinations) developed by industry or public not-for-profit developers, which could translate to a positive effect on their R&I investments.

Why the expected outcomes can only be achieved by an IHI JU action

Translating current RWD/RWE standards into practical guidance that can be accepted and implemented by decision-makers is a significant challenge. The active involvement of many stakeholders working collaboratively in partnership is needed to ensure such guidance has broad applicability and adds value to the broader initiatives already underway. The diverse nature of these stakeholders, which includes patients, real world data custodians, academics, and SMEs with expertise in RWD, industry, regulators, HTA agencies, and payers, means that a public-private partnership is the ideal framework for such a collaboration.

Pre-identified industry consortium

The pre-identified industry consortium that will contribute to this cross-sectoral IHI JU project is composed of the following pharmaceutical and medical technology industry beneficiaries (‘constituent or affiliated entities of private members’):

- Bristol Meyers Squibb
- Edwards Lifesciences
- GE HealthCare
- Medtronic
- Mölnlycke
- Novo Nordisk (Lead)
- Pfizer
- Sanofi
- Servier
- WL Gore

In the spirit of partnership, and to reflect how IHI JU two-stage call topics are built upon identified scientific priorities agreed together with a number of proposing industry beneficiaries (i.e. beneficiaries who are constituent or affiliated entities of a private member of IHI JU), it is envisaged that IHI JU proposals and actions may allocate a leading role within the consortium to an industry beneficiary. Within an applicant consortium discussing the full proposal to be submitted for stage 2, it is expected that one of the industry beneficiaries may become the project leader. Therefore, to facilitate the formation of the final consortium, all beneficiaries, affiliated entities, and associated partners are encouraged to discuss the weighting of responsibilities and priorities with regard to such leadership roles. Until the role is formalised by execution of the Grant Agreement, one of the proposing industry beneficiaries shall as project leader facilitate an efficient drafting and negotiation of project content and required agreements.

Indicative budget

- The maximum financial contribution from the IHI JU is up to EUR 13 300 000.
- The indicative in-kind and financial contribution from industry beneficiaries is EUR 13 300 000.

Due to the global nature of the participating industry partners, it is anticipated that some elements of the contributions will be in-kind contributions to operational activities (IKOP) from those countries that are neither part of the EU nor associated to the Horizon Europe programme.

The allocation of the EUR 200 000 financial contribution (FC) from industry beneficiaries will be decided by the full consortium at the second stage when preparing the full proposal.

The indicative in-kind contribution from industry beneficiaries may include in-kind contributions to additional activities (IKAA).

Indicative duration of the action

The indicative duration of the action is 60 months.

This duration is indicative only. At the second stage, the consortium selected at the first stage and the predefined industry consortium and contributing partner(s) may jointly agree on a different duration when submitting the full proposal.

Contribution of the pre-identified industry consortium

The pre-identified industry consortium expects to contribute to the IHI JU project by providing the following expertise and assets:

- industry expertise in real world evidence, clinical development, benefit risk evaluation, regulatory affairs, HTA, health economics and market access for medicinal products, medical devices, and combination products;
- previously assessed and utilised use cases that can be utilised to evaluate existing methodologies, encountered challenges, explored pathways and practices for the use of RWD/RWE in healthcare decision-making;
- leverage synergies with existing initiatives, including H2O, EHDEN, ConcePTION, IDERHA, REDDIE, REALM, Real4Reg, EHR2EDC, GetReal Institute, TransCelerate, Duke Margolis Real World Evidence Collaborative, CIOMS, RWE4Decisions, CORE-MD, REALM, projects under the ongoing call for proposals HORIZON-HLTH-2024-IND-06-08, TEHDAS, QUANTUM, and relevant EFPIA committees[78].

[78] www.iderha.org, www.i-hd.eu/rd-and-collaborative-projects/ehr2edc, www.getreal-institute.org, www.transceleratebiopharmainc.com, https://healthpolicy.duke.edu/projects/real-world-evidence-collaborative, https://cioms.ch/

Applicant consortium

The first stage applicant consortium is expected, in the short proposal, to address the scope and deliver on the expected outcomes of the topic, considering the expected contribution from the pre-identified industry consortium.

This may require mobilising the following expertise and/or resources:

- comprehensive expertise in RWD/RWE including data science, standards & guidance;
- expertise in the access, linkage, and use of RWD and/or synthetic data to evaluate medicinal products, medical devices, and combinations;
- expertise in the technical, legal, and ethical requirements to access and use patient data in Europe;
- knowledge of medicinal product and/or medical device development regulations;
- expertise in interacting with regulatory authorities, national competent authorities, HTA bodies, notified bodies and payers;
- experience with consumer-directed communications and/or patient advocacy (social media reach and expertise in health sector communications);
- expertise in managing multi-stakeholder cross-sectoral projects;
- citizens and/or patient representatives;
- real-world data sources (healthcare providers, clinical sites, contract research organisations (CROs), vendors, national/regional databases);
- previous use cases that can be used evaluate existing methodologies, guidelines, and practices for the use of RWD/RWE in healthcare decision making.

The applicant consortium is expected to enable effective collaboration with regulatory authorities, national competent authorities, HTA bodies, notified bodies and payers, and may consider, for instance, engaging them as consortium partners, or in an advisory capacity.

At the second stage, the consortium selected at the first stage and the predefined industry consortium will form the full public-private consortium. The full consortium will develop the full proposal in partnership, including the overall structure of the work plan and the work packages, based upon the short proposal selected at the first stage.

Dissemination and exploitation obligations

The specific obligations described in the conditions of the calls and call management rules under ‘Specific conditions on availability, accessibility and affordability’ do not apply.

HORIZON-JU-IHI-2024-06-01 **Support healthcare system resilience through a focus on persistency in the treatment of chronic diseases**	The maximum financial contribution from IHI is up to EUR 11 300 000. The indicative in-kind contribution from industry partners is in total EUR 11 300 000. The indicative in-kind contribution from industry partners may include in-kind contributions to additional activities.	Research and Innovation Action (RIA) Two-stage submission and evaluation process. Only the applicant consortium whose proposal is ranked first at the first stage is invited for the second stage.
HORIZON-JU-IHI-2024-06-02 **Development of evidence based practical guidance for sponsors on the use of real-world data / real-world evidence**	The maximum financial contribution from IHI is up to EUR 13 300 000. The indicative in-kind contribution from industry partners is EUR 13 300 000. The indicative in-kind contribution from industry partners may include in-kind contributions to additional activities.	Research and Innovation Action (RIA) Two-stage submission and evaluation process. Only the applicant consortium whose proposal is ranked first at the first stage is invited for the second stage.

6.3 IHI call 7

Topic 1: Improving clinical management of heart disease from early detection to treatment

Expected outcomes

Actions under this topic must contribute to all the following outcomes, ultimately contributing to reducing the burden of heart disease:

- Healthcare systems and patients benefit from the development of integrated solutions for improving critical aspects in the overall care pathway (primary, ambulatory and hospital care) for heart disease.
- Healthcare systems and patients will benefit from the development or optimisation of innovative technologies leading to personalised, patient-centric solutions for the early detection, diagnosis or treatment of heart disease.
- Patients benefit from proposed strategies tailored to their needs for improved outcomes in heart disease.
- Healthcare professionals benefit from the deployment of solutions for improved diagnostic procedures, referral programs or clinical workflows as well as targeted training for relevant clinical staff where appropriate.

Scope

Heart disease includes structural heart disease (SHD), coronary artery disease (CAD), heart failure (HF) and heart arrythmias, which are common, devastating, and heterogeneous medical conditions causing a high burden in Europe and worldwide[79][80] [1][2]. It is estimated that SHD affects 14 million people in Europe alone, while, worldwide, HF affects more than 64 million [1], atrial fibrillation more than 37 million [2] and 244.1 million people were living with CAD in 2020[2]. The impact of these diseases is significant both in terms of the health-related quality of life of patients and caregivers, and the large economic burden, amounting to over EUR 280 billion in the EU for cardiovascular disease (CVD [3]). In Europe, the prevalence of these conditions is expected to rise due to the ageing population and the lifestyle of citizens and, thus, the economic burden will also increase dramatically in the next decades with the costs for health care accounting for the largest part [3][4][5].

However, despite the importance of SHD, CAD, HF and heart arrythmias, disease management and long-term outcomes remain heterogeneous [6] due to the lack of comprehensive access to detection, diagnosis and care. The care of people with heart disease is also highly complex, with a multitude of diagnostic procedures and multidisciplinary therapeutic approaches available, including pharmaceutical, minimally-invasive and surgical interventions, disease-modifying therapies, and cardiac rehabilitation. Moreover, means for early diagnosis are often suboptimal, thus novel approaches should be explored to provide sustainable and scalable solutions [7].

Critically, improved early detection, diagnosis, referral and patient stratification linked to optimised clinical workflows and clinical decision-making hold the promise of faster, personalised treatments.
However, to achieve their successful implementation, there is a need for substantial cross-sectorial research and innovation and better integration of the different steps of care from primary to hospital care for an optimised disease management in more efficient healthcare settings.

[79] About Structural Heart Diseases | SHD Coalition

[80] 2022 Heart Disease & Stroke Statistical Update Fact Sheet Global Burden of Disease

Projects funded under this topic should address all or any of the following heart diseases: SHD, CAD, HF, and heart arrythmias.

Applicants are expected to assemble a suitable cross-sectoral public-private partnership to propose activities to address the following objectives in heart disease. In this context, applicants may consider identifying and addressing only some critical aspects of the patients' journey or specific care settings, with the aim of contributing to the overall care pathway improvement.

- Improve the efficiency of primary care, ambulatory or hospital care, considering how to optimise the patient pathway from one to the other and the transition among the teams in each care setting.
- Improve patient outcomes through earlier detection, better diagnosis, monitoring and/or treatment. This may include the development or deployment of innovative technologies or package solutions for early detection and diagnosis, or to seamlessly both treat and monitor (e.g. personalised imaging technologies, personalised sensing technologies, artificial intelligence (AI)-powered clinical decision tools, digital imaging, diagnostic technologies).
- Develop and implement measures and digital tools to enhance efficiency and optimise patient outcomes in primary and hospital care (e.g. reducing hospitalisations, disease burden and/or length of stay), and ensure a continuum between early detection, diagnostic and therapeutic approaches by guiding patients faster to the selection of the best treatment modality. This could be done for example via procedural automation, non-invasive testing, improved access to data, integrated pathways dashboards, and AI powered clinical decision making.
- Develop personalised, patient-centric solutions in diagnosis and treatment to improve patients' healthcare experience, considering the needs of specific populations such as children, elderly patients, cardio-oncology patients, or patients with co-morbidities.
- Adequate consideration should be given to the sustainability and scalability of the proposed solutions.
- Explore management strategies combining access to medical teams specialising in heart disease and social interventions to address population inequalities in outcomes. Also consider the heterogeneity of the healthcare system in Europe and generate evidence applicable across the diversity of European realities.
- Conduct an initial health economic study (such as cost-effectiveness analyses, budget impact models, etc.) of the proposed interventions on the healthcare system. The health economic study could include, for example, an analysis on whether an optimised management of heart diseases results in avoiding or reducing hospital treatment and the related costs.
- Patients and healthcare professionals should be engaged in all stages of the project from conceptualisation and throughout the implementation (e.g. in raising public awareness, education of patients, helping with the improvement of the referral pathway and the pathway to treatment, developing targeted training for relevant clinical staff).
- Consider the potential regulatory impact of the results and as relevant develop a regulatory strategy and interaction plan for generating appropriate evidence as well as engaging with regulators in a timely manner (e.g. national competent authorities, the European Medicines Agency (EMA) Innovation Task Force, qualification advice).

Applicants should also reserve resources to synergise with other relevant initiatives, including other projects funded under this topic and those resulting from IHI call 2 topic 1[81] (iCARE4CVD) and IHI call 5 topic 3[82], as well as with other European research initiatives and infrastructures, such as the European Partnership on Transforming Health and Care Systems (THCS), the Healthier together – EU non-communicable diseases (NCD) initiative, and the European Partnership for Personalised Medicine (EP PerMed) among others.

Expected impacts

Actions under this topic are expected to achieve the following impacts:

- Patients benefit from personalised patient-centred healthcare from early detection to treatment, and improved patient outcomes and experience due to advanced detection, diagnostic, decision-making and disease management throughout the continuum of care.
- Healthcare professionals benefit from novel diagnostic procedures and optimised clinical workflows, which lead to improved clinical outcomes for heart disease.
- Healthcare systems benefit from organisational solutions and an efficient transition through the different stages along the whole continuum of the care pathway for heart disease.
- Companies develop and offer advanced, robust and scalable solutions that leverage innovative technologies, tools and services allowing for integration with other existing workflows to effectively and efficiently support healthcare professionals and health systems in achieving their goals.
- Healthcare professionals benefit from the enhancement of existing clinical management guidelines and the development of new ones as appropriate.

Actions are also expected to contribute to the following EU policies/initiatives:

- European Partnership on Transforming Health and Care Systems (THCS);
- Healthier together – EU non-communicable diseases (NCD) initiative;
- The European Commission proposal for a European Health Data Space (EHDS).

Why the expected outcomes can only be achieved by an IHI JU action

The complexity of clinical care for SHD, CAD, HF and heart arrythmia patients calls for the involvement of different industry sectors involved in diagnosis, data analytics, clinical decision-making, and pharmaceutical and non-pharmaceutical interventions. Beyond industry, it requires bringing together researchers, hospitals, medical staff, patients and patient organisations. The IHI framework provides the ideal setting to create a fruitful collaboration and leveraging of resources and know-how of all these stakeholders and deliver the expected outcomes from this topic.

Indicative budget

Applicant consortia will be competing for the maximum financial contribution from IHI JU of up to EUR 25 000 000.

IHI JU estimates that an IHI JU financial contribution of EUR 12 500 000 would allow a proposal to address these outcomes appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

[81] https://www.ihi.europa.eu/apply-funding/ihi-call-2

[82] https://www.ihi.europa.eu/apply-funding/ihi-call-5

Applicant consortia must ensure that at least 45% of the action's eligible costs and costs for the action-related additional activities are provided by in-kind contributions to operational activities ('IKOP'), financial contributions ('FC's), or in-kind contributions to additional activities ('IKAA'). While 45% is the threshold for eligibility, applicant consortia are strongly advised to aim for 50% to provide a margin e.g. for unforeseen changes during the project lifetime.
IKOP and FCs may be contributed by the constituent and affiliated entities of both the private members and the contributing partners. IKAA may be contributed by constituent and affiliated entities of the private members only. Contributing partners and their affiliated entities cannot contribute IKAA.
See the call conditions in the annual Work Programme for further information (also in the document ''call text" published on the IHI website).

Indicative duration of the actions

Applicants should propose a project duration that matches the project's activities and expected outcomes and impacts.

Dissemination and exploitation obligations

The specific obligations described in the conditions of the calls and call management rules under 'Specific conditions on availability, accessibility and affordability' apply.

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1) Savarese G, Becher PM. Global burden of heart failure: a comprehensive and updated review of epidemiology. Cardiovasc Res. 2023 Jan 18;118(17):3272-3287
2) Lina Wang, Feng Ze, et al. Trends of global burden of atrial fibrillation/flutter from Global Burden of Disease Study 2017. Heart 2021;107:881-887.
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5) Hessel FP. Overview of the socio-economic consequences of heart failure. Cardiovasc Diagn Ther. 2021 Feb; 11(1): 254–262.
6) Lawson CA, Zaccardi F, Squire I, et al. 20-year Trends in Cause-Specific Heart Failure Outcomes by Sex, Socioeconomic Status, and Place of Diagnosis: A Population-Based Study. Lancet Public Health 2019;4:e406-20. 10.1016/S2468-2667(19)30108-2
7) Luise Gaede MD, Marta Sitges MD, Johnson Neil, Eleonara Selvi, William Woan, Richard Derks, Helge Möllmann. European heart health survey 2019. Clinical Cardiology, Vol.43, Issue 12.

Topic 2: User-centric technologies and optimised hospital workflows for a sustainable healthcare workforce

Expected outcomes

Actions under this topic must contribute to at least three of the following outcomes:

- Healthcare professionals will benefit from assistive technologies that are user-centric, and improved workflows within the hospital setting, resulting in optimised procedures or new capacities, while easing the workload and promoting job satisfaction.
- European healthcare systems will benefit from the automation and improvement of already- existing processes and/or the availability of new technologies. These innovations will provide increased functionality or new capacities.
- Patients will benefit from an improved experience throughout the entire care journey, including increased quality and efficiency of healthcare services derived from the automation or improvement of existing hospital workflows, and/or access to novel treatment modalities.
- Healthcare providers will benefit from new and innovative workflows and/or capabilities for improved cost-effectiveness and efficiency of care delivery, enhancing access to care, and improving the experience of both hospital staff and patients.

Scope

Due to long-lasting staff shortages and systemic challenges in healthcare systems, which have been exacerbated as a consequence of the COVID-19 pandemic, healthcare professionals are facing increasing workloads and pressures at work, resulting in an increase in burnout and stress as well as short or long-term absences from work. A high level of clinician and medical staff burnout has many professional ramifications and can result in medical errors and suboptimal patient care as well.

Technical and data-driven solutions have the potential to support the healthcare workforce, but their adoption has faced many challenges such as: a lack of holistic integration in clinical workflows; a lack of proper consideration of the healthcare professionals' input for their design [1][2][3]; the need to enhance the digital skills of health professionals without adding more workload; the lack of real added value for addressing clinically significant problems; and the under- or over- reliance on artificial intelligence (AI) that may compromise clinical outcomes. For example, while the massive growth in medical data and developments in data analytic methods promise better quality of care and health outcomes for patients at a lower cost for health systems, it also fuels the workload of healthcare professionals, due to the high training and documentation burden for clinicians among other things. Similarly, robot-assisted and automation technologies can improve the safety, quality and efficiency of hospital workflows, such as in surgery and other care settings. However, reconciling the tensions that exist between standardisation through automation versus the unpredictable nature of healthcare work remains difficult. In addition, while AI solutions have been suggested to support clinical decision-making, operational optimisation, patient empowerment, healthy lifestyle maintenance and population health management, they require further testing and validation.

The life-critical decision-making in healthcare and the dynamic, stressful work environment require user-centred (that consider the needs, preferences, and experiences of the healthcare workforce) and intuitive tools that support clinicians with reliable diagnostics and planning, as well as the delivery of complex interventions. In addition, better integration of existing solutions and emerging technologies in (optimised) hospital workflows will improve treatment outcomes, ease workloads, and preserve job satisfaction.

The projects funded under this topic should develop or improve innovative medical technology solutions. Through collaborative design approaches incorporating the feedback of end-users, the solutions should be easy-to-use, clearly identify and tackle any ethical concerns, and aim to be ready for integration into real-world hospital environments. Applicants should also consider the ethical and societal implications of the proposed solutions, involving the perspectives and preferences of patients and their families as the ultimate beneficiaries.

To achieve this aim, applicants must assemble a public-private partnership to ensure successful co-creation of the proposed solution(s), with input of all relevant stakeholders including healthcare professionals and patients, focusing on the following activities.

- Develop and implement solutions to empower the healthcare workforce (for example in diagnostics, management and organisation, planning, delivery of complex interventions, etc.), by supporting and assisting them without introducing additional burdens.
    - Propose solutions (up to a prototype level) that may relate either to the automation of existing workflows, or the adoption and the integration of new capacities and/or the development of trustworthy and autonomous technologies or technology (AI)[83] experiences.
    - These solutions should be data-driven, aiming to improve workflows and assist clinical procedures and/or hospital processes, supporting in planning and creating a more efficient and balanced supply and demand between patient load and staff competencies and healthcare resource consumption.
    - Applicants should take into consideration standardised approaches to data acquisition to allow proper development/training of the technologies.
- Propose and implement a strategy for better integration of existing and/or emerging technologies in different hospital workflows. This may include an analysis of the most critical processes running in hospitals, technological gaps within the hospital environment, ways to optimise workflow(s), and a roadmap of how the proposed technologies can grow, adapt, and innovate to meet the future needs of a healthcare system and its staff.
- Demonstrate potential for deployment through use cases that address wide user groups involving all relevant medical staff categories (nurses, medical staff, specialists, managers, etc.).
- Establish effective training approaches for complex technologies to minimise user burden and operator error, and/or to improve patient outcomes.
- Convincingly demonstrate the scalability and transferability of the approaches across different healthcare professions and different levels of care.
- Demonstrate the feasibility and desirability of the proposed approach(es) or technologies from an economic perspective, analysing the potential impact on patient and staff costs in healthcare institutions, on payers and insurers, and on the healthcare system. Applicants should consider relevant strategies to drive end-user and organisation-wide adoption.
- Where relevant, the proposed solutions should aim at developing and applying relevant standards (e.g. Fast Health Interoperability Resources (FHIR), Health Level Seven International (HL7), Integrating the Healthcare Enterprise (IHE), Logical Observation Identifiers Names and Codes (LOINC), Systemized Nomenclature of Medicine – Clinical Terms (SNOMED CT), Business Process Model and Notation (BPMN)) and ensuring the potential for regulatory approval, taking into consideration the different national regulatory requirements to ensure future implementation in the target markets.

[83] If applicable to the proposal, the consortium should consider relevant initiatives on the safe use of AI in the healthcare domain, including refences to ISO/SC42, ISO/TC215, and WHO WG on AI4Health.

- If relevant, applicants should take into account other dimensions with regulatory implications (for example the prevention and management of shortages, implementation of risk minimisation measures following regulatory decisions, the incorporation of clinical trial design requirements, and collecting real world data (RWD) for regulatory purposes).
- Where applicable, applicants should ensure the proposed solutions take into consideration supporting the secondary use of data generated for research, including by regulators.
- Applicants should also learn from past EU-funded projects (via mapping exercises and desk reviews) and reserve resources to synergise with other relevant ongoing initiatives. These could include other projects funded under this topic, those funded under IHI Call 3[84], and 'AI for the smart hospital of the future' (DT-ICT-12-2020) or HORIZON-HLTH-2023-CARE-04-02, if relevant.

Expected impacts

Actions under this topic are expected to achieve the following impacts and contribute to the following EU policies/initiatives:

- development of innovative medical technology that directly contributes to halting the current efflux of medical professionals, fostering sustainable careers in healthcare, and potentially improving clinical outcomes;
- improved patient care through advanced diagnostic and treatment technologies and more efficient clinical workflows, while ensuring the privacy and security of patient data;
- companies develop and offer advanced technological solutions to support healthcare professionals; these solutions should consider workflow integration and reflect end-user needs;
- healthcare systems could improve their capacity and resilience because of more efficient and sustainable solutions.

Actions are also expected to contribute to the following EU policies/initiatives:

- contribute to the 'Comprehensive Approach to Mental Health' of the European Commission by promoting the reduction of psychosocial risks at work in the healthcare sector, and 'a Europe fit for the digital age', by empowering people with a new generation of technologies.

Why the expected outcomes can only be achieved by an IHI JU action

Other programmes have previously addressed human-technology interactions in a broad manner, however, IHI JU is best suited to structurally address the specific needs of the healthcare sector. For the successful embedding of technologies in the work of people in healthcare, collaboration between private and public organisations is a basic prerequisite for implementation. This topic, in particular, requires cross-sectoral approaches involving the med-tech and pharmaceutical industries for the effective integration of new technologies in the clinical workflow. Moreover, it is essential to bring together broad user groups involving all relevant medical staff categories (nurses, medical staff, specialists, pharmacists, etc.) with industry partners to ensure the upfront integration of their input.

In addition, a multidisciplinary approach is needed to enable an objective and qualified evaluation of the proposed novel medical technologies, integrating the social sciences and humanities to understand the user preferences and expectations, and ensure acceptance and uptake among users. Where relevant, the evaluation of ethical and technical safety risks may require collaboration with ethicists and regulators.

[84] https://www.ihi.europa.eu/apply-funding/ihi-call-3

Indicative budget

Applicant consortia will be competing for the maximum financial contribution from IHI JU of up to EUR 25 000 000.

IHI JU estimates that an IHI JU financial contribution of EUR 12 500 000 would allow a proposal to address these outcomes appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

Applicant consortia must ensure that at least 45% of the action's eligible costs and costs for the action-related additional activities are provided by in-kind contributions to operational activities ('IKOP'), financial contributions ('FC's), or in-kind contributions to additional activities ('IKAA'). While 45% is the threshold for eligibility, applicant consortia are strongly advised to aim for 50% to provide a margin e.g. for unforeseen changes during the project lifetime.
IKOP and FCs may be contributed by the constituent and affiliated entities of both the private members and the contributing partners. IKAA may be contributed by constituent and affiliated entities of the private members only. Contributing partners and their affiliated entities cannot contribute IKAA.
See the call conditions in the annual Work Programme for further information (also in the document ''call text" published on the IHI website).

Indicative duration of the actions

Applicants should propose a project duration that matches the project's activities and expected outcomes and impacts.

Dissemination and exploitation obligations

The specific obligations described in the conditions of the calls and call management rules under 'Specific conditions on availability, accessibility and affordability' apply.

References

1) Collier, R., Medical technology often a burden if designed without physician input. Canadian Medical Association Journal, E1091–E1092. 2018.
2) Lena Petersson et al., Challenges to implementing artificial intelligence in healthcare: a qualitative interview study with healthcare leaders in Sweden, BMC Health Services Research, 2022.
3) Schlieter H. et al., Scale-up of Digital Innovations in Health Care: Expert Commentary on Enablers and Barriers, Journal of Medical Internet Research, 2022.

Topic 3: Clinical validation of biomarkers for diagnosis, monitoring disease progression and treatment response

Expected outcomes

Actions under this topic must contribute to all the following expected outcomes:

- Access for healthcare professionals to novel, robust and fit for purpose biomarkers[85] with linked technologies enabling their use in clinical setting and progress towards validation. Biomarkers and linked technologies may be for diagnosis, monitoring disease progression, selecting the optimal therapeutic treatments, or assessing treatment response.
- Availability for researchers of robust and fit-for-purpose biomarkers with linked technologies enabling their clinical use for diagnosing disease, disease monitoring, or monitoring treatment response. This will enable researchers to develop safer and more effective personalised treatments tailored to the individual's characteristics and the stage of their disease. Alternatively, availability for researchers of key technology (e.g. companion diagnostics) that could be essential for the safe and appropriate use and selection of a corresponding drug or biological product or its development.
- Availability for regulators of robust evidence on the suitability of selected biomarkers and their linked technologies to enable regulatory acceptance for a specific use.

Scope

Biomarker-driven approaches for diagnosis, monitoring disease progression and assessing treatment response have immense potential to help us progress precision medicine. Despite intense research, few biomarkers are subject to rigorous testing in clinical settings and shown to be fit for purpose (clinically validated). In addition, while there are several novel biomarkers that have shown significant promise for a number of use cases, often the technology to make them accessible for clinical use is not mature enough, which hampers their validation for use. Thus, technology development or improvements to existing technologies may be required to progress these biomarkers to clinical validation. For example, there are many novel and highly innovative technologies in development (e.g. imaging, artificial intelligence (AI), omics markers, phage-based diagnostics in multiple formats among others) and their further development and validation would be a necessary element for validating their detected biomarkers in the clinic.

Furthermore, different healthcare actors (e.g. academics, clinicians, patients, health technology developers and regulators) may have different definitions and expectations on the utilities of biomarkers, and there is a need for an aligned methodological framework for scaling up the clinical validation of candidate biomarkers.

[85] See definition as in the IHI JU Strategic Research and Innovation Agenda (Glossary): BIOMARKERS are biological characteristics, which can be molecular, anatomic, physiologic, or biochemical. These characteristics can be measured and evaluated objectively. They act as indicators of a normal or a pathogenic biological process. They allow the assessment of the pharmacological response to a therapeutic intervention. A biomarker shows a specific physical trait or a measurable biologically-produced change in the body that is linked to a disease or a particular health condition. A biomarker may be used to assess or detect a specific disease as early as possible (diagnostic biomarker), the risk of developing a disease (susceptibility/risk biomarker), the evolution of a disease (prognostic biomarker) – but it can also predict response to a given treatment including potential toxicity (predictive biomarker).

To address this challenge, this topic aims:

- to progress candidate biomarkers towards clinical validation and, when relevant, to regulatory acceptance; and/or
- to progress towards clinical validation innovative technologies necessary for making biomarker(s) accessible for clinical use. In proposals focusing uniquely on these technologies, applicants should justify how such progress will enable the validation of the biomarker(s) for use in a clinical context.

Projects funded under this topic should:

- Assemble a cross-sectoral public-private partnership to align and develop a methodological framework and roadmap for progressing selected candidate biomarker(s) and/or linked technologies enabling the clinical use of the biomarker(s) (or a combination thereof) to rigorous clinical validation.
- Provide a justification and clearly demonstrate why the proposal area responds to an unmet public health need[86].
- Progress biomarker(s) and/or technologies towards clinical and analytical validation in one or more of these areas: diagnosing disease, early treatment path selection, monitoring disease progression, or treatment response assessment:
  - All types of biomarkers including digital, combinations of biomarkers and multimodal biomarkers are in scope. Proposals addressing biomarker(s) intended for specific populations such as the elderly or children are very welcome.
  - The candidate biomarkers can be combined with existing biomarkers for more personalised decision making.
  - All types of technologies for progressing biomarkers to a stage closer to clinical validation, including innovative and novel approaches, are in scope. Some examples could be technologies for the effective collection, preparation, measurement and analysis of samples and biomarkers, or diagnostic equipment, methods, or systems.
  - In their proposal, applicants must clearly identify the candidate biomarker(s) and/or linked technology(ies) and the proposed application in research and development (R&D) and/or clinical practice.
  - Applicants should provide in their proposal sufficient preliminary evidence, including relevant methodology(ies) and high-quality data to demonstrate that the biomarker(s) and/or technology(ies) can be progressed towards clinical validation and, when relevant, to regulatory acceptance.
  - As relevant, applicants must ensure effective collection, preparation, measurement, and analysis of biomarker samples to allow validation in the clinical setting.
- Build on existing solutions to develop a collaborative platform to integrate, analyse and share data (historical or generated de novo) gathered for the validation of biomarker(s) and/or linked technologies during the project, as well as to support future biomarker validation beyond the project duration.

[86] See definition in Art 125.1 of the Council Regulation (EU) 2021/2085 establishing the Joint Undertakings under Horizon Europe: "An unmet public health need shall be defined as a need currently not addressed by the health care systems for availability or accessibility reasons, for example where there is no satisfactory method of diagnosis, prevention or treatment for a given health condition or if people's access to health care is limited because of cost, distance to health facilities or waiting times."

Applicants should plan to ensure the future scalability and sustainability of the platform and future data sharing and ensure adherence to FAIR (findable, accessible, interoperable, reusable) principles.

- Develop a regulatory strategy and interaction plan for evidence generation to support the regulatory qualification of the biomarker/s and/or technologies and engage with regulators in a timely manner (e.g. national competent authorities, European Medicines Agency (EMA) Innovation Task Force, qualification advice). Applicants should reserve resources to support these interactions.
- Elaborate a plan for interacting with all the relevant actors in the learning healthcare system (for example clinicians, academic researchers, healthcare professionals, health technology developers, regulators, policy makers, and others as relevant) to align on utilities of the candidate biomarker(s) and/or technologies for clinical use and guide the roadmap.
- Disseminate the results of the project to ensure uptake by relevant stakeholders, including healthcare systems and technology developers.
- Applicants should also reserve resources to synergise with other relevant initiatives, including other projects funded under this topic and those funded under IHI Call 3 topic 1[87] as relevant.

Expected impacts to be achieved by this topic

Actions under this topic are expected to achieve the following impacts:

- New clinically-validated biomarker-driven approaches are available that lead, as relevant, to more precise and effective diagnosis, leaner diagnosis-to-treatment pathways, better treatment path selection, or improved follow-up and treatment response assessment and monitoring.
- A significant reduction in the diagnostic or therapeutic burden for patients (and caregivers) for example by favouring non- or minimally-invasive approaches.
- Validated tools and approaches supporting evidence-based health and care decisions addressing both the needs of patients and of healthcare systems.
- An increase in the competitiveness of European health industries.

Why the expected outcomes can only be achieved by an IHI JU action

The clinical validation of biomarkers and the development of their linked technologies is a challenging process. To meet the topic objectives, a collaboration across several industry sectors (including pharmaceutical and medical technology industries) combined with other relevant stakeholders in the healthcare ecosystem is necessary. The IHI framework is the ideal enabler for gathering the necessary significant cross-sectoral expertise, and fostering collaborative open innovation, including from patients, clinicians, statisticians, healthcare professionals, biomarker specialists, machine learning experts, scientists, experts in regulatory affairs, small and medium-sized enterprises (SMEs), pharmaceutical and medical technology industries among others.

[87] https://www.ihi.europa.eu/apply-funding/ihi-call-3

Indicative budget

Applicant consortia will be competing for the maximum financial contribution from IHI up to EUR 45 000 000.

IHI estimates that an IHI financial contribution of EUR 15 000 000 would allow a proposal to address these outcomes appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

Applicant consortia must ensure that at least 45% of the action's eligible costs and costs for the action-related additional activities are provided by in-kind contributions to operational activities ('IKOP'), financial contributions ('FC's), or in-kind contributions to additional activities ('IKAA'). While 45% is the threshold for eligibility, applicant consortia are strongly advised to aim for 50% to provide a margin e.g. for unforeseen changes during the project lifetime.
IKOP and FCs may be contributed by the constituent and affiliated entities of both the private members and the contributing partners. IKAA may be contributed by constituent and affiliated entities of the private members only. Contributing partners and their affiliated entities cannot contribute IKAA.
See the call conditions in the annual Work Programme for further information (also in the document ''call text" published on the IHI website).

Indicative duration of the actions

Applicants should propose a project duration that matches the project's activities and expected outcomes and impacts.

Dissemination and exploitation obligations

The specific obligations described in the conditions of the calls and call management rules under "Specific conditions on availability, accessibility and affordability" apply.

HORIZON-JU-IHI-2024-07-01 **Improving clinical management of heart disease from early detection to treatment**	Applicant consortia will be competing for the maximum financial contribution from IHI of up to EUR 25 000 000. Applicant consortia must ensure that at least 45% of the action's eligible costs are provided by contributions from industry members, their constituent or affiliated entities, and contributing partners.	Research and Innovation Action (RIA) Single-stage submission and evaluation process. Proposals submitted will be evaluated and ranked in one single list. Several proposals might be invited to conclude a Grant Agreement, depending on budget available and their ranking.
HORIZON-JU-IHI-2024-07-02 **User-centric technologies and optimised hospital workflows for a sustainable healthcare workforce**	Applicant consortia will be competing for the maximum financial contribution from IHI of up to EUR 25 000 000. Applicant consortia must ensure that at least 45% of the action's eligible costs are provided by contributions from industry members, their constituent or affiliated entities, and contributing partners.	Research and Innovation Action (RIA) Single-stage submission and evaluation process. Proposals submitted will be evaluated and ranked in one single list. Several proposals might be invited to conclude a Grant Agreement, depending on budget available and their ranking.
HORIZON-JU-IHI-2024-07-03 **Clinical validation of biomarkers for diagnosis, monitoring disease progression and treatment response**	Applicant consortia will be competing for the maximum financial contribution from IHI of up to EUR 45 000 000. Applicant consortia must ensure that at least 45% of the action's eligible costs are provided by contributions from industry members, their constituent or affiliated entities, and contributing partners.	Research and Innovation Action (RIA) Single-stage submission and evaluation process. Proposals submitted will be evaluated and ranked in one single list. Several proposals might be invited to conclude a Grant Agreement, depending on budget available and their ranking.

6.4 IHI call 8

Topic 1 : A city-based approach to reducing cardiovascular mortality in Europe

Expected outcomes

The action under this topic must contribute to all the following outcomes:

- **patients and citizens** will benefit from better preventive measures, earlier detection and diagnosis, better outcomes for disease management, and access to innovative and effective treatments for cardiovascular disease (CVD), as needed;
- **healthcare providers** will benefit from updated, evidence-based guidelines on CVD management and more efficient clinical pathways. They will also gain clarity on best practice examples in health management and CVD prevention means in European cities;
- **healthcare system decision-makers** will have better evidence and tools to implement appropriate CVD prevention strategies, including digital therapies, allowing for their introduction into clinical practice and adoption by all segments of society;
- **health technology assessment bodies, payers and regulators** will benefit from better information on the real-life use of cardiovascular medicinal products, the benefit-risk profile of medical devices and the value of CVD prevention in cities / urban areas (note: a city / urban area is expected to have a population of at least 50 000 in its urban centre, in line with the OECD-EC (Organisation for Economic Co-operation and Development – European Commission) definition of a city[88],[89]);
- **researchers, including industry stakeholders, and clinical investigators** will benefit from models and findings that will help future programme implementation in other cities in Europe and beyond.

Scope

Cardiovascular diseases (CVD), the world's leading cause of mortality, are responsible for over 18 million deaths annually with a staggering cost of EUR 282 billion in 2021 [1]. The CVD risk has been acknowledged by WHO's Sustainable Development Goal (SDG) 3.4 which aims to reduce heart disease rates by one-third by 2030[90]. Trends in the EU27 and the UK from 1961 to 2018 show a decline in the share of the total population living in rural areas, while towns and cities experienced a smooth and constant population increase. Europe's level of urbanisation was 75% in 2022[91] and is expected to increase to approximately 83.7% in 2050[2]. In cities, CVD risks are amplified by factors like pollution, scarcity of green spaces and stressful lifestyles. The trend towards urbanisation often leads to significant healthcare disparities and worsening of CVD outcomes especially among underserved and disadvantaged communities. Thus, an improvement of the management of CVD in cities would be of significant benefit for the great majority of the European citizens living in an urban context.

The focus of this topic is on identifying and creating scalable models, interventions, and practices to enhance the overall efficiency and effectiveness of CVD management based on existing (e.g. Cardio4Cities) [2] or new pilots in up to 5 cities, to build evidence for replication across Europe in different socio-economic conditions.

[88] OECD-EC, "Cities in Europe: The new OECD-EC definition." January 2012.

[89] European Commission, "Urbanisation in Europe." last updated July 2020.

[90] WHO, "Noncommunicable diseases (who.int)." September 2023.

[91] https://data.worldbank.org/

These pilots should propose a good coverage of different locations and contexts in Europe and deliver scalable solutions that can be applied to other cities.

The action funded under this topic will consider primary and secondary prevention strategies, early detection, timely diagnosis and treatment (healthcare delivery), lifestyle changes (personal responsibility), and living environment (community responsibility).

Against this objective, the future action is expected to deliver:

- predictive models (developed and validated) that integrate various data sources – including electronic health records, environmental data, and lifestyle factors – to forecast cardiovascular risk at the individual and population levels in urban settings;
- models and/or good practices (including governance structure, funding/financing models, etc.) and roadmaps on cost-effective approaches to improve cardiovascular (CV) health management that can be replicated across Europe;
- recommendations for updating European guidelines and standards on CVD management (including primary and secondary prevention, and treatment);
- a stronger definition and improved selection of performance indicators on CV mortality, patient outcomes and economic impact of interventions;
- harmonised data standards for measurement of performance and impact (including PROMs[92], PREMs[93], patient preference, clinical outcome assessments etc.).
- an easy-to-use digital platform (ideally based on existing solutions to ensure interoperability) and high-quality data that enable a data-driven approach to CVD risk management, using standardised data reporting to facilitate comparison across cities;
- new solutions: digital and telehealth for early detection and monitoring of CVD patients, leveraging technologies for monitoring by incorporating wearables and apps to continuously monitor the population's adherence to cardiovascular medications and the occurrence of potential side effects. Moreover, this will enhance predictive models with more granular data leading to more precise risk assessments;
- recommendations on enhancing patient use of and access to technology and digital interventions (telemedicine, wearables, clinical mobile apps…); targeted prevention strategies, urban planning recommendations, and public health policies to mitigate these risks;
- a platform, network, or another support mechanism for exchange of good practice, learnings, and experience, to support further deployment of successful approaches across Europe and beyond;
- recommendations on improving living conditions to support the goal of decreasing impact of cardiovascular diseases.

To address this challenge, the action funded under this topic should:

- select up to five cities to serve as pilot use cases. These cities should be representative of the European context (in particular in relation to size and population) to allow broader implementation across regions/countries, different cultural and/or economic distributions, considering different health care structures (private/public) in different countries. Indicatively, each pilot city (or another urban administrative entity) is expected to have a population of at least 50 000 in its urban centre, in line with the OECD-EC definition of a city;

[92] PROM: Patient Reported Outcome Measurements

[93] PREM: Patient Reported Experience Measurements

- conduct a gap analysis of existing cardiovascular disease screening and diagnostics, clinical pathways and public health policies to guide the development of scalable models and best practices to fill these gaps, also considering broader European application (for example, set targets, define actions, strengthen enablers). In this analysis, due attention should be given to high-stress lifestyles (nutrition, physical activity) and socio-economic disparities. The identified solutions for improvement should be based on data-driven insights to identify multi-sectorial interventions that improve the management of CVD risk factors (such as hypertension, diabetes, low-density lipoprotein cholesterol) and prevent these risks from developing. They should also consider the entire continuum of care (detect, treat, control). The work on performance indicators including harmonisation is key to set a baseline from which improvements can be made. Applicants are expected to consider all applicable legislative and regulatory constraints (national, regional, local) and their possible impact on the implementation and results of the project. End-users (including citizens, patients, healthcare professionals and providers, health technology developers among others) should be included from the start in the co-creation process to ensure future buy-in and implementation.
- collaborate with patients and citizens to develop strategies and guidance for effective CV health awareness campaigns;
- collaborate with healthcare professionals to review and adapt guidance on CVD prevention and management, identifying opportunities to maintain and optimise healthcare workforce resources and engagement;
- set up sustainable platforms and other support mechanisms for deployment of the models (sharing best practice between pilot cities and across regions);
- pilot novel and/or improved early detection and diagnostic solutions, patient management strategies, (including improved patient support, remote patient management, patient flows), and initiatives to maintain workforce engagement;
- explore potential funding tools to complement healthcare systems funding for managing cardiovascular health (including bonds, insurance, crowdsourcing, etc.) which could be used to implement the models;
- leverage existing and newly created sources of multimodal data (contemplating opportunities provided by EHDS) for decision making and management of CVD (collecting, connecting, standardising, processing and analysing);
- design and deploy communication and awareness-raising campaigns, including training and capacity-building for health workers to effectively address various population groups affected by CVD.

Applicants should consider synergies with relevant initiatives at national level and with other European health initiatives such as the European Innovation Partnership on Active and Healthy Ageing[94], Reference Site Collaboration Network[95], Urban Health Cluster[96], the Cities and Cancer Missions[97] and the Joint Action on Cardiovascular Diseases and Diabetes (JACARDI) funded by the EU4Health programme, to maximise the potential for creating models that can be applied in various urban settings to improve cardiovascular health.

[94] European Commission, "The European Innovation Partnership on Active and Healthy Ageing (EIP on AHA)." Accessed March 2024.

[95] Reference Site Collaboration Network, "Home - RSCN." Accessed March 2024.

[96] Urban Health Cluster, "Urban Health Cluster | The first European Cluster to improve and safeguard health and well-being of citizens, leaving none behind." Accessed March 2024.

[97] European Commission, "EU Missions in Horizon Europe." Accessed May 2024.

This collaborative approach underscores the potential for cross-applicability of health solutions in addressing chronic diseases.

The action should also consider learnings and synergies with other IMI and IHI initiatives such as H2O, EHDEN, BigData@Heart, iCARE4CVD, among others.

Applicants are expected to consider the potential regulatory impact of the results and – as relevant – develop a regulatory strategy and interaction plan for generating appropriate evidence as well as engaging with regulators in a timely manner (e.g. national competent authorities, EMA Innovation Task Force, qualification advice).

Expected impacts

The action under this topic is expected to achieve all the following impacts and contribute to the following EU policies/initiatives:

- decrease the CVD burden in European cities by the reduction of CV events, disability, and mortality;
- enable future clinical pathways leading to improved patient outcomes;
- reduce the pressure of patient flow in the healthcare system via innovative diagnostic/detection solutions;
- strengthen the definition, standardisation and selection of performance indicators on CVD mortality, patient outcomes and economic impact of interventions, and thus improve future clinical pathways and intervention implementation studies;
- optimise healthcare expenditure to tackle the financial strain of CVD, amounting to €282 billion annually in the EU [3]. The emphasis is on prioritising spending for maximum efficiency and value, balancing the costs of advanced interventions with their long-term benefits;
- strengthen public awareness initiatives and incorporate improved diagnostic methods to enhance early detection and treatment of CVD, to reduce premature CVD deaths and support preventive healthcare measures;
- strengthen patient and citizen input to treatment pathways, disease monitoring and scientific guideline enhancement;
- contribute to the European policy on Active and Healthy Aging , and to the implementation of the European Commission's proposal for the European Health Data Space (EHDS) by providing FAIR data that are aligned with the EHDS requirements;
- start building a system for continual impact assessment and provide early evidence on the impact and effectiveness of the applied recommendations.

These impacts are in alignment with specific objectives 3 and 2 of IHI JU[98].

Why the expected outcomes can only be achieved by an IHI JU action

This action requires collaboration among multiple public and private sectors and stakeholders due to the multifaceted nature of urban CVD challenges. Economic viability is also a key consideration and will require multiple parties to come together for economy of scale. To achieve economic viability, actors must work together collaboratively in a consortium and not in a fragmented manner, for solutions to be adoptable by, and beneficial for, European health systems.

[98] https://www.ihi.europa.eu/sites/default/files/flmngr/IHI_Strategic_Research_and_Innovation_Agenda_3.pdf

Pharmaceutical companies, biotech firms, medical device manufacturers, and health ICT sectors must join forces and collaborate to create an integrated approach to CVD management. Collaboration between private (industry) and public partners (city management, academia, healthcare practitioners, community, patients, payers) is key to ensure that the developed solutions are comprehensive, evidence-based, and aligned with public health needs and future expectations.

The public-private partnership model ensures that industry innovations are effectively translated into practical health solutions, considering regulatory standards and real-world applicability.

Pre-identified industry consortium

The pre-identified industry consortium that will contribute to this cross-sectoral IHI JU project is composed of the following pharmaceutical and medical technology industry beneficiaries ('constituent or affiliated entities of private members'):

- Daiichi Sankyo
- Huawei
- Menarini
- Novartis (Lead)
- Novo Nordisk
- Servier
- Siemens Healthineers

In the spirit of partnership, and to reflect how IHI JU two-stage call topics are built upon identified scientific priorities agreed together with a number of proposing industry beneficiaries (i.e. beneficiaries who are constituent or affiliated entities of a private member of IHI JU), it is envisaged that IHI JU proposals and actions may allocate a leading role within the consortium to an industry beneficiary. Within an applicant consortium discussing the full proposal to be submitted for stage 2, it is expected that one of the industry beneficiaries may become the project leader. Therefore, to facilitate the formation of the final consortium, all beneficiaries, affiliated entities, and associated partners are encouraged to discuss the weighting of responsibilities and priorities with regard to such leadership roles. Until the role is formalised by execution of the Grant Agreement, one of the proposing industry beneficiaries shall as project leader facilitate an efficient drafting and negotiation of project content and required agreements.

Indicative budget

- The maximum financial contribution from the IHI JU is up to EUR 15 750 000.
- The indicative in-kind contribution from industry beneficiaries is EUR 15 750 000.

Due to the global nature of the participating industry partners, it is anticipated that some elements of the contributions will be in-kind contributions to operational activities (IKOP) from those countries that are neither part of the EU nor associated to the Horizon Europe programme.

The indicative in-kind contribution from industry beneficiaries may include in-kind contributions to additional activities (IKAA).

Indicative duration of the action

The indicative duration of the action is 72 months.

This duration is indicative only. At the second stage, the consortium selected at the first stage and the predefined industry consortium may jointly agree on a different duration when submitting the full proposal.

Contribution of the pre-identified industry consortium

The pre-identified industry consortium expects to contribute to the IHI JU project by providing the following expertise and assets:

- ongoing pilots (including models, management, or coordination platforms)
- data from prospective observational studies
- necessary health interventions: medical devices (e.g., wearables), diagnostics, medicines
- support to the organisations of meetings, workshops, conferences and setting up the coordination and dissemination platform (including IT systems where appropriate)
- expertise in the field of R&D in relevant science fields, clinical development, medical and regulatory affairs, medical education, health economics, data management, communication.

Applicant consortium

The first stage applicant consortium is expected, in the short proposal, to address the scope and expected outcomes of the topic, considering the expected contribution from the pre-identified industry consortium.

This may require mobilising the following expertise in:

- clinical practice in CVD in both primary and secondary care
- clinical investigators/researchers in CVD
- health economics and outcomes
- economic modelling and financial tools
- data and knowledge management
- artificial Intelligence
- communication and awareness raising campaigns
- healthcare systems organisations
- complex project management
- telehealth and remote patient management
- health impact of living conditions/urbanism.

Key resources might include: data, data platforms, diagnostic and monitoring tools, education and training infrastructure, communication platforms (including social media and other).

Key stakeholders to be involved include (but are not limited to): public health and research institutions, learned societies, hospitals, health providers, health systems managers, medical associations, patient organisations, community leaders. Connectivity with competent authorities responsible for planning and deployment of programmes targeted by the action is a must (in an advisory role or as participants in the action).

At the second stage, the consortium selected at the first stage and the predefined industry consortium will form the full consortium. The full consortium will develop the full proposal in partnership, including the overall structure of the work plan and the work packages, based upon the short proposal selected at the first stage.

Dissemination and exploitation obligations

The specific obligations described in the conditions of the calls and call management rules under 'Specific conditions on availability, accessibility and affordability' do not apply.

References

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2) Reiker et al., "Population health impact and economic evaluation of the CARDIO4Cities approach to improve urban hypertension management," Plos Global Public Health. April 2023.
3) Luengo-Fernandez et al, "Economic burden of cardiovascular diseases in the European Union: a population-based cost study." National Library of Medicine. December 2023.

Topic 2 : Novel endpoints for osteoarthritis (OA) by applying big data analytics

Expected outcomes

The action under this topic must contribute to all the outcomes listed below, by integrating existing data sets (clinical registries, prospective observational trials and real-world evidence data, for example from medical claims and biobanks as well as genotypic and epigenetic information), and data collections from historical and ongoing clinical trials (provided by industry partners).

- Algorithms and models, including Artificial Intelligence (AI)-based models, that are adaptable to differences in data availability have been developed and validated in different datasets to allow for the identification of osteoarthritis (OA) patient subpopulations (phenotypes/endotypes) that will benefit from specific, targeted treatment approaches. The identification of subpopulations will be based on:
  a) the patient-specific burden of osteoarthritis with focus on underlying drivers (e.g. metabolic disease) and multi-morbidity/holistic patient profiles;
  b) the evaluation of underlying pathways driving local vs. centralised pain in joint disease and the correlation of symptoms to joint tissue pathology;
  c) the identification of key risk factors for pain in joint disease that can be linked to structural disease progression providing insights into the symptom–structure discordance in OA;
  d) the detection of joint areas at risk of progression and quantification of structural progression to a more advanced stage;
  e) the measures from existing innovative tools such as functional assessments with mobility and activity assessing devices (including algorithms) to reflect independence, gait measures, and assessments of muscular strength and function, as well as balance and coordination to subtly measure functional changes;
  f) evaluating the differences and commonalities of osteoarthritis (OA) and inflammation-driven joint diseases such as psoriatic arthritis (PsA), rheumatoid arthritis (RA), erosive hand osteoarthritis (eHOA).
- A validation strategy is provided for a selected set of novel endpoints to measure and predict OA disease progression that enables planning of regulatory implementation pathways. This validation strategy supports innovative outcome-based and patient-centred development approaches for medicines and other therapeutic options to be discussed by regulatory authorities, health technology assessment (HTA) bodies, healthcare providers, patients, scientists and industry, shaping new approaches to the development of efficient treatments in OA and respective regulatory frameworks.
- A decision tool is developed – based on the predictive models – that supports shared decision-making for patients, their caregivers and healthcare providers according to the predicted disease progression, the most likely associated OA disease drivers and the current disease burden.
- A robust, trustworthy, and interpretable AI framework is established, that enables the development of guidelines or determines any boundaries for predictive modelling at various stages of value generation e.g. biological discovery, patient subgrouping, and clinical trials enrichment. Measures to mitigate the risk of bias and discrimination are implemented including, but not limited, to:
  a) careful consideration of data sets to ensure diversity and inclusion (or account for the lack thereof);
  b) the running of bias-unaware AI models and provision of fairness metrics;
  c) applying AI models within frameworks mitigating bias and promoting fairness during the pre-processing, in-processing and post-processing phases.

- Data platform(s) are designed and implemented to allow a workable and efficient collaboration across the participating organisations in their respective geographies, respecting each data contributor's access, privacy and consent approaches, which can be facilitated by federated data sharing. This outcome may serve as a blueprint for other data collaborations under the umbrella of the EU's newly implemented AI act and data policies[99, 100].

It is expected that certain existing assets like clinical data, algorithms, and data storage infrastructure will be used as background in this action. Therefore, beneficiaries intending to participate in this data-driven action need to be comfortable with the principle that ownership of specific deliverables / project results which would be considered direct improvements to a beneficiary's background asset, will need to be transferred back to the beneficiary who contributed the background asset to the project. Provision for, and conditions relating to such transfers should be specified in the project's consortium agreement.

Scope

Osteoarthritis (OA) has no cure and affects the lives of more than 500 million people worldwide with widespread individual, societal and economic consequences. Economic consequences pertain on one hand to health care utilisation and health care spending, OA is however also associated with relevant economic impact on the individual due to missed days at work, early retirement, and substantial out-of-pocket expenditures. Since OA primarily affects the elderly, females, patients with lower levels of education and socio-economic status and certain ethnicities, the associated economic risk hits already vulnerable populations. OA has long been underestimated in its impact; the disease negatively affects social functioning and ranks 7th for years lived with disability in people over 70 years. With its impact on activities of daily living, OA is a major risk factor for loss of independence. Additionally, OA is associated with increased mortality.

Despite major research efforts and increasing insights into the mechanism, epidemiology, risk factors and natural history of OA, various development efforts over the years have failed to provide a disease-modifying treatment. The epidemiology as well as clinical and biological insights strongly suggest the existence of several pheno- and endotypes of osteoarthritis; failure to account for those differences critically hampers progress in the field. The implementation of innovative approaches to stratify the patient population, predict the course of disease and define patient-relevant endpoints is specifically relevant in an ageing society with a high prevalence of obesity, metabolic syndrome, and multi-morbidity. Furthermore, there is an increasing prevalence of post-traumatic secondary OA in relatively young individuals affected at the prime of their lives. First studies towards the clustering of patient groups and development of predictive models have been published suggesting the feasibility of these approaches. Bringing all those insights together requires the collaboration of experts from various fields and can only be achieved in the concerted action of a public-private partnership, including existing initiatives.

The overall aim of this topic is to build a public-private partnership that is able to integrate and leverage the plethora of existing and currently collected data on OA, as well as the increasing insights and expertise gathered over decades of research. Further, the goal is to use a data driven approach to significantly progress the field by leveraging the novel opportunities that have emerged thanks to increased computing power and innovative methodologies in big data analysis, in order to:

[99] Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts (2021/0106(COD), 26 Jan. 2024, pdf (europa.eu), last accessed 04.04.2024

[100] Proposal for a regulation - The European Health Data Space Proposal for a regulation - The European Health Data Space - European Commission (europa.eu), last accessed 04.04.2024

1) integrate different perspectives to improve the understanding of osteoarthritis as a complex disease;
2) foster progress towards regulatory validation of patient-relevant endpoints to measure and predict OA disease progression as well as alternative endpoints to measure response to treatment;
3) allow predictive modelling while actively seeking feedback to incorporate the perception of patients, care givers, primary care physicians and regulators.

The action generated by this topic should pave the way towards transforming the current isolated research efforts and static late-stage development approaches into a more patient-centred and simplified (more inclusive/enriched patient population, shorter study duration, potential enablement of the evaluation of preventive or early therapeutic strategies based on predicted outcomes, cost-effectiveness etc.) as well as sustainable part of clinical research and development. This aim is supported by increasing the insights into OA as an heterogenous disease with various underlying patient risk profiles, patho-mechanistic pathways and underlying genotypic/epigenetic/ metabolomic/transcriptomic phenomena based on big data. Such insights will allow for the creation of integrated risk profiles combining clinical and multi-omic approaches (e.g. clinical characteristics, transcriptomics, proteomics, genetic markers, and in-depth multimodal imaging data).

These advances are needed to support the development of patient-relevant and cost-efficient integrated health care solutions including focused, individualised treatments for specific patient segments. The use of AI-based approaches is crucial for the integration of the totality of existing patient datasets and mechanistic disease insights to better understand disease drivers in various tissues of joints thereby upscaling, broadening and/or sharpening current methodology.

The proposed action must:

- gather and provide access to high quality data – including clinical data from trials (mainly data from placebo arms from studies run outside the project) provided by the pre-identified industry consortium and by applicants as well as prospective observational data, registry data and cohort data including genetic, imaging, soluble biomarker, and data from wearables among others;

- provide a flexible federated data lake house with appropriate tools for access, management and governance, data curation, integration, and augmentation for consequent high-performance analytics using for example new or contributed AI (foundation) models and modelling workflows.
  This infrastructure will deploy existing or newly developed approaches or implementations to host and analyse disparate data assets ranging from public, commercial, and not-for-profit observational and trial clinical data to -omics, images, or data from wearables. In their proposal applicants should address key challenges around federated data collection, data privacy, data transfer, data storage, data processing, curation, and harmonisation of data, etc. to achieve a comprehensive understanding of OA by upscaled, big data analytics from:
  1) genetic analyses (GWAS);
  2) AI-driven big data analyses for identification of clinical patterns in phenotypes and endotypes;
  3) algorithm-based imaging analyses of whole joints and peri-articular tissues;
  4) the evaluation of performance assessments using novel technologies and devices.

- generate and provide a validation strategy for a risk model of disease progression by evaluating whether and to which extent risk factors and predictive models identified in the literature and the above-mentioned data sets are reliably predictive for the progression of structural joint changes as evidenced by imaging, pain and functional decline documented by patients and ultimately leading to joint replacement surgery. The combination of surrogate markers such as imaging [1] with medical history and medication, as well as with predictive markers (plasma-based multi-omics, polygenic risk scores) [2][3], patient reported outcome data and data from wearables or performance tests [4], will generate a more refined predictive engine in analogy to, for example, established fracture risk prediction algorithms in osteoporosis;
- work towards a broad consensus between all stakeholders especially linking patients, caregivers and healthcare providers' perspectives to regulatory and health technology assessment (HTA) bodies. This will enable the elaboration of a set of endpoints relevant to these groups depending on the phase of development of treatments (i.e. early phase trials for medication or device efficacy, while late-stage development needs to prove effectiveness, which may necessitate different sets of outcomes), incorporating the various domains of assessments, and taking into account the predominant effect (structural or symptomatic) of the evaluated treatment. This will help to shape new regulatory frameworks for accelerated targeted OA treatment development based on big data analyses, in-silico trials, digital twin approaches and similar innovative trial designs;
- use data analysis and modelling to provide evidence and knowledge that could enable the evaluation of existing innovative tools (such as functional assessments, imaging approaches etc.) and innovative treatment solutions for OA, based on their scientific validity and feasibility as a prerequisite. Design a strategy to progress them towards regulatory validation and implementation. The action should provide an exploratory and interactive platform to evaluate the validity and user-preference of novel methods of evidence generation, such as the use of data from wearable devices, innovative imaging, and surrogate markers for joint replacement surgery;
- model short- and long-term economic and public health impact from OA including morbidity and mortality. These new risk models should support benefit/risk assessment as well as quality and efficacy assessments of therapeutic interventions in patients diagnosed with OA to prevent or delay the onset of disease progression, but also avoid overtreatment and thereby optimise the use of health care resources;
- develop a decision tool based on predictive models that can support shared decision-making between physicians, patients and their caregivers to select the intervention best suited to address the various stages and symptoms of OA in an individual patient, integrating also patient reported outcome and experience measure (PROMs and PREMs) data as well as patient preferences. The diversity of patients at risk or affected by the disease must be considered when discussing patient-relevant outcomes to enable the focused development of treatments and healthcare solutions specific to the needs of individual patients;
- leverage real-world evidence (RWE) data to address the diversity of patients including sex and gender, ethnicity, and race disparities to develop patient engagement strategies. This should enable engagement with specific groups for the design of OA outcome trials and better promotion of OA management.

The action should contribute to addressing the research needs outlined in the Regulatory Science Research Needs initiative[101], launched by the European Medicines Agency (EMA), assessing the utility of real-world healthcare data to improve the quality of randomised controlled trial simulations and patient and public involvement and engagement.

Therefore, applicants are expected to consider the potential regulatory impact of the results and – as relevant – develop a regulatory strategy and interaction plan for generating appropriate evidence as well as engaging with regulators in a timely manner (e.g. national competent authorities, EMA Innovation Task Force, qualification advice).

Consideration should be specifically given to patient and public involvement and engagement in the implementation of all of the above activities. The applicants are expected to leverage prior learnings, for example, previous experiences that have demonstrated the importance of transparent and accessible structures to receive input from patients, caregivers and health care providers as key stakeholders and integrate expertise from various fields relevant in this context [5]. The continuous and active engagement of all groups is indispensable to meet patients' and providers' needs and leverage synergies between practitioners and scientists, especially to ensure the sustainability of potential outputs.

Applicants should provide in their proposal evidence that they have in place all permissions (legal, ethical) needed for accessing the data necessary to implement the action.

Note that the implementation of prospective clinical studies is not supported by this topic.

Expected impacts

The project should contribute to all of the following impacts:

- the federated integration of big data from disparate data sources including the use of digital twin and similar methodological approaches will lay the foundation for advanced clinical trial designs that allow for more efficient and smaller trials, as well as the reduction of patients' burden and exposure to placebo;

- the development of predictive models for disease progression and joint replacement, which are crucial to efficiently discuss treatment strategies, support assessments of quality in health care and equitably plan and allocate health care resources. In addition, such predictive models can revolutionise outcome trial designs, shortening the trial duration and patient burden as well as reducing development costs. The aspired modular flexibility to data availability allows for their sustained use in various settings and economic circumstances;

- the stratification of different patient groups and targeting of treatments to patients' needs and preferences, which enables the development of successful therapies, informs development strategies, improves patient and caregiver engagement and optimises trial designs. This stratification also supports data-based shared decision making for health care solutions in clinical practice;

[101] https://www.ema.europa.eu/en/documents/other/regulatory-science-research-needs_en.pdf, last accessed March 19th 2024

- availability of tools that enable specific functional measurements and reflect the real-life treatment benefit for patients. These tools have been positively evaluated for practicality and scientific validity and could be used for systematic assessments complementing clinical and patient reported information.
  All of the above will allow for better trial designs that can demonstrate the treatment benefits of medicines and health care solutions in early development programmes with limited numbers of patients.

Why the expected outcomes can only be achieved by an IHI JU action

Millions of patients suffer from osteoarthritis but only a limited number of symptomatic treatment options are available. Efforts to develop insights into disease drivers and to develop disease-modifying treatments that address pain, function and joint survival have been fragmented and futile for decades. In addition, small sample sizes in early trials, the lack of stratification, the limited sensitivity of traditional biomarkers and outcome measures such as conventional x-rays, the vulnerability to confounders specifically of patient reported outcomes for pain, as well as a certain ignorance of patient preferences have also contributed to this failure. After countless failed trials in the industrial and academic setting, and in view of increasing patient numbers and the devastating impact from OA, it is high time to assemble an interdisciplinary team of clinical and scientific experts, health technology innovators, affected patients, their caregivers, HTA bodies and regulators to tackle this complex pathology leveraging AI that finally allows for the management and analytics of an important amount of data.

Only a concerted action with patients in a cross-sectoral public-private partnership incorporating various fields of expertise and from different academic fields and industry sectors can bring together the necessary skills to unravel and link the hidden insights from the plethora of existing data and translate this newly generated knowledge into tangible strategies to treat this underestimated disease.

The IHI JU provides a framework for bringing together the various public and private stakeholders as well as facilitating a structured dialogue including patients, caregivers, physiotherapists, nursing home specialists, primary care physicians and regulatory authorities. The action generated by this topic can provide a safe space in which patient stratification, endpoint development and the implementation of digital assessments can be discussed at a pre-competitive level breaking down existing silos and establishing a common ground and framework for guiding future trials. This not only leverages short-term synergies to reach the individual project goals but also opens the opportunity to reach a broad consensus for endpoint composition in different stages of drug development.

Pre-identified industry consortium and contributing partners

The pre-identified industry consortium that will contribute to this cross-sectoral IHI JU project is composed of the following pharmaceutical and medical technology industry beneficiaries (‘constituent or affiliated entities of private members’):

- Imorphics /Stryker
- GlaxoSmithKline (GSK)
- Nordic Biosciences
- Novartis (Lead)
- Novo Nordisk
- Rottapharm Biotech
- Sanofi
- Siemens Healthineers

In addition, the following contributing partners will participate in the IHI JU action:

- Capgemini
- Nordic Biosciences Clinical Development (NBCD)
- Pacira

In the spirit of partnership, and to reflect how IHI JU two-stage call topics are built upon identified scientific priorities agreed together with a number of proposing industry beneficiaries (i.e. beneficiaries who are constituent or affiliated entities of a private member of IHI JU), it is envisaged that IHI JU proposals and actions may allocate a leading role within the consortium to an industry beneficiary. Within an applicant consortium discussing the full proposal to be submitted for stage 2, it is expected that one of the industry beneficiaries may become the project leader. Therefore, to facilitate the formation of the final consortium, all beneficiaries, affiliated entities, and associated partners are encouraged to discuss the weighting of responsibilities and priorities regarding such leadership roles. Until the role is formalised by execution of the Grant Agreement, one of the proposing industry beneficiaries shall, as project leader, facilitate an efficient drafting and negotiation of project content and required agreements.

Indicative budget

- The maximum financial contribution from IHI is up to EUR 14 000 000.
- The indicative in-kind contribution from industry partners is EUR 11 416 000.
- The indicative in-kind contribution from IHI JU contributing partners is EUR 4 260 000.

Due to the global nature of the participating industry partners and contributing partners, it is anticipated that some elements of the contributions will be in-kind contributions to operational activities (IKOP) from those countries that are neither part of the EU nor associated to the Horizon Europe programme.

The indicative in-kind contribution from industry partners may include in-kind contributions to additional activities (IKAA).

Indicative duration of the action

The indicative duration of the action is 60 months.

This duration is indicative only. At the second stage, the consortium selected at the first stage and the predefined industry consortium may jointly agree on a different duration when submitting the full proposal.

Contribution of the pre-identified industry consortium and contributing partners

The pre-identified industry consortium and contributing partner(s) expect to contribute to the IHI JU project by providing the following expertise and assets:

- Data: data from clinical trials (such as patient profiles, soluble or imaging biomarkers, genetics at baseline and follow up information especially from placebo arms or observational cohorts), biobank data, real world data, biomarker data;
- Expertise: medical expertise, bioinformatics, data science, public health, patient input, clinical and regulatory expertise, data & AI experts, technology architects, data privacy experts;

Technology: data science and imaging platforms and tools, including pre-developed imaging algorithms.Applicant consortium

The first stage applicant consortium is expected, in the short proposal, to address the scope and deliver on the expected outcomes of the topic, taking into account the expected contribution from the pre-identified industry consortium and contributing partner(s).

This requires mobilising the following expertise:

- OA disease-specific expertise including all of the following domains: clinical and patho-mechanistic expertise, imaging (software) analyses of whole joints and peri-articular tissues, evaluation of performance assessments using novel technologies, evaluation of patient reported outcome and experience measures, outcome quality;
- AI-driven big data analyses, data science, bioanalytics, bio-statistics/risk modelling, drug development;
- epidemiology, genetic analyses (GWAS), (epi)genetics;
- demonstrated experience in generating and analysing data from new digital tools that enable specific functional measurements and reflect the real-life treatment benefit for patients including expertise in movement science;
- proven experience with prior patient engagement: patient and caregiver networks including institutions such as nursing homes or assisted living facilities as well as networks with primary care physicians and physiotherapists are specifically valuable in this context to meet the needs and preferences of these primary target groups and support the development of sustainable, patient-centred and accepted solutions;
- experience with regulatory aspects especially with respect to endpoint validation, and previous experience with interaction with regulators;
- data privacy and ethics;
- health economics and outcome research, evidence-based medicine, quality, and efficiency in health care.

Furthermore, the applicant consortium is expected to provide the below resources:

- Timely access to data from registries, cohorts and any other relevant data collection is critical for the success of the action generated by this topic and has to be clearly documented in the proposal.
- Technology: data lake infrastructure, tools to curate, enrich and augment the data for AI models readiness.

Moreover, applicants are expected to give regard to previous activities / consortia on national/EU level such as the Digital Health Catalyst[102], a co-creation from two IMI projects (MobiliseD[103] and IDEA-FAST[104]), aiming to maximise insights from real-world digital measurements and remote monitoring options – or the BigData@Heart[105] [6] initiative (IMI2 call 7) – that similarly to this topic aims at leveraging big data to gain insights into phenotypes and pathologic mechanisms or EUROPAIN[106] among others (please see some additional examples listed below, this is however not an exhaustive list).

[102] Digital Health Catalyst, last accessed March 19th 2024

[103] Home - Mobilise-D, last accessed March 19th 2024

[104] IDEA-FAST, last accessed March 19th 2024

[105] BigData@Heart > Home (bigdata-heart.eu) , last accessed March 19th 2024

[106] EUROPAIN_summary_final_report.pdf, last accessed March 19th 2024

At the second stage, the consortium selected at the first stage and the predefined industry consortium and contributing partner(s) will form the full consortium. The full consortium will develop the full proposal in partnership, including the overall structure of the work plan and the work packages, based upon the short proposal selected at the first stage.

Dissemination and exploitation obligations

The specific obligations described in the conditions of the calls and call management rules under 'Specific conditions on availability, accessibility and affordability' do not apply.

Additional information (examples only)

Links to project-related EU programmes:

https://www.imi.europa.eu/projects-results/project-factsheets/approach

https://www.approachproject.eu

https://www.ihi.europa.eu/news-events/newsroom/computational-modelling-shows-promise-predicting-mortality-risk-after-knee

https://www.ehden.eu

https://www.ihi.europa.eu/projects-results/project-factsheets/idea-fast

https://health.ec.europa.eu/ehealth-digital-health-and-care/european-health-data-space_en

Links for more information on OA as a serious disease:

https://oarsi.org/sites/oarsi/files/library/2018/pdf/oarsi_white_paper_oa_serious_disease121416_1.pdf

https://cdn.vev.design/private/BCwBc9ZFZyVz8yQQKr9VeLxSnjf1/d6Jx2OYBUF_Unmet%20needs%20in%20Europe_EIU%20Briefing%20Paper_Pfizer.pdf.pdf

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[5] Keogh A, et al., L, Mobilise-D consortium. **Mobilizing Patient and Public Involvement in the Development of Real-World Digital Technology Solutions: Tutorial**. J Med Internet Res 2023;25:e44206, URL: https://www.jmir.org/2023/1/e44206, DOI: 10.2196/44206

[6] Gill SK, et al. Artificial intelligence to enhance clinical value across the spectrum of cardiovascular healthcare, European Heart Journal, Volume 44, Issue 9, 1 March 2023, Pages 713–725, https://doi.org/10.1093/eurheartj/ehac758

Topic 3 : Modelling regulatory sandbox mechanisms and enabling their deployment to support breakthrough innovation

Expected outcomes

The action under this topic must contribute to all of the following outcomes:

- A horizon scanning for potential sandbox candidates including how sandboxes provide an additional tool to existing frameworks and identified examples to model the process.
- Analysis of how regulatory sandboxes can drive science and health technology innovation in an evolving environment.
- Recommendations for end-to-end operations of regulatory sandboxes to inform healthcare innovation developers, regulators, and other decision makers.

Scope

While there is no concrete definition, regulatory sandboxes generally refer to regulatory frameworks that provide a structure for healthcare innovation developers to test and experiment with new and innovative products, services, or approaches under the oversight of a regulator for a limited period of time. These adaptive tools are meant to address challenges arising from the acceleration of technological/scientific advances and the mechanisms intended to regulate them. It offers customisation in terms of how a regulatory framework can be applied, combined with appropriate safeguards.

Regulatory sandboxes, first tested in the fintech sector (2015), are starting to transform the traditional methods used by regulatory agencies in the health sector to accompany the development of safe, efficacious, and high-quality health technologies[107], which, due to their level of novelty, challenge the current regulatory framework. The mechanism enables breakthrough developments and the testing of alternative regulatory approaches for disruptive innovations for medicinal products, related platforms and their combinations, including where appropriate medical and digital technologies. Regulatory sandboxes are mentioned as important future-proofing elements in the legislative proposal[108] of the European Commission on the general pharmaceutical legislation. The European Commission's communication to boost biotechnology and biomanufacturing in the EU further promotes the establishment of regulatory sandboxes that allow the testing of novel solutions in a controlled environment for a limited amount of time under the supervision of regulators as a way of quickly bringing more of them to the market[109]. Regulatory sandboxes are not featured in the medical devices and *in vitro* diagnostics regulations (MDR and IVDR)[110], but the artificial intelligence (AI) Act[111] creates an opportunity for regulatory sandboxes focused on case studies forAI-enabled medical devices. Regulatory sandboxes entail a shared learning objective for innovators (finding a pathway and getting regulatory predictability) and regulators (understanding the technology and defining how best to regulate it). The mechanism helps to inform future regulation through experimentation and evidence generation and minimises the risks of regulating ex-ante innovative and novel approaches

[107] 'health technology' means a medicinal product, a medical device or medical and surgical procedures as well as measures for disease prevention, diagnosis or treatment used in healthcare.

[108] Proposal for a Regulation of the European Parliament and of the Council laying down Union procedures for the authorisation and supervision of medicinal products for human use and establishing rules governing the European Medicines Agency, amending Regulation (EC) No 1394/2007 and Regulation (EU) No 536/2014 and repealing Regulation (EC) No 726/2004, Regulation (EC) No 141/2000 and Regulation (EC) No 1901/2006 Chapter IX Regulatory Sandbox (Articles 113-115)

[109] https://research-and-innovation.ec.europa.eu/document/download/47554adc-dffc-411b-8cd6-b52417514cb3_en

[110] Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices and Regulation (EU) 2017/746 of the European Parliament and of the Council of 5 April 2017 on in vitro diagnostic medical devices.

[111] Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act)

prematurely or inappropriately. For the same reasons regulatory sandboxes also potentially facilitate the more efficient or rapid subsequent adaptation of the legislation either through translation into an adapted regulatory framework and/or through recommendations when the time comes for revising existing or developing new legislation.

Regulatory sandboxes should be able to experiment and draw on several relevant healthcare innovation related frameworks other than pharmaceutical products (i.e. medical devices, *in-vitro* diagnostics, AI, digital health technologies, and substances of human origin among others). Due to their anticipatory and adaptive nature, regulatory sandboxes are well placed to address gaps and complexity within and across regulatory frameworks. Indeed, as the number of drug and device combinations increases, and technology integration becomes the norm rather than an exception in healthcare innovation R&D, manufacturing and healthcare delivery, the current siloed technology-specific frameworks may not provide a clear path forward. To that end, when considering an innovation, it is important to consider all relevant legislative frameworks including MDR and IVDR, the Clinical Trials Regulation[112], the General Product Safety Regulation[113] and AI ACT among others.

Although still new to the healthcare and pharmaceutical sector, there are a few examples of regulatory sandboxes such as the Sante Canada sandbox for advanced therapeutic products or the Singapore sandbox to test telemedicine. More recently, the UK launched the MHRA AI-airlock to assist in the development and deployment of software and AI medical devices, safely providing patients with earlier access to cutting edge innovations that improve care.

The overall aim of this IHI topic is to contribute to the progression and successful implementation of regulatory sandboxes for healthcare innovations by developing a comprehensive and shared understanding of their value and process of implementation. The topic should also enable the development of a cross-sectoral community of stakeholders including pharma and medical device companies, regulators, and health technology assessment bodies (HTAs), among other stakeholders.

To fulfil this aim, the proposal should:

1. **Scan the horizon for potential sandbox candidates including how sandboxes provide an additional tool to existing frameworks, and use the examples identified to model the process.**

To this end, a key objective is to identify a number of healthcare innovation case studies to better understand how a regulatory sandbox could be used to solve further-defined challenges at an existing regulation level and inform recommendations for end-to-end operations. These cases could draw from the past, present and from horizon scanning activities (the EMA's work in this area already provides a hint[114]) to anticipate future innovations, looking across their development value chain.

2. **Analyse how regulatory sandboxes can drive science and health technology innovation in an evolving environment.**

The proposal should do this by:

- anticipating consequences for health technology development under a regulatory sandbox mechanism, acknowledging its time-limited scope and the consequences (considering the technical particularities of healthcare innovation) for other downstream activities e.g., standardisation, health technology assessment;
- proactively identifying any guardrails and mitigation measures.

[112] Regulation (EU) No 536/2014 of the European Parliament and of the Council of 16 April 2014 on clinical trials on medicinal products for human use

[113] Regulation (EU) 2023/988 of the European Parliament and of the Council of 10 May 2023 on general product safety

[114] Health horizons: Future trends and technologies from the European Medicines Agency's horizon scanning collaborations: https://doi.org/10.3389/fmed.2022.1064003

3. **Develop recommendations for end-to-end operations of regulatory sandboxes to inform healthcare innovation developers, regulators and downstream decision makers.**

The proposal should do this by:

- mapping out conceptual elements and operationalisation features of future sandbox mechanisms based on existing experiences in other fields such as governance, conditions fostering dialogue and collaboration, access to the right type of expertise, support, regulatory customisation, sharing/communicating lessons learned and their translation via the appropriate frameworks into new standards, among other elements to be further defined;
- modelling how to operationalise the sandbox(es) (including governance, operations, principles) and how they could be used in healthcare innovation development and evaluation in conjunction with existing regulatory mechanisms to advance innovation at European and national levels.

Part of the topic entails modelling a regulatory sandbox. The proposal should therefore consider good practices for designing and evaluating the necessary operating models to ensure the robustness and future applicability of the output of the project.

The project outcomes could also offer directions for the translation of the resulting recommendations into digital tools and systems deemed necessary for the functioning of regulatory sandboxes (e.g. ensuring collaboration between different health authorities' triage mechanisms, horizon scanning, fitness check evaluations), as relevant.

When developing a comprehensive and shared understanding of the value of regulatory sandboxes, applicants will have to explore key aspects across the life-cycle of healthcare innovations with the objective of accompanying their ultimate adoption, which could include as appropriate R&D, regulatory authorities, HTA bodies, payers, governments, clinicians and patients. Ethical considerations would also have to be considered as some innovations could trigger questions in this field.
A shared objective should include to develop a regulatory strategy and interaction plan for generating appropriate evidence, enabling engagement across all the different decision makers in a timely manner (e.g. national competent authorities, EMA and the respective Innovation Task Force, qualification advice) and identifying aspects that can be leveraged by existing regulatory tools, as well as the limiting aspects and the flexibilities that would be required under a regulatory sandbox to achieve the timely development and access of healthcare innovations.

Expected impacts

The action under this topic is expected to achieve the following impacts:

- Meaningful contributions to the successful implementation of regulatory sandboxes through developing a comprehensive and shared understanding of their use and value among key stakeholders in the healthcare ecosystem.
- Support the future-proofing of the EU regulatory framework by design, enabling the efficient implementation of regulatory sandboxes where and when appropriate, and thus helping to make Europe more attractive as place of innovation.
- Enhancing and enabling the cooperation of key healthcare stakeholders, including patients, clinicians, small and medium-sized enterprises (SMEs) and academics, with regulators in developing a competitive and innovation-friendly landscape.
- Fostering interaction with regulators to develop healthcare solutions when it is not possible to develop them within the current framework.

The action will also contribute to a number of European policies/initiatives, which include:

- the European Commission's Pharmaceutical Strategy for Europe, specifically the pillar on competitiveness, innovation and sustainability;
- related measures under the ongoing revision of the Pharmaceutical legislation;
- the European Commission innovation agenda (published in 2022) flagship initiative "*Enabling innovation through experimentation spaces and public procurement*" facilitating innovation through improved framework conditions including experimental approaches to regulation (e.g. regulatory sandboxes);
- the EU biotech strategy;
- the green and sustainability agenda.

Why the expected outcomes can only be achieved by an IHI JU action

As health innovation happens at the interface of disciplines and will be increasingly driven by technology, regulatory challenges will arise at the interface of the regulatory frameworks that govern these disciplines.

Engagement across sectors and multi-disciplinary collaboration are essential to support the deployment of regulatory sandboxes within different fields and across regulatory frameworks.

Therefore, a wider cross-sectorial community of stakeholders is needed to achieve the topic objectives. Innovators from the academic sector and from the various developer organisations (including biotech and start-ups) are increasingly coming together in areas such as medical devices, *in-vitro* diagnostics, AI, digital health technologies, and substances of human origin, among others.

Regulatory science and oversight are at the heart of regulatory sandboxes, so regulatory authorities and the wider regulatory science community including notified bodies are at the centre of the project. Downstream decisions makers such as HTA bodies and payers as well as solution recipients like patients and healthcare professionals should also be involved. This diversity reflects the actors of the ecosystem and is essential to ensure the uptake of innovation in a holistic manner.

A public-private partnership is the ideal framework for such a multi-sectorial and disciplinary endeavour and the diversity of representation in a neutral collaborative platform like an IHI consortium would help to build trust which is essential to ensure the adoption of the resulting mechanisms and future outputs.

Pre-identified industry consortium

The pre-identified industry consortium that will contribute to this cross-sectoral IHI JU project is composed of the following pharmaceutical and medical technology industry beneficiaries ('constituent or affiliated entities of private members'):

- Astellas
- Biogen
- CSL Behring
- EFPIA
- Eli Lilly
- F. Hoffman-La Roche (co-lead)
- Johnson & Johnson
- Merck KGA
- MSD (co-lead)

- Novo Nordisk
- Novartis
- Pfizer
- Sanofi
- Takeda
- Teva

In the spirit of partnership, and to reflect how IHI JU two-stage call topics are built upon identified scientific priorities agreed together with a number of proposing industry beneficiaries (i.e. beneficiaries who are constituent or affiliated entities of a private member of IHI JU), it is envisaged that IHI JU proposals and actions may allocate a leading role within the consortium to an industry beneficiary. Within an applicant consortium discussing the full proposal to be submitted for stage 2, it is expected that one of the industry beneficiaries may become the project leader. Therefore, to facilitate the formation of the final consortium, all beneficiaries, affiliated entities, and associated partners are encouraged to discuss the weighting of responsibilities and priorities with regard to such leadership roles. Until the role is formalised by execution of the Grant Agreement, one of the proposing industry beneficiaries shall as project leader facilitate an efficient drafting and negotiation of project content and required agreements.

Indicative budget

- The maximum financial contribution from the IHI JU is up to EUR 5 200 000
- The indicative in-kind and financial contribution from industry beneficiaries is EUR 4 261 096

Due to the global nature of the participating industry partners, it is anticipated that some elements of the contributions will be in-kind contributions to operational activities (IKOP) from those countries that are neither part of the EU nor associated to the Horizon Europe programme.

The allocation of the EUR 100 000 financial contribution (FC) from industry beneficiaries will be decided by the full consortium at the second stage when preparing the full proposal.

The indicative in-kind contribution from industry beneficiaries may include in-kind contributions to additional activities (IKAA).

Indicative duration of the action

The indicative duration of the action is 36 months.

This duration is indicative only. At the second stage, the consortium selected at the first stage and the predefined industry consortium may jointly agree on a different duration when submitting the full proposal.

Contribution of the pre-identified industry consortium

The pre-identified industry consortium expects to contribute to the IHI JU project by providing the following expertise and assets:

- expertise in manufacturing/CMC (chemistry, manufacturing, and controls) in healthcare innovation development R&D, clinical development, clinical trials, benefit/risk assessment;
- expertise in regulatory, HTA/pricing and reimbursement, legal and intellectual property, medical and health affairs and communication;
- expertise and input on impact on decision-making;
- risk assessment and risk management expertise;

- expertise in organisational design (design thinking);
- contributions to case simulation.

Applicant consortium

The first stage applicant consortium is expected, in the short proposal, to address the scope and deliver on the expected outcomes of the topic, taking into account the expected contribution from the pre-identified industry consortium.

This may require mobilising the following expertise and/or resources:

- project management expertise in running cross-sectorial projects;
- broad expertise in R&D of healthcare innovation;
- expertise in simulation set-up to design appropriate conditions to run the simulation exercises;
- expertise in organisational design (e.g. design thinking) to inform the architecture of the regulatory sandbox mechanism;
- regulatory and legal expertise are core to a number of activities ranging from the fitness check evaluation of the regulatory framework against identified innovations to the development, simulation and design of the regulatory sandbox operating principles;
- healthcare professionals and patient perspectives, including a dimension on ethical considerations, would be beneficial;
- HTA and payer perspective;
- innovation, its management and foresight to inform horizon scanning activities and the identification of innovations susceptible to present challenges to their development and deployment;
- expertise in risk management to inform the anticipated consequences of the use of regulatory sandboxes (e.g. via scenario design) and contribute to defining mitigation solutions;
- IT and digital expertise.

Applicants are also expected to propose case studies in their short proposals. The pre-identified industry consortium would also propose case studies, to be aligned and decided by the full consortium at the second stage when preparing the full proposal.

At the second stage, the consortium selected at the first stage and the predefined industry consortium will form the full consortium. The full consortium will develop the full proposal in partnership, including the overall structure of the work plan and the work packages, based upon the short proposal selected at the first stage.

Dissemination and exploitation obligations

The specific obligations described in the conditions of the calls and call management rules under ‘Specific conditions on availability, accessibility and affordability’ do not apply.

Topic 4: Patient-centred clinical-study endpoints derived using digital health technologies

Expected outcomes

The action under this topic must contribute to all of the following outcomes:

- organisations and institutions involved in the development of therapies for the treatment and management of chronic disease have access to a unifying framework and consensus-based recommendations for:
    - using a combination of patient preference information (PPI), clinical outcome assessments (COAs), and digital health technology (DHT)-derived measures to demonstrate the importance to patients of what is being measured by DHT-derived clinical-study endpoints;
    - determining, from the patient perspective, what constitutes a minimal clinically important difference (MCID) in a patient-centred, DHT-derived clinical-study endpoint.
- new methods for analysing PPI and COA data collected using DHT and for combining data from PPI, COA, and DHT-derived measures are available to researchers;
- a consistent framework for engagement regarding the development and use of patient-centred, DHT-derived clinical-study endpoints is available to industry and stakeholders;
- acceptance of the use of PPI, COAs, and patient-centred DHT-derived measures in addition to or in combination with traditional clinical-study endpoints to provide a robust view of the benefits of a therapy to patients;
- acceptance of the use of patient-centred DHT-derived measures for clinical-study endpoints as reliable evidence for the evaluation of the clinical and economic benefit of therapeutic medicinal products and medical technologies among stakeholders including, but not limited to, patient groups, regulatory bodies, and health technology assessment (HTA) bodies (including the EU Member State Coordination Group on HTA), indicated by a qualification opinion, endorsement, adoption or other approval by each relevant stakeholder group;
- patient-centred, DHT-derived endpoints are implemented along with traditional clinical-study endpoints in clinical studies of therapies to treat chronic diseases, and data from DHT-derived clinical-study endpoints are used in regulatory and reimbursement decision-making.

Scope

Three types of patient-centred information related to how a patient feels and functions contribute to the evaluation of outcomes of a therapy:

- patient preference information (PPI)
- clinical outcome assessments (COAs) (including patient-reported outcome (PRO) measures)
- digital health technology-derived (DHT-derived) measures

Each of these types of measures can be used to understand patient-centred benefits of therapies (i.e., meaningful improvements in how a patient feels or functions).

DHT-derived measures can capture patient-centred information about disease symptoms, physical, cognitive, and emotional functions, and experience with therapy. They can measure the status of a patient's health in ways that may be related to, but often differ from, COAs. For example, DHTs may measure activity intensity but not specific activities. Likewise, DHT-derived measures may detect changes in patient-centred outcomes - such as function - earlier than a patient may notice such a change. For patient-centred DHT-derived measures (i.e., DHT-derived measures that capture how a patient feels and functions) to be useful as endpoints in clinical studies, they must not only be technically validated, but also demonstrate that they measure functions, activities, symptoms, and other impacts of disease and treatment that are important to patients and measure changes in these outcomes that are meaningful to patients.

PPI, COAs, and DHT-derived measures are different, but complementary, types of patient-centred data. Because these measures are complementary, using these measures in combination will provide a more robust view of the benefits of therapies measured using DHT-derived endpoints from the patient perspective. Combining these complementary measures is necessary to demonstrate the utility of using DHT-derived measures as clinical study endpoints that reflect the value of treatment benefits to patients. Specifically, using these measures in combination may contribute to determining what constitutes a minimal clinically important difference (MCID) in patient-centred DHT-derived endpoints from the patient perspective in clinical studies of therapies to treat chronic diseases. For the purpose of this project, a chronic disease is defined as a long-term health condition that may not have a cure.

However, despite recent increases in the use of PPI, COAs, and patient-centred DHT-derived measures, there is no unifying framework for understanding the relationships among these measures, nor how they can be used in combination to demonstrate meaningful, patient-centred benefits of therapies for chronic diseases in clinical studies.

Therefore, uncertainties exist regarding the utility of these measures either alone or in tandem, and the meaningfulness to patients of patient-centred DHT-derived measures when used as clinical study endpoints in the development of therapeutic products (including, but not limited to, pharmaceutical products, combination products, and therapeutic devices) for the treatment of chronic diseases.

The topic aims to develop a unified framework and consensus-based recommendations for using multiple types of patient-centred information to support the use of DHT-derived endpoints to demonstrate therapeutic benefit. This will ensure that therapies addressing patients' needs are approved for use and reimbursed at levels that reflect the value of the therapies to patients.

To fulfil this aim, the action funded under this topic must:

- Develop a framework for using PPI, COAs, and DHT-derived measures in combination for the development, acceptance and implementation of patient-centred DHT-derived clinical-study endpoints in clinical studies of potential treatments for chronic diseases.

  The framework will be designed to ensure that PPI, COAs, and patient-centred DHT-derived measures used in combination will be accepted as reliable evidence to support the use of DHT-derived clinical study endpoints in the evaluation of the clinical and economic benefit of therapeutic drugs and technologies.

  The framework must:

  - include recommendations for using the three types of patient-centred data in addition to or in combination with traditional clinical-study endpoints to provide evidence of the patient-centred benefits of therapeutic drugs and technologies;
  - describe the potential relationships among COAs, patient-centred DHT-derived endpoints and other common types of clinical study endpoints;

- identify and address issues related to how and under which circumstances data from PPI and COAs can be used to determine what constitutes a MCID in a patient-centred DHT-derived clinical-study endpoint from the patient perspective;
- identify and address issues related to whether and how data from PPI, COAs, and patient-centred DHT-derived measures can be pooled, including the need for new techniques (including, but not limited to, artificial intelligence, machine learning, and large language models) to jointly analyse pooled data from the different types of measures;
- address issues related to diversity in patient populations (e.g., disease type, disease stage, health literacy, cultural factors, etc.) on the use and results of PPI, COAs, and DHT-derived measures and the ethical and equity implications of patient diversity on the interpretation and utility of patient-centred measures of therapeutic benefit.

- Develop recommendations for:
  - using quantitative PPI to better understand COA data by demonstrating the relative importance of domains, items, and scores (and changes therein) within a COA instrument and relative to other commonly used endpoints (including endpoints included in relevant core outcomes sets) in clinical studies within the same therapeutic area;
  - understanding the relationships between COA data and patient-centred DHT-derived endpoints in diverse therapeutic areas;
  - using DHTs (e.g., apps, smart personal devices, smart drug-delivery devices, therapeutic medical technologies, etc.) to collect PPI and COA data;
  - using quantitative PPI, COAs, and patient-centred DHT-derived measures in combination to demonstrate the importance to patients of what is being measured by DHTs and determining what constitutes a MCID in a patient-centred, DHT-derived clinical-study endpoint.

- Conduct at least four use cases to provide evidence to support the framework and recommendations.

  Each use case should address one or more recommendations and all recommendations should be supported by one or more case studies. Applicants should specify the methodology to be applied in each use case and identify how each use case will inform the framework and recommendations. The set of use cases should:
  - include a range of digital measurement domains (e.g., physical activity, sleep, cognition, fatigue, or others) and address differences between passive and interactive DHTs.
  - include a range of patient ages (e.g., paediatric, adolescent, younger adults, and older adults).
  - address issues related to diversity in patient populations (e.g., disease type, disease stage, health literacy, cultural factors, underserved patient populations, etc.)
  - address issues related to combining and/or jointly analysing PPI, COA, and/or DHT-derived data using new techniques (including, but not limited to, artificial intelligence, machine learning, and large language models).
  - be conducted in partnership with academic medical centres and focus on all of the following areas:
    - paediatric radiation oncology
    - lung cancer
    - non-motor and motor symptoms in Parkinson’s disease
    - obesity

All use cases must be conducted in a way that is consistent with generally accepted international treatment guidelines in the relevant disease area.

The precise scope of the use cases will be developed by the full consortium during the preparation of the full proposal at the second stage. Case studies should not involve the *de novo* development of novel COAs, DHTs, or DHT-derived measures.

- Include robust input from relevant stakeholders. Applicants are expected to specify how relevant stakeholders will be engaged and identify the type of stakeholder required and their expected role in the project. Accordingly, applicants are expected to:
  - engage patients, parents or carers of juvenile patients, and patient organisations as active partners in all aspects of the project to ensure that interaction between patients and research is active, meaningful, and collaborative across all stages of the research process. In this way, research decision making is guided by patients' contributions as partners, recognising their specific experiences, values, and expertise.
  - develop the framework and recommendations in consultation with stakeholders, including patient organisations, regulators, health technology assessment (HTA) bodies, and medical organisations to ensure consensus about what is required to demonstrate the patient-centred benefits of a therapy.
  - develop a regulatory strategy and interaction plan for evidence generation to support the regulatory qualification of the framework and recommendations and engage with regulators in a timely manner (e.g., national competent authorities, EMA Innovation Task Force, qualification advice).
- Complement and coordinate with other initiatives including:
  - ongoing and completed European projects (and their successor organisations), and initiatives related to patient engagement and use of digital measurement technologies. Such projects may include, but are not limited to, IMI/IHI projects PRO-active, H2O, PREFER and the PREFER Expert Network, SISAQOL-IMI, IDEA-FAST, MOBILISE-D, IMPROVE, PaLaDin as well as EUnetHTA 21;
  - existing frameworks and guidance documents related to patient-focused drug development such as those from FDA and EMA;
  - existing frameworks and guidance documents related to the development and deployment of digital clinical measures such as those from the Digital Medicine Society.

Expected impacts

The action under this topic is expected to achieve the following impacts:

- greater benefit to patients from improved health care by ensuring that DHT-derived measures of how a patient feels and functions are accepted as patient-centred clinical-study endpoints;
- patients having improved access to innovations that meet their needs through the development of new and improved evidence-based methodologies for a more comprehensive assessment of the added value of innovative therapeutic drugs and technologies;
- better informed decision-making at all levels of the health care system (authorities, organisations) to facilitate cost-effective allocation of health resources, continuing innovation, and better health outcomes;
- greater understanding of the relationship between multiple patient-centred measurements including PPI, COAs, and DHT-derived measures and how these measures, when considered together, can provide greater insight into the patient perspective;

- reduced uncertainty regarding the PPI and COA data required to demonstrate the patient-relevance of DHT-derived clinical-study endpoints, and that needed to determine what constitutes a MCID in a patient-centred DHT-derived clinical-study endpoint for use in the development of pharmaceutical products, diagnostics, combination products, and therapeutic devices;
- improved and more efficient engagement between industry and stakeholders in the evaluation of technologies developed using patient-centred DHT-derived endpoints in clinical studies;
- increased speed and efficiency in the development and evaluation of innovative therapeutic technologies.

Why the expected outcomes can only be achieved by an IHI JU action

A unifying framework for understanding the relationships among PPI, COAs, and DHT-derived measures and how these can be used in combination to demonstrate patient-centred benefits of therapeutic drugs and technologies is novel and requires input from multiple disciplines, each with their own practices and guidelines. In addition, stakeholders with an interest in the use of these measures in clinical development are numerous, varied and include multiple patient groups, regulatory authorities, and HTA bodies among others. As DHT-derived measurement and other patient-centred data are being used more often in clinical development, there is a need for consensus among pharmaceutical and therapeutic medical technology manufacturers, DHT developers, and other stakeholders to define the evidence needs surrounding the use of patient-centred, DHT-derived endpoints in the approval, economic assessment, reimbursement, and adoption of medical technologies. Such a consensus from a wide range of interested parties requires collaboration among multiple research disciplines and stakeholders to ensure that the information needs of decision makers related to this information are addressed consistently.

To achieve the outcomes outlined above, a cross-sectoral collaboration is needed with a particular involvement of and focus on patients to give insights into their experience with current technology utilisation and to contribute as partners in the development of patient-centred digital measures and digital measurement technologies. The collaboration must include patients and patient advocacy groups, academic researchers, patient preference researchers, COA experts, health economists, healthcare professionals, data analysts, regulatory and HTA stakeholders, and health technology and therapy developers. Integrating data from different origins/sources requires the cooperation of multiple data holders in a non-competitive, neutral setting like an IHI project.

Therefore, a precompetitive public-private project is the only way to harness the required expertise and incorporate the perspectives of all the relevant stakeholders in the recommendations.

Pre-identified industry consortium and contributing partners

The pre-identified industry consortium that will contribute to this cross-sectoral IHI JU project is composed of the following pharmaceutical and medical technology industry beneficiaries (‘constituent or affiliated entities of private members’):

- AbbVie
- AstraZeneca
- F. Hoffman-La Roche
- IQVIA
- Johnson & Johnson
- Molnlycke
- Novartis
- Novo Nordisk

- Pfizer (Lead)
- Siemens Healthineers/Varian
- UCB

In addition, the following contributing partners will participate in the IHI JU action:

- Genaiz
- John Snow Labs

In the spirit of partnership, and to reflect how IHI JU two-stage call topics are built upon identified scientific priorities agreed together with a number of proposing industry beneficiaries (i.e. beneficiaries who are constituent or affiliated entities of a private member of IHI JU), it is envisaged that IHI JU proposals and actions may allocate a leading role within the consortium to an industry beneficiary. Within an applicant consortium discussing the full proposal to be submitted for stage 2, it is expected that one of the industry beneficiaries may become the project leader. Therefore, to facilitate the formation of the final consortium, all beneficiaries, affiliated entities, and associated partners are encouraged to discuss the weighting of responsibilities and priorities with regard to such leadership roles. Until the role is formalised by execution of the Grant Agreement, one of the proposing industry beneficiaries shall, as project leader, facilitate an efficient drafting and negotiation of project content and required agreements.

Indicative budget

- The maximum financial contribution from the IHI JU is up to EUR 12 600 000.
- The indicative in-kind contribution from industry beneficiaries is EUR 9 434 420.
- The indicative in-kind contribution from IHI JU contributing partner(s) is EUR 3 867 000.

Due to the global nature of the participating industry partners and contributing partners, it is anticipated that some elements of the contributions will be in-kind contributions to operational activities (IKOP) from those countries that are neither part of the EU nor associated to the Horizon Europe programme.

The indicative in-kind contribution from industry beneficiaries may include in-kind contributions to additional activities (IKAA).

Indicative duration of the action

The indicative duration of the action is 60 months.

This duration is indicative only. At the second stage, the consortium selected at the first stage and the predefined industry consortium and contributing partner(s) may jointly agree on a different duration when submitting the full proposal.

Contribution of the pre-identified industry consortium and contributing partners

The pre-identified industry consortium and contributing partners expect to contribute to the IHI JU project by providing the following expertise and assets:

- results and insights from existing pilots and studies*;
- real-world evidence (RWE) and clinical trial data*;
- expertise in medicine; clinical development of therapies; digital measurement technologies; patient reported outcome measures and clinical outcome assessments; patient preference information; clinical and real-world data collection and analysis;

- expertise in regulatory strategy, policy, and decision making; health technology assessment and reimbursement; and publication support;
- data platforms, digital tools, apps, remote monitoring technology, healthcare-specific Natural Language Processing (NLP), Artificial Intelligence (AI).

* Contributions to this project may include historical data generated outside of the project timelines. In this case, it will be considered as background provided to the project but with no value assigned and will therefore not constitute part of the in-kind contribution from the pre-defined industry consortium.

Applicant consortium

The first stage applicant consortium is expected, in the short proposal, to address the scope and deliver on the expected outcomes of the topic, taking into account the expected contribution from the pre-identified industry consortium and contributing partners.

This may require mobilising the following expertise and/or resources:

- demonstrated experience in managing multi-stakeholder, cross-sectoral projects
- demonstrated experience interacting with regulatory authorities, HTA bodies, citizens and/or patient representatives
- expertise in PPI, COAs, and DHT-derived measures
- expertise in clinical study design
- expertise in health technology assessment and economic evaluation of therapies
- expertise in the public health impacts of therapeutic technologies
- expertise in advanced data management and data analytics techniques including, but not limited to, large-language models and artificial intelligence
- academic medical centres that can manage clinical case studies
- DHT partners that can contribute to the clinical case studies within the chosen clinical areas.

At the second stage, the consortium selected at the first stage and the predefined industry consortium and contributing partners will form the full consortium. The full consortium will develop the full proposal in partnership, including the overall structure of the work plan, the work packages, and the case studies, based upon the short proposal selected at the first stage.

Dissemination and exploitation obligations

The specific obligations described in the conditions of the calls and call management rules under ‘Specific conditions on availability, accessibility and affordability’ do not apply.

HORIZON-JU-IHI-2024-08-01 **A city-based approach to reducing cardiovascular mortality in Europe**	The maximum financial contribution from IHI JU is up to EUR 15 750 000. The indicative in-kind contribution from industry partners is EUR 15 750 000. The indicative in-kind contribution from industry partners may include in-kind contributions to additional activities.	Research and Innovation Action (RIA). Two-stage submission and evaluation process. Only the applicant consortium whose proposal is ranked first at the first stage is invited for the second stage.
HORIZON-JU-IHI-2024-08-02 **Novel endpoints for osteoarthritis (OA) by applying big data analytics**	The maximum financial contribution from IHI JU is up to EUR 14 000 000. The indicative in-kind contribution from industry partners is EUR 11 416 000. The indicative in-kind contribution from IHI JU contributing partners is EUR 4 260 000. The indicative in-kind contribution from industry partners may include in-kind contributions to additional activities.	Research and Innovation Action (RIA). Two-stage submission and evaluation process. Only the applicant consortium whose proposal is ranked first at the first stage is invited for the second stage.
HORIZON-JU-IHI-2024-08-03 **Modelling regulatory sandbox mechanisms and enabling their deployment to support breakthrough innovation**	The maximum financial contribution from IHI JU is up to EUR 5 200 000. The indicative in-kind and financial contribution from industry partners is EUR 4 261 096. The indicative in-kind contribution from industry partners may include in-kind contributions to additional activities.	Research and Innovation Action (RIA). Two-stage submission and evaluation process. Only the applicant consortium whose proposal is ranked first at the first stage is invited for the second stage.
HORIZON-JU-IHI-2024-08-04 **Patient-centred clinical-study endpoints derived using digital health technologies**	The maximum financial contribution from IHI JU is up to EUR 12 600 000. The indicative in-kind contribution from industry partners is EUR 9 434 420. The indicative in-kind contribution from IHI JU contributing partners is EUR 3 867 000. The indicative in-kind contribution from industry beneficiaries may include in-kind contributions to additional activities.	Research and Innovation Action (RIA). Two-stage submission and evaluation process. Only the applicant consortium whose proposal is ranked first at the first stage is invited for the second stage.

Contact

Tel +32 (0)2 221 81 81
infodesk@ihi.europa.eu

Postal address:
IHI JU - TO56
1049 Brussels – Belgium

Visiting address:
Ave de la Toison d'Or 56-60
1060 Brussels – Belgium

ihi.europa.eu
@IHIEurope