innovative health initiative

IHI 2024 In Focus

Annual Report Summary

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

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1. Foreword

Niklas Blomberg
IHI Executive Director

As I look back on my first year as Executive Director of the Innovative Health Initiative, it is a good time to reflect on what makes our partnership model unique, and why it helps us to deliver excellent, impactful science that contributes to Europe's competitiveness and key EU policies.

The answer can be found in our tagline – **'bold collaborations, transforming health'**.

Many research partnerships bring together funding from different sources. What sets IHI (and its forerunner IMI) apart, and drives our success, is the way our projects create 'bold collaborations' by bringing together the best people in their fields.

On the 'public' side, EU funding supports the participation in our projects of leading experts from universities, SMEs, patient groups, regulators and other groups whose input is essential in health research. And on the 'private' side, around half of the contributions of our industry members to our projects come in the form of people – in our projects, we have industry representatives from different sectors with expertise in a wide range of areas, including research, development and advanced engineering, regulatory affairs, project management, process development and manufacturing.

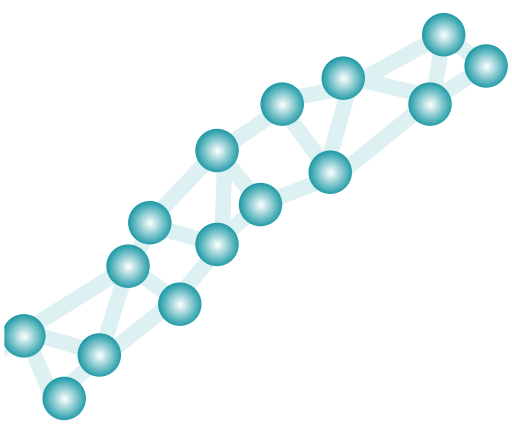
As a result, our projects include a diversity of knowledge, expertise, viewpoints and ways of working. This allows them to generate results that are both scientifically excellent and have a clear pathway to impact in research and health care – in other words, to transform health.

The added value of this approach is evident in the results presented in this report; we have project outputs being taken up and used by organisations both from within and outside the consortium. We also have project results achieving regulatory endorsements. Other project results contribute to the competitiveness of the sector. For example, many projects have established pan-European clinical trial networks as well as other resources (e.g. trial protocols, templates etc) to facilitate the conduct of multi-country clinical trials.

If the private members simply contributed cash to our projects, the results section would be significantly thinner and less impressive.

The strength of this way of working is also recognised in the report on the external evaluation of the Innovative Medicines Initiative 2 (IMI2) and IHI programmes, which was published in 2024. The report recognises IMI as 'a world-first public-private partnership in the field of health research and innovation'. Furthermore, expanding the scope to include cross-sector collaboration under IHI means the partnership is still 'ahead of the curve', the report notes.

Looking to the future, I am confident that IHI will stay 'ahead of the curve', delivering results that will both transform health and boost Europe's competitiveness.



Bold collaborations, transforming health

2. Highlights from the year

In 2024, we reflected on the progress of IHI and the impact of IMI, we launched our 200th project and we decided to shift our strategy for call 9 – preparing to launch our first-ever applicant-driven call for proposals.

We celebrated the **launch of our 200th project**, UMBRELLA, in August. UMBRELLA perfectly exemplifies what IHI is about. It is tackling a major unmet health need (the need for better stroke care) by bringing together a coalition of universities, hospitals, patient groups, and companies from different sectors. Working in a collaborative public-private partnership like this will allow them to achieve results that would not be possible for any single organisation or even country to address alone.

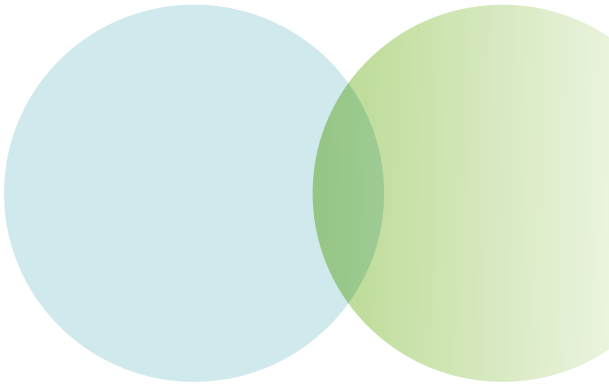
For the first time ever, a strategic decision was taken by IHI to launch an **applicant-driven call**. While all our previous calls have clearly outlined the challenges that we want applicants to tackle, the new call will take a different approach. The idea was that potential applicants could propose solutions to any challenge identified in our strategic research and innovation agenda. Of course, the usual rules for IHI projects would still apply – the projects proposed would have to be a large-scale, ambitious, cross-sector public-private partnerships, addressing unmet public health needs and with clearly-described impacts on society, the economy and science. The pilot call was published in January 2025.

The European Commission runs **evaluations of its research programmes** both at the halfway point and after the end of the programme, and in this context a team of experts carried out the final evaluation of the Innovative Medicines Initiative 2 (IMI2) programme and the mid-term evaluation of the Innovative Health Initiative (IHI).

You can read the full evaluation here, but in summary, **IMI2 exceeded its targets**, advanced digital health, built long-lasting networks and supported the sustainability of the results of its projects. The move to IHI was judged to make the partnership stronger, with evaluators saying that **IHI is ahead of the curve**, contributes to key EU policies, supports collaboration across sectors and can drive innovation.

One key area where public-private partnerships can make an impact is through regulatory science. IHI hosted a **Regulatory Science Summit** in February which brought together representatives of regulatory agencies for medicinal products and devices as well as people from the European Commission and IHI's industry members. Over the course of two days, the group discussed challenges and opportunities in regulatory science that could be addressed by a cross-sectoral public-private partnership like IHI. They also explored how to maximise the regulatory impact of IHI projects. A **report** has been published on our website highlighting the main take-aways.

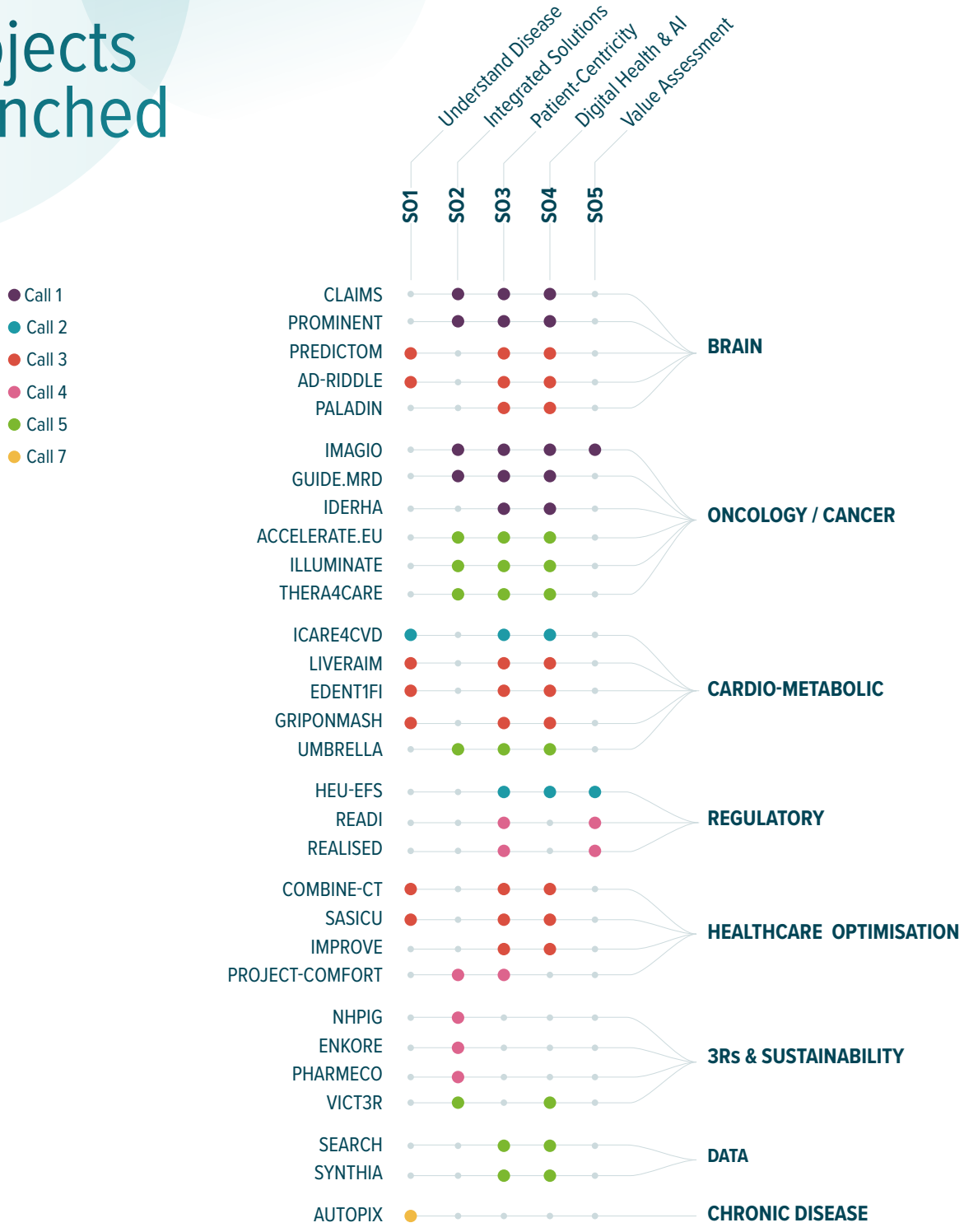
The roll-out of real-world data and AI solutions across European healthcare systems can't be achieved without tackling some common problems, like data interoperability, a lack of trust in AI, the need for training healthcare professionals to use new tools, harmonisation of data, regulatory hurdles, and more. IHI ran a workshop on real-world data, AI and digital health in October that explored the role that IHI and IMI projects have played, continue to play and will play in strengthening the EU's capabilities in alignment with the goals of the European Health Data Space. An **event report** has been published capturing the discussions.



2024 was the year when the impact of IHI and IMI on greening the healthcare sector was particularly evident. Two eco-friendly IHI projects, **PHARMECO** and **ENKORE**, were launched. PHARMECO is integrating 'safe and sustainable by design' principles into pharmaceutical development, while ENKORE is developing an eco-design framework for single-use medical devices and their packaging, which will cut down on waste. **IMI's PREMIER** project is focused on limiting the harm that active ingredients from medicines can do to ecosystems and wildlife and in 2024 the project launched a framework to prioritise the environmental assessment of medicines which has already been applied to more than 1000 pharmaceutical ingredients.

In terms of administration, we continue to perform well, with good results on budget execution and achievement of all key targets relating to the management of calls and payments.

3. Projects launched



Meet the latest additions to the IHI project family

Improving clinical trials

Two new IHI projects are contributing to improving the environment for clinical trials in Europe. These projects' outputs will not only accelerate the development of much-needed new treatments, but they will also contribute to Europe's competitiveness by making it an attractive place to run high quality trials, even in challenging disease areas.

RealiseD targets a paradigm shift in clinical trials for rare diseases – the team aims to deliver tools and resources to facilitate the set-up and conduct of trials for rare and ultra-rare diseases while minimising the burden for patients.

Meanwhile the **READI** project will usher in a more inclusive approach to clinical studies by supporting the inclusion of underserved and underrepresented groups in trials. Improving inclusiveness and representation in clinical studies will lead to more equitable healthcare access, help address existing health disparities and enhance the quality of clinical research.

Advancing theranostics to tackle tough-to-treat cancers

Theranostics refers to the practice of pairing a diagnostic test and therapy that both bind to the same target. For example, a molecule targeting a cancer cell could carry with it a radioactive isotope that shows up on a scan to diagnose the disease, and then another radioactive isotope designed to destroy the cancer cell. In 2024, IHI launched three new projects that aim to advance the development of theranostics and boost Europe's theranostic manufacturing and treatment capacities. The projects contribute to the EU's Strategic Agenda for Medical Ionising Radiation Applications (SAMIRA) action plan, which supports the safe, high quality and reliable use of radiological and nuclear technology in healthcare.

ACCELERATE.EU is pioneering the development of novel radiotheranostic pairs in which the therapy part features the radioactive isotope astatine-211 (211At). What sets 211At apart from other similar treatments is the fact that it emits alpha particles, and so could prove effective at treating cancers that are resistant to beta and gamma particles as well as chemotherapy. The project will focus its efforts on three highly aggressive cancers: pancreatic, breast and brain cancer.

ILLUMINATE focuses on Lutetium-177-PSMA (Lu-177-PSMA), which is used to treat prostate cancer that has spread to other organs and become resistant to treatments such as hormone therapy. ILLUMINATE aims to make it easier to identify the patients who are most likely to benefit from Lu-177-PSMA, and deliver improved manufacturing methods to minimise the risk of drug shortages.

Finally, **Thera4Care** plans to position Europe as a global leader in theranostics and support healthcare system readiness for the technology. It is doing this by establishing an integrated, collaborative European ecosystem for theranostics that brings together leading academic centres, healthcare providers, SMEs and industry stakeholders.

Boosting the potential of synthetic data in health research

Synthetic health data, which has been created artificially to mimic real patient data, can help to avoid some of the privacy, security and other issues that arise when doing research with genuine patient data. However, it is not always clear which methods of generating synthetic health data are best for different situations, and some methods are still immature.

New project **SYNTHIA** is working to deliver validated, reliable tools and methods for synthetic data generation (SDG). The tools will cover multiple data types including lab results, clinical notes, genomics, imaging and m-health data. SYNTHIA also hopes to make possible the generation of longitudinal data.

The aim of **SEARCH** is to develop an innovative biomedical data generation and sharing solution as well as generalisable methodologies for generating and validating synthetic data. SEARCH will use new models to create realistic synthetic replicas of diverse types of healthcare data, including data types that are often missing from synthetic data sets, such as wearable device data, image sequences, and genomic data. The project will also deliver a framework for assessing the anonymity and credibility of synthetic data.

Practical improvements to healthcare

IHI boasts a growing portfolio of projects that aim to improve healthcare in diverse ways.

Today, having a blood test requires the patient to go to a hospital or clinic and this can be burdensome. But what if patients could collect a blood sample in the comfort of their own home and simply send it to the lab for analysis? Turning this vision into a reality is the ultimate goal of **Project-COMFORT**, which focuses on patient-centric microsampling techniques that collect less than half a millilitre of blood. While microsampling devices already exist, they are not widely used; Project-COMFORT aims to co-create and test the logistics, infrastructure and tools needed to make microsampling a standard part of healthcare and an acceptable alternative to conventional blood tests.

A stroke is a life-threatening condition that occurs when the blood supply to part of the brain is cut off by either a blood clot (85% of cases) or a burst blood vessel. Due to the potential for long-lasting consequences, stroke care involves a lengthy, complex pathway requiring coordination among multiple healthcare professionals. Unfortunately, many patients experience impaired care due to poor coordination between their healthcare providers. **UMBRELLA** aims to revolutionise the way we manage strokes by implementing a comprehensive approach that addresses gaps along the whole stroke care pathway, from diagnosis and emergency treatment, right through to rehabilitation and the prevention of further strokes.

Arthritis refers to a range of systemic diseases characterised by joint pain, swelling, and stiffness. Currently, imaging technologies are widely used to diagnose different forms of arthritis, monitor changes in patients' conditions and assess how well treatments are working. However, we lack tools to facilitate the analysis and interpretation of the large number of images generated. **AUTOPIX** aims to deliver powerful analysis and decision-making tools to boost the usefulness of these images to patients and clinicians, from diagnosis and initial treatment decisions, through to monitoring and follow-up.

Towards a greener healthcare sector

The health sector has a significant impact on the environment; in OECD (Organisation for Economic Co-operation and Development) countries, it is responsible for between 3 and 8% of CO_2 emissions. It also uses large quantities of water, energy, solvents and fossil-based raw materials, and generates a lot of waste. Two new IHI projects aim to improve the environmental performance of the sector, and so contribute to EU policies such as the Green Deal.

PHARMECO plans a 'green revolution' in medicines manufacture. It will do this by integrating 'safe and sustainable by design' principles into pharmaceutical development, and will deliver practical tools and resources to support environmentally-sound decision-making when designing manufacturing processes.

For its part, **ENKORE** focuses on the medical device sector; medical devices, particularly single-use devices, and their packaging generate substantial amounts of waste, including plastics and hazardous materials that are challenging to manage. They also need to be sterile and up to the job, and this limits the kinds of materials that can be used to make them. ENKORE seeks to develop an eco-design framework for single-use medical devices and their packaging. By integrating sustainable practices into the design, manufacturing and waste management processes, the project aims to support the delivery of products that are both safe for patients and environmentally responsible.

4. IHI Calls

IHI's call 5 closed in 2024, while calls 6, 7, and 8 were launched along the year.

Call 5

IHI call 5 was a single-stage call that searched for non-animal approaches for health technology development, new clinical applications of theranostics (when a diagnostic test and therapy that both bind to the same target are paired), improved approaches to stroke management and solutions to maximise the potential of synthetic data for healthcare.

Topic 1:

Accelerating the implementation of New Approach Methodologies and other innovative non-animal approaches for the development, testing and production of health technologies

Topic 2:

Development and proof of principle of new clinical applications of theranostics solutions

Topic 3:

Improved prediction, detection, and treatment approaches for comprehensive stroke management

Topic 4:

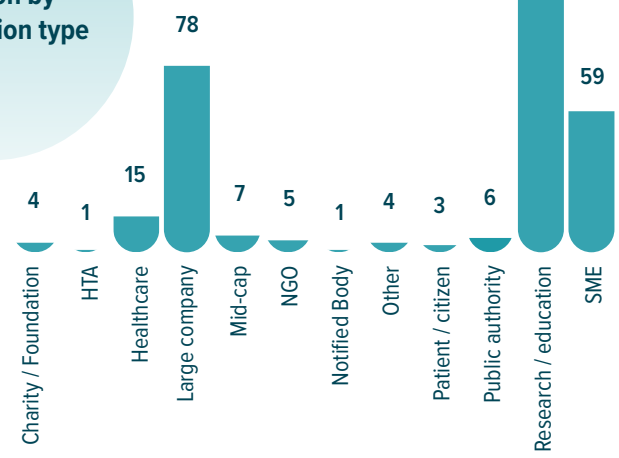
Maximising the potential of synthetic data generation in healthcare applications

17 proposals were received in response to this call, and **7** were selected to become IHI projects.

26% of the applicants are IHI industry partners, and **24%** are IHI contributing partners. The table below gives a detailed breakdown of the applicants by organisation type.

	Charity / Foundation	HTA	Healthcare	Large company	Mid-cap	NGO	Notified Body	Other	Patient / citizen	Public authority	Research / education	SME	Total by country
Albania											1		1
Austria	1										4	1	6
Belgium	2		1	4	1	2			1		10	1	22
Cyprus			1								1	3	5
Czechia											1		1
Denmark			2	4						1	6	7	20
Finland			1		1						2	1	5
France			4	5							5	2	16
Germany				18	1						17	7	43
Greece			1						1		5	2	9
Hungary				2							1	1	4
India				2									2
Ireland				3							1	2	6
Israel				1									1
Italy			1	4				1	1		13	3	23
Lithuania											1	1	2
Luxembourg												1	1
Netherlands	1		1	5	1	1					14	6	29
Norway							1				3		4
Poland											3		3
Portugal											6		6
Romania											1	1	2
Slovakia				1							1		2
Slovenia								1			1		2
Spain			3	6		1		1		1	21	11	44
Sweden				2	1					1	2	3	9
Switzerland				7	1	1				1	4	2	16
Türkiye										1			1
Ukraine										1	1		2
United Kingdom		1		5	1						1	3	11
United States				9				1				1	11

Distribution by organisation type



Total number of applicants
309

Call 6

IHI call 6 was a two-stage call that was launched on 16 January 2024 with topics on treatment persistency and the use of real-world data and evidence.

Topic 1:

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

Topic 2:

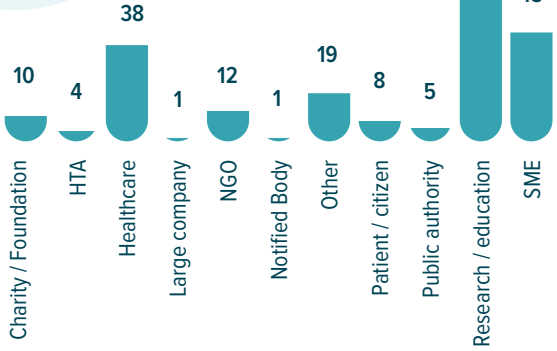
Development of evidence based practical guidance for sponsors on the use of real-world data / real-world evidence

The deadline for short proposals was 16 April 2024 while the deadline for full proposals was 10 October 2024.

16 short proposals were submitted for this call. The short proposals were evaluated by independent experts and the top ranked consortium for each topic was invited to join up with the industry consortium identified in the call text and submit a full proposal.

	Charity / Foundation	HTA	Healthcare	Large company	NGO	Other	Patient / citizen	Public authority	Regulator	Research / education	SME	Total by country
Austria			1							4	1	6
Belgium	2		1		6		3			3	5	20
Bulgaria										2		2
Croatia										1		1
Czechia			1					1		2		4
Denmark			4					1		6	1	12
Estonia										1	2	3
Finland			2							3		5
France			1		1					5		7
Germany			2				3		2	13	6	26
Greece			3				2			10	1	16
Hungary											1	1
Ireland			1				2			3		6
Israel							1			1		2
Italy	2	1	2	1						14	7	27
Luxembourg										3	2	5
Netherlands	1		4		3		1	1		15	6	31
Norway		1	3		1				1	3		9
Poland										3	1	4
Portugal			1				2			4		7
Romania										3		3
Serbia										1		1
Slovenia						1				2		3
Spain	5		10		1		3	2	1	13	8	43
Sweden			1				2	2		4		9
Switzerland										3	2	5
Türkiye										1		1
Ukraine										1		1
United Kingdom		2	1					1	1	14		19
United States										1		1

Distribution by organisation type



Total number of applicants
280

Call 7

IHI call 7 was a single-stage call with topics on heart disease, the healthcare workforce, and biomarkers.

Topic 1:

Improving clinical management of heart disease from early detection to treatment

Topic 2:

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

Topic 3:

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

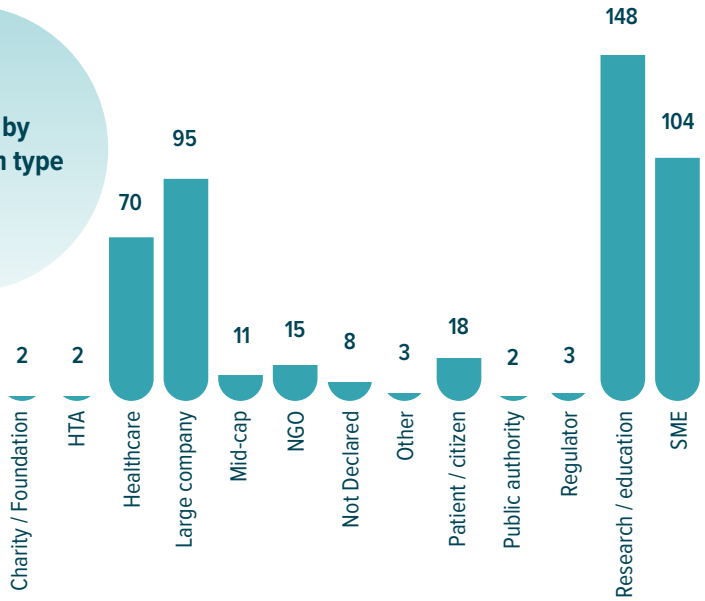
The deadline for submission of proposals was 22 May 2024.

28 proposals were received in response to the call, and **8** were selected to become IHI projects.

24% of the applicants are IHI industry partners, and **10%** are IHI contributing partners. The table below gives a detailed breakdown of the applicants by organisation type.

	Charity / Foundation	HTA	Healthcare	Large company	Mid-cap	NGO	Not Declared	Other	Patient / citizen	Public authority	Regulator	Research / education	SME	Total by country
Australia												1		1
Austria			1			2					1	6	2	12
Belgium			1	7	1	1			4			1	3	18
Bulgaria						1							1	2
Canada				1									1	2
Croatia							1							1
Cyprus			1									1	2	4
Czechia			1											1
Denmark			4	4								5	2	15
Estonia													3	3
Finland													1	1
France			6	8		1		1	1			10	7	34
Germany			10	16	2		2		1		1	20	14	66
Greece									3			3	2	8
Hungary				2									1	3
India				1										1
Ireland				1	2				1			2	1	7
Israel				1								1	1	3
Italy			11	5	1		2		1			12	7	39
Korea (Republic of)							1							1
Latvia												1		1
Lithuania													1	1
Luxembourg													1	1
Nepal			1											1
Netherlands	1		11	16	2			1	3			23	24	81
Norway				1								1	1	3
Poland												3		3
Portugal			1	1								2	1	5
Romania						1							1	2
Serbia			1									2		3
Slovakia				1										1
Slovenia						1			1			1		3
South Africa												1		1
Spain	1	2	13	8	1	2		1	1		1	14	11	55
Sweden			3	2								5	2	12
Switzerland			1	5	1	6	1		1			7	3	25
Taiwan												1		1
Türkiye										2			1	3
Ukraine												1		1
United Kingdom			4	9	1				1			22	9	46
United States				6			1					2	1	10

Distribution by organisation type



Total number of applicants **481**

Call 8

Call 8 was a two-stage call with topics on cardiovascular disease, osteoarthritis, regulatory sandboxes, and patient-centred endpoints.

Topic 1:

A city-based approach to reducing cardiovascular mortality in Europe

Topic 2:

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

Topic 3:

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

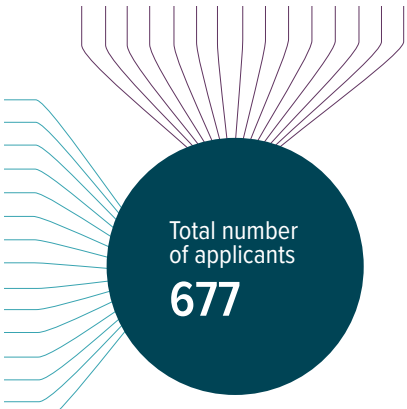
Topic 4

Patient-centred clinical-study endpoints derived using digital health technologies

The deadline for short proposals was 10 October 2024 while the deadline for full proposals was 23 April 2025.

	Charity / Foundation	Payer	HTA	Healthcare	Large company	Mid-cap	NGO	Not Declared	Notified Body	Other	Patient / citizen	Public authority	Regulator	Research / education	SME	Total by country
Austria				1				1						6	1	9
Belgium	3		1	5			8	3			5	1		13	8	47
Bosnia and Herzegovina												1		1		2
Bulgaria				1		1	1				1	1		4	2	11
Canada							1	1			2			1	1	6
Croatia															1	1
Cyprus									1						2	3
Czechia							1								1	2
Denmark	1			3								3	1	7	2	17
Estonia												1		4	6	11
Finland				1				1				2		2	2	8
France				2		1	1	1			3		1	4	4	17
Germany	1			7		1	1	4		1	1	5	1	26	11	59
Greece				3			2		1		3	3	1	19	10	42
Hungary															1	1
Iceland														1		1
Ireland				1	1		2	2		1	3	1		6	5	22
Israel											1			1		2
Italy	1			13				1			1	3		40	9	68
Japan														1		1
Latvia				1										2	1	4
Lithuania				1							1			1	1	4
Luxembourg				1								1		1	1	4
Netherlands	8		1	8			1	2		2	5	1		31	8	67
Nigeria															2	2
Norway			1				1					1	1	5		9
Poland				2								1		4	1	8
Portugal				2								1		9	4	16
Romania				1		1						1		3	1	7
Serbia				1								1		1	2	5
Slovenia	2			1		1	1			1	1	1	1	3	1	13
South Africa														1		1
Spain	1	1	4	15			3	1			4	8	1	30	28	96
Sweden				2			1					1		8		12
Switzerland							1			1	2	1	1	15	11	32
Türkiye				1							1	1		5	2	10
Ukraine							1								1	2
United Kingdom	3		1	3			1	1			1	5		27	9	51
United States										1				2	1	4

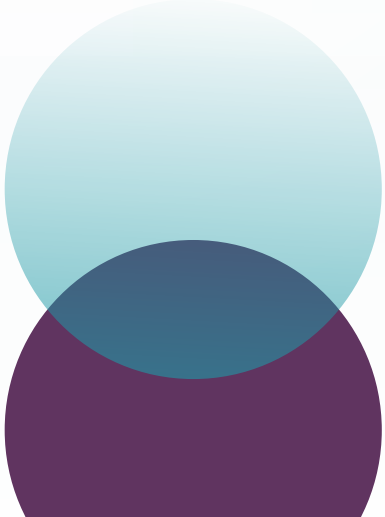
Distribution by organisation type



5. Research highlights

Delivering results with impact

The IHI Programme Office continues to manage the large number of projects launched under the IMI1 and IMI2 programmes. Here's a selection of those outputs – between them, they demonstrate how our projects are delivering results that address major unmet health needs, including infectious diseases such as tuberculosis (TB), metabolic disorders such as diabetes, and more. The projects are continuing to deliver knowledge and resources that can be used by the wider research community. In addition, the many results in fields such as health data and medical devices demonstrate how IMI paved the way for IHI by launching projects with a strong cross-sectoral element. You'll also see a number of results from projects that actually ended several years ago. The fact that the consortia are still collaborating and publishing new papers is testament to the way IMI projects are creating long-lasting, productive networks.

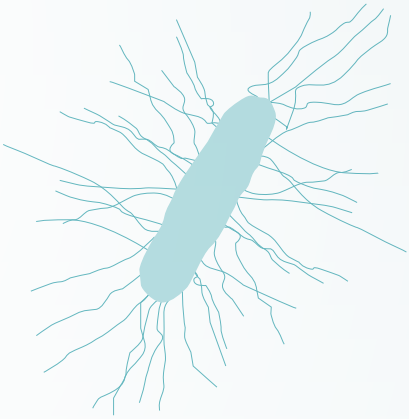


IMI projects are securing regulatory endorsement

Many IMI and IHI projects are developing results and outputs such as novel tools, methodologies, biomarkers, endpoints, and patient-reported outcomes that may impact on health-related decision-making processes, including decision-making processes by regulatory authorities.

IMI-supported treatment against multidrug-resistant bacteria approved by European Commission

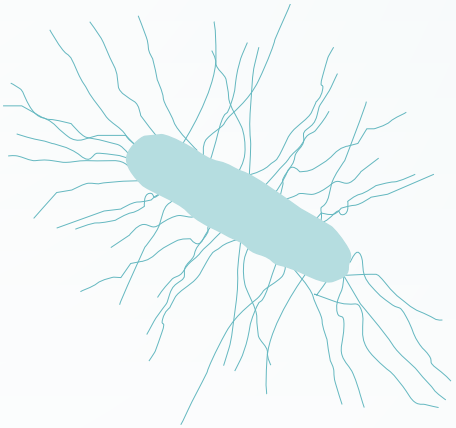
Up to 35,000 deaths in the EU every year are estimated to be caused by multi-drug resistant bacteria, and the IMI programmes feature a comprehensive portfolio of projects set up to address the immense challenge of antimicrobial resistance (AMR).



In April 2024, the European Commission approved marketing authorisation for Pfizer's EMBLAVEO®, a fixed-dose combination of two active substances - aztreonam and avibactam - for adult patients with infections due to antibiotic-resistant bacteria. EMBLAVEO® is indicated for the treatment of complicated intra-abdominal and urinary tract infections, hospital-acquired pneumonia and infections caused by certain types of bacteria (aerobic Gram-negative) where treatment options are limited.

> Two of the EMBLAVEO® clinical studies were conducted with the support of the IMI project **COMBACTE-CARE**.

Data from the studies showed that the treatment is effective and well-tolerated.



IMI project drives 'historic' decision to drop common animal test

Before a new batch of medicines can be released for use, manufacturers must run certain tests to check that the batch is safe for patients, whether human or animal. The tests required to assess the safety and quality of different types of medicines are set out in a reference work called the European Pharmacopoeia. In the case of medicines administered by injection, such as vaccines, some antibiotics, and blood products, manufacturers have to test for pyrogens, contaminants which can trigger a fever. For decades, the rabbit pyrogen test (RPT) has been the most common pyrogen test, and today some 400 000 rabbits worldwide are subjected to the test every year.

IMI project VAC2VAC was launched with the goal of developing and validating non-animal testing approaches for both human and veterinary vaccines. One focus of the project was the monocyte activation test (MAT), a cell-based assay for pyrogens. The project validated the MAT for testing batches of ENCEPUR, a vaccine against tick-borne encephalitis virus (TBEV).

> Now, VAC2VAC's work has helped to convince the European Pharmacopoeia Commission (EPC) to eliminate the RPT from its monographs entirely.

During a meeting, the group deleted the RPT from 57 texts and added a new general chapter on pyrogens. The new rules will come into force on 1 July 2025. After that, the RPT will no longer be required and medicines developers will be able to select a suitable in vitro test, such as the MAT, to test their products for pyrogens.

EMA endorses new method for evaluating severity of Alzheimer's disease

In June 2024, the European Medicines Agency gave a thumbs up – in the form of a qualification opinion of novel methodologies for drug development – to a new methodology extensively validated by the IMI AMYPAD project that can assess the degree of Alzheimer's disease visible in a person's brain scan.

The technique works by grading the level of Alzheimer's disease a person has according to the amount of a protein called amyloid that is present in their brain, which is estimated using radioactive signals visible on a brain scan.

> The endorsement means that the method can be confidently used in clinical trials by researchers who are seeking new treatments for Alzheimer's disease.

The methodology can help to evaluate how effective new potential treatments are.

Project results are being taken up and integrated into activities, products and services

Numerous results from IMI projects are being taken up and used by project partners in their research and innovation activities, or being integrated into products and services. This demonstrates the quality of the outputs and shows how projects are making contributing to advancing health research and boosting the competitiveness of the sector.

Real-world results: Mobilise-D algorithms enter the market

The way we move is an indication of how healthy we are. Declines in mobility are linked to the progression of several diseases including Parkinson's disease, multiple sclerosis, chronic obstructive pulmonary disease (COPD) and more.

> The **Mobilise-D** project set up an easy-to-use, clinically-validated system to monitor people's walking and gait patterns in real-world settings.

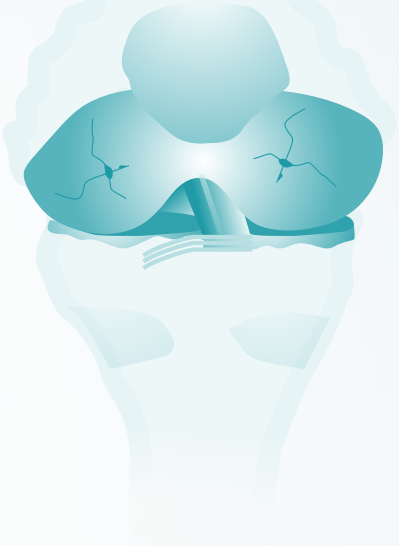
The method involves attaching a single wearable device to a patient's lower back over a seven-day period, which gives clinicians and researchers a clearer picture of exactly how well a person is moving in real life. Algorithms developed by the project then translate the device readings into digital mobility outcomes that can indicate a change in a person's disease status, how it is evolving over time and even predict future health events.

The project decided to make the algorithms open-source and translate them into the Python programming language – a task that was labour-intensive but has delivered results. By the end of 2024, there had been more than 500 downloads of the source code, and **four companies had integrated the Mobilise-D algorithms into their own offerings**.

RT-Cure results support new rheumatoid arthritis trial

Rheumatoid arthritis is caused when the immune system attacks the body's own healthy cells, resulting in painful inflammation, especially around the joints.

> Now a new clinical trial testing the best administration route for an experimental arthritis treatment is using outcome measures established by IMI project **RT-Cure** to evaluate its performance.



The experimental treatment involves manipulating the patient's own white blood cells and re-injecting them, with special instructions telling the immune system to cease attacking the rheumatoid joint. The treatment was initially tested using fluid from a knee joint, and now this new trial - AUTO-DECRA-2 - will test whether other entry points on the body (namely the lymph node and under the skin beside the thigh) might work better.

The differences in the immune responses to the various administration routes might be very slight, and often patients don't experience shifts in their symptoms over the short term. The AUTO-DECRA-2 trial needed a biochemical method to indicate which administration route yielded the best results, and the immune monitoring outcome measures developed by the RT-Cure project were a perfect fit. RT-Cure support also helped to establish the procedure of aspirating cells from lymph nodes (needed for biomarker analysis) as well as the procedure for injecting cells into lymph nodes as a treatment route.

PERISCOPE model accelerates development of new pertussis vaccine

Vaccines have helped to cut cases of pertussis (whooping cough) worldwide. However, recent years have seen a rise in cases and the disease remains a leading cause of infant mortality around the world.

> A key output of the IMI project **PERISCOPE** was a controlled human infection model of pertussis, which essentially creates a fast-track way of measuring how well a novel vaccine can prevent people getting infected.

The model developed by PERISCOPE is being used in a clinical trial of a nasal vaccine for pertussis, which fights the bacteria that causes the disease at its entry point to the body and prevents it from taking hold.

EU-PEARL platform trial resources applied in new depression trial

The EU-PEARL project developed tools and resources to facilitate the set-up and implementation of platform trials, in which several treatments can be tested at the same time, using a shared infrastructure and participant pool. The design is based on a single master protocol to which new treatment groups can be added at any time and treatments that prove ineffective can quickly be dropped.

> EU-PEARL successfully developed a master protocol specifically for depression studies, and this will now be used in the first Europe-wide platform study on the safety and efficacy of treatments for depression.

With funding from the Wellcome Trust, the platform trial will be rolled out in six European countries – Germany, Spain, the Netherlands, Italy, Denmark and the UK. Two drugs plus a shared placebo arm will be investigated initially, with plans to add more treatments over time.

Meanwhile, work on an adaptive trial for patients with neurofibromatosis-1 (NF-1) using the master protocol developed by the consortium will continue; the trial protocol was submitted to EMA for scientific review and drug selection is ongoing.

ConcePTION app offers info for mums-to-be

Surprisingly little is known about which medicines can be taken safely by pregnant and breastfeeding women, or what the potential side effects of various medication can be.

> The Meds4Mums2B app developed by the ConcePTION project will provide pregnant and breastfeeding women with trustworthy and robust information based on real-world data.

The basis of the ConcePTION app was an app that already exists and was developed as part of IMI's WEB-RADR project – it is a mobile application which allows patients to directly report potential medicine side effects and also receive reliable information on their drugs. ConcePTION tailored it specifically for use for pregnancy and breastfeeding. Users can create a list in the app of the medications that they are interested in. Then, they receive news and updates for those particular medications only, for instance if more information becomes available about the risks or benefits of taking that particular medication during pregnancy or breastfeeding. This way, they will always have access to the most up-to-date information.

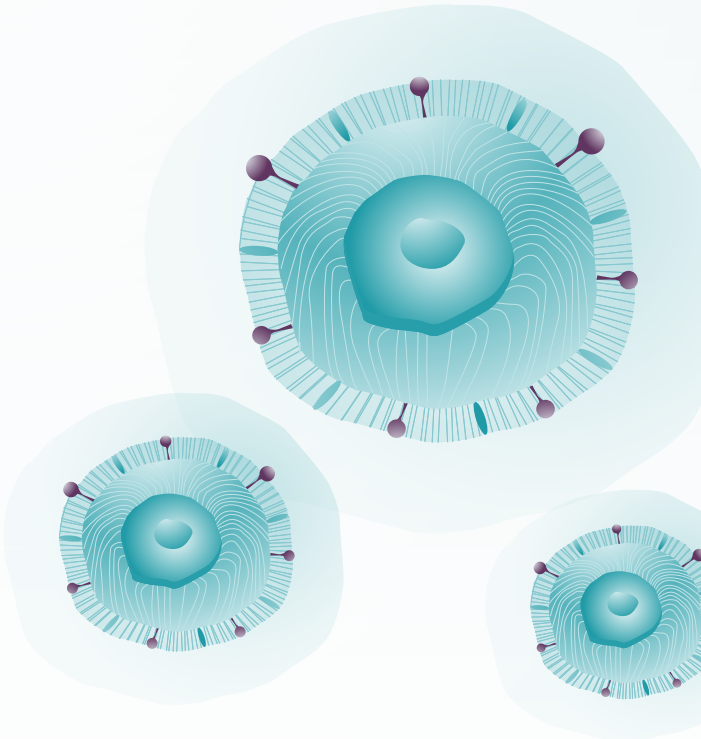
Italy screens for type 1 diabetes alongside EDENT1FI

IHI project EDENT1FI was set up with one goal: to improve screening for type 1 diabetes in children and adolescents throughout Europe. By the time the project ends, more than 200 000 children and teenagers in the general population across Europe will be screened for this disease.

Around the same time as EDENT1FI started, the Italian government passed a law announcing that national screening programmes for type 1 diabetes in children and teenagers would begin. Although it was still early days for EDENT1FI, Italian researchers active in the project were called on to assist the government with the national plan, and so a dialogue began between the two screening initiatives. The type of approach taken by the Italian government is different to that taken by EDENT1FI, but the researchers have opened a channel of communication where best practices and learnings are shared liberally.

> To date, the Italian government has already implemented EDENT1FI's master protocol as part of an ongoing pilot screening programme.

The EDENT1FI project also developed a method of screening for multiple autoantibodies – indicators of type 1 diabetes – using a capillary test, which proved efficient and non-invasive. Seeing the success that EDENT1FI had with the test, the Italian government also deployed it as part of their screening programme.



IMI projects are releasing valuable resources to the research community

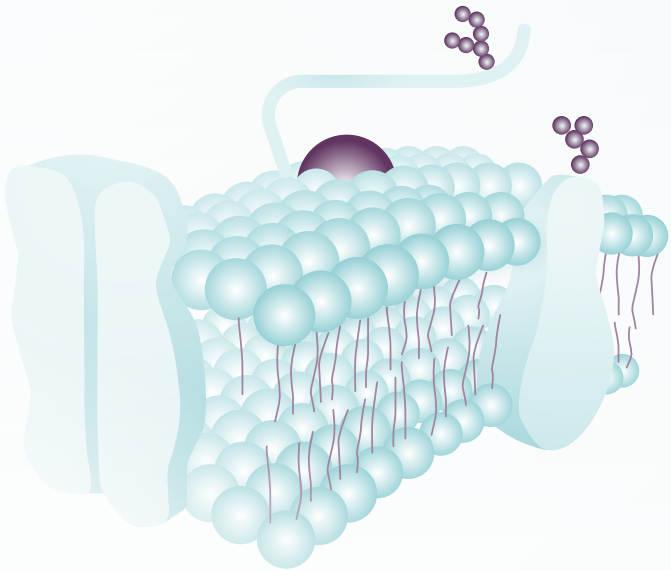
Many IMI projects make their project outputs available to the wider research community, boosting their impact and ensuring their legacy.

RESOLUTE and REsolution put the spotlight on under-studied proteins

Transport proteins are the gate-keepers of our cells, effectively controlling the flow of nutrients and other molecules across the cell membrane. With over 400 members, solute carriers (SLCs) represent the largest class of transport proteins. Yet although they have been implicated in many diseases, solute carriers had never been studied in detail. IMI projects RESOLUTE and REsolution changed that, delivering a wealth of knowledge on SLCs plus tools to study them further.

> Outputs include cell lines, data and protocols for assays, and information on how genetic variations in SLC genes affect health.

Crucially, the projects made their results available to the scientific community through their own knowledge base and through other repositories.



IMI projects are paving the way for personalised treatments

Many diseases are still described on the basis of their symptoms, even though the underlying causes may be very different. This is important because a treatment that works in one patient may not work in another. IMI and IHI projects are probing the underlying causes of a wide range of diseases in a bid to identify clearly-defined clusters of patients who could respond well to the same treatments. Ultimately, these findings pave the way for more personalised treatments and could help to ensure that patients receive a treatment that works for them, faster.

Discovery of five subtypes of Alzheimer's enriches the EPND database

The underlying physiology of Alzheimer's disease is extremely diverse, and researchers have posited that this could be a reason for the limited success of Alzheimer's drug trials.

> Now, researchers have used cerebrospinal fluid analysis data to successfully identify five separate molecular subtypes of Alzheimer's disease.

They analysed samples from 419 Alzheimer's patients and compared those results to 187 healthy people, as a control.

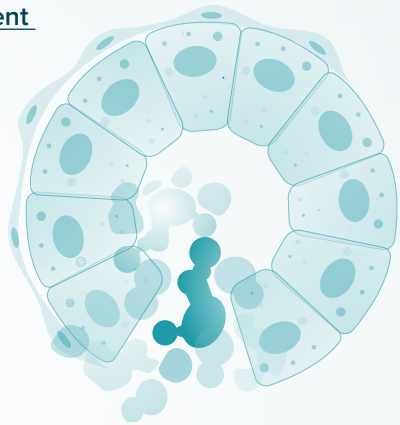
The five subtypes had distinct molecular characteristics – for instance, one subtype had increased production of amyloid plaques, whereas another subtype had reduced production of amyloid plaques but disruption of the blood-brain barrier. The group then validated their findings by creating a "subtype detector" using machine learning, and running it through a series of 6 cohort datasets from Europe and the US, where it identified subtypes with high accuracy.

Key to the study was the IMI project European Platform for Neurodegenerative Diseases (EPND). The individuals involved in the study were selected from a number of cohorts in the EPND Catalogue, and the data generated will be linked to EPND to enrich the platform and allow for further sharing and linking to other data.

New subgroups of Sjögren's patients mean better treatments possible

Sjögren's disease is a condition in which the immune system attacks cells in the body that secrete fluids, such as tear ducts and salivary glands. Symptoms include itchy eyes, a dry mouth, joint and muscle pain, difficulty concentrating, and disabling fatigue. Although there are treatments to alleviate some symptoms of Sjögren's disease, there is no cure.

> IMI project **NECESSITY** carried out a study that showed that **Sjögren's patients can be categorised into three different subgroups**, meaning that more personalised and better treatments could be possible.



The project will now apply its approach to the results of previous clinical trials to see if they observe a better response to treatment once the patients are clustered. This could help researchers when designing future clinical trials, because they can focus on the cluster that is more likely to benefit from a specific treatment under investigation.

Predicting obesity complications – in those who are not obese

People living with obesity face a higher risk for cardiovascular disease, type 2 diabetes and other complications. But some people, despite having a high body mass index (BMI), have a low risk for these complications. On the other hand, about one in five people with a normal BMI are at high risk. The IMI **SOPHIA** project used machine learning techniques to analyse health data from a database of 170 000 adults from the UK, the Netherlands and Germany. They also developed powerful algorithms to cluster people whose risk profiles didn't match what was expected given their body weight.

> The study defined five subgroups of people whose risk for obesity complications and BMI are not aligned.

This can help to identify people who are at risk of developing cardiovascular disease, type 2 diabetes or other complications commonly associated with obesity, but who are not currently living with obesity. Since a lot of these complications are preventable, it is possible to reduce the number of people who go on to develop these complications.

What's more, **better and more precise treatments can now be developed that are targeted for a specific subtype**.

Spotting the molecular differences between phases of lupus

Lupus affects around half a million people in Europe. This chronic auto-immune disease affects multiple organs throughout the body, and patients with lupus undergo periods where the disease is active – so-called 'flare phases' – and where they have barely any symptoms – remission.

IMI project **3TR** is using molecular techniques (like transcriptomics) to examine gene expression pathways in patients as they transition from remission to flare and vice-versa. Using data from a 2000-person strong molecular dataset on patients with lupus from a previous IMI project, **PRECISESADS**, the 3TR team looked at data from 321 patients in various stages of flare-up and remission and successfully identified molecular signalling pathways that could **distinguish people who were having active flare-ups from those who were experiencing low disease activity** or complete remission from the disease.

> This was the first time that these molecular signalling pathways have been shown to distinguish disease activity levels in lupus patients.

IMI and IHI projects are addressing the environmental impacts of health sectors

The health sector has a significant impact on the environment; in OECD (Organisation for Economic Co-operation and Development) countries, it is responsible for between 3 and 8% of CO2 emissions. It also uses large quantities of water, energy, solvents and fossil-based raw materials, and generates a lot of waste. The portfolio of IMI and IHI projects with an environmental focus is growing; meanwhile the PREMIER project is delivering a wealth of results which have the potential to help limit the environmental impacts of the sector.

PREMIER results set to minimise environmental impacts of pharma sector

Active ingredients from medicines can get into the environment through a variety of routes, and once there they can prove harmful to wildlife and ecosystems. In the EU, new medicines are required to undergo an environmental risk assessment (ERA). However, so far relatively few of the 1 900 or so active pharmaceutical ingredients (APIs) in use have been assessed.

> IMI project **PREMIER** has developed a framework to prioritise the environmental assessment of existing medicines and has applied it to over 1 000 of these 'legacy' active pharmaceutical ingredients (APIs). What's more, they are developing a centralised, transparent, public and easily accessible database to support ERAs – something that is called for in the proposed revision of the EU pharmaceutical legislation.

The project is also delivering knowledge and resources to support ERAs in different ways. For example, information on the mode of action can play an important role in the ERA. To support this, PREMIER developed the EcoDrug+ database which integrates data on 7 770 pharmaceuticals and their metabolites (including 61 000 other chemicals), with information on chemical target conservation for 180 organisms across diverse phyla.

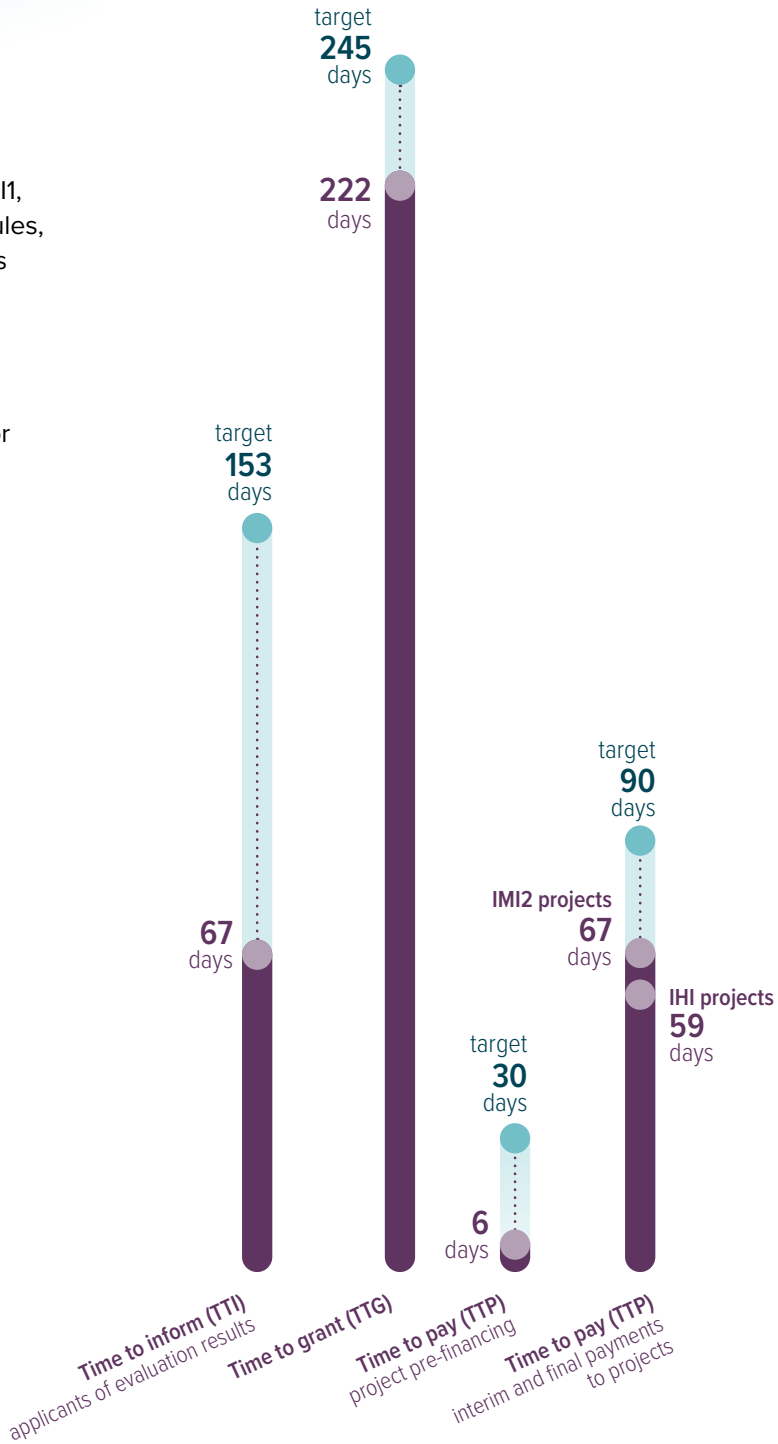
The team have also developed a tool that enables an evidence-based decision to avoid fish testing in laboratory studies for approximately a third of pharmaceuticals - an ethical win with significant cost saving.

6. Administrative targets

The IHI Programme Office is currently managing three programmes in parallel (IMI1, IMI2 and IHI), each of which has different rules, management tools and procedures. Thanks to strong collaboration between the teams at IHI and robust procedures, IHI continues to manage these programmes efficiently, completing our administrative duties such as making payments and managing calls for proposals well ahead of our targets.

The cumulative residual error rate for the IMI1 and IMI2 programmes is under the 2% materiality threshold.

The European Court of Auditors (ECA) gave a clean bill of health for IHI JU for 2023!



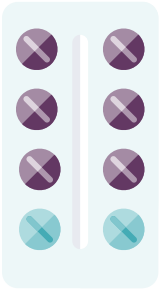
7. Gender balance

As of the end of 2024, the statistics reflected the distribution of roles held by women are:

IHI Governing Board

6

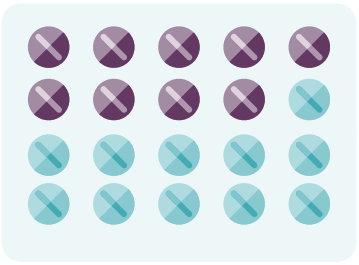
of the 8 members, including both the chairperson and vice-chairperson



IHI Science and Innovation Panel

9

of the 18 members, including the chairperson

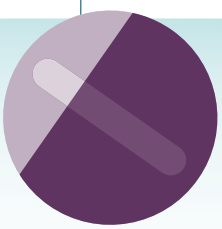


IHI States Representatives Group

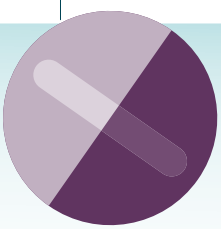
25

out of 41 main delegates, including the chairperson

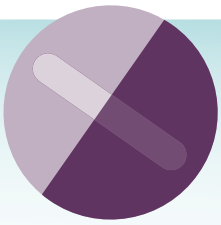
IHI Programme Office



69%
of staff



50%
of the management team



54%
of the total workforce working in IMI2 projects

Women are well represented in IHI's leadership roles, and the Programme Office showcased some of the women involved in its projects and governance bodies at a high level in an article and social media campaign for the International Day of Women and Girls in Science.

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