

Potential future IMI Call topics

About this document

The following topics are under consideration for inclusion in future IMI Calls for proposals in the longer term. The discussions on these topics are still in their early stages. For this reason, the topics may change considerably and they will probably not be ready for inclusion in an IMI Call for proposals for several months. Furthermore, as the discussions advance, it is likely that some topics will be added to this list while others will be dropped. In any case, we hope that this list will give potential applicants a useful glimpse into what is under development in the longer term, and provide additional time to enhance their network. We will update this list whenever we have updates on the status of the topics.

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All information regarding future IMI Call topics is indicative and subject to change. Final information about future IMI Calls will be communicated after approval by the IMI Governing Board.

Neurodegeneration and other neuroscience priorities

Pain

Digital transformation of clinical trial endpoints in pain

As part of the programme on digital endpoints, started in 2018, with a specific focus on different diseases, the objective is to develop objective, continuous or high-frequency digital measures of clinical efficacy and disability experienced by patients with pain. Digital endpoints relevant to clinical pain (e.g. pain severity, daily activity, quality of life, sleep) will be validated in selected pain conditions with the goal of obtaining acceptance of digital endpoints by regulators and HTA bodies as primary or key secondary endpoints for use in pivotal pain trials.

Placebo effect in pain

The placebo response in clinical trials in pain can be substantial, and high placebo effect is associated with reduced drug-placebo difference, which, in turn, interferes with signal detection for new therapies. This topic aims to develop and validate effective methods for reduction of placebo response in randomised controlled trials in pain. It will support the identification of factors influencing the magnitude of the placebo response by analysing patient clinical data and site characteristics.

Psychiatry

Psychiatric ratings using intermediate stratified markers -2 (PRISM-2)

This topic supports activities to further progress on delivery of a quantitative biological approach to the stratification of neuropsychiatric disorders, specifically Alzheimer's dementia and schizophrenia while also considering a wider application. Activities will focus on understanding neural substrates of the symptoms of social withdrawal and both the identification of biomarkers and clinical rating tools that can be proposed for regulatory validation.

Expected impact of the topic(s)

- novel drug pathways for neurodegenerative and psychiatric disease interception and for pain, including validated biomarkers and clinical trial endpoints ;
- accelerate patient access to innovative medical treatments for neurological, psychiatric disorders and for pain;
- reduce the patient burden due to mental health disorders;
- enable more efficient and cost-effective clinical trials and real-world studies.

Immunology

Psoriatic arthritis

Early diagnosis, prediction of radiographic outcomes and the development of rational, personalised treatment strategies to improve outcomes in psoriatic arthritis (PsA). This topic will address the major unmet need to identify early predictors of progression to PsA in patients with skin psoriasis, thereby enabling earlier intervention and possibly even preventing development of PsA. The results will provide stratification of PsA patients in clinical trials and allow a potential reduction of the clinical and economic burden of disease for patients by postponing the start of the PsA symptoms.

Expected impact of the topic(s)

- improved methods for recognition and diagnosis of autoimmune and inflammatory disorders and a range of treatment options;
- earlier availability of new, more cost-effective therapies for patients most likely to benefit;
- expanding our current knowledge will give rise to more precise, targeted treatments yielding long-lived reductions in disease and improved patient quality of life, and fulfilling unmet medical needs in patient care.

Infection control including vaccines

New topic(s) under the AMR accelerator platform

The objective is to expand the AMR Accelerator Programme launched in 2018, in particular under the Pillars A and C to expand activities and accelerate scientific discoveries in antimicrobial resistance (AMR) and to progress a pipeline of potential therapeutic, biologic and preventive medicines & procedures, e.g. diagnostics, to manage patients and/or populations with resistant bacterial infections in Europe and across the globe.

Expected impact of the topic(s)

- a pipeline of promising new agents for tackling antibiotic-resistant bacterial infections;
- a significant contribution to the development of a vibrant AMR research environment in the EU and to the strengthening of its competitiveness and industrial leadership;
- major impact on the improvement of public health.

Translational safety

Dosing in specific populations

The term specific population has been used to describe patient attributes that may require alterations in the course of therapy when compared to typical patients; examples include renal and hepatic-impaired patients, children, the elderly and pregnant women. These populations are often excluded or under-represented in

pivotal trials. 50% to 80% of new molecular entities do not have explicit dosing recommendations for severe renal and hepatic impairment, respectively. Therefore, the objective of this topic is to establish a framework for developing models, criteria for establishing adequacy of predictions, and a drug-development-regulatory framework for incorporation of derived dosing recommendations into product labels.

Digital pathology

Pathology is the cornerstone of the workup of many diseases such as cancer, autoimmune diseases, transplant rejection, but still relies on the interpretation of a tissue section by a qualified pathologist. Although the pathologist's report is currently the only accessible pathology data, slide scanners can capture the data of the entire tissue sections digitally. The systematic digitization of slides opens the field of digital pathology. It facilitates the consultations with expert pathologists and the search or review of large collections of slides. As digital modality, it allows to quantify features from tissues. The recent development of deep learning has propelled the field of digital pathology even further, opening the way to computer-assisted diagnosis. This has the potential to revolutionize medicine by allowing to discover new clinic-pathological entities and better identify treatments for specific groups of patients.

In drug development, digital pathology would apply to unbiased evaluation of preclinical safety or clinical efficacy. Regulators could conduct faster review of pathology data and could have a transversal view across projects/sponsors.

The proposal would comprise: (1) centralised repository for digitalized slides, including secured archival of pathology data (2) the initial population of such a repository with preclinical safety studies, clinical trials, and clinical collections, (3) a legal and regulatory framework to enable exchange of studies and cases series while preserving patient's privacy, and (4) tools for access, visualisation, quality control (QC) and data mining (open source).

The slides would be collected from preclinical safety studies and clinical trials (source: industrial and Academic partners) and could be associated with clinical findings and biomarkers. The partners would provide electronic versions (scans) of pathology slides used in upcoming preclinical safety studies, and clinical trials.

Expected impact of the topic(s)

- better prediction and understanding of toxicities of drugs;
- reduce use of animals in toxicology studies;
- accelerate clinical development programmes and better identify treatments for specific groups of patients;
- reduced costs and enhanced commercial viability of drug development.

Big data, digital health, clinical trials and regulatory research

ROADMAP 2: need and opportunity for public-private collaborative research to continue the RoadMap efforts

This topic will leverage prior phase I work of the project 'Real-world outcomes across the Alzheimer's disease (AD) spectrum for better care: multi-modal data access platform', ROADMAP. The objective is to validate the outcomes of interest with a broader range of stakeholders including clinical experts and AD clinical centres, patient organisations, regulatory and national health authorities and payers across the EU. This should result in a standardised data set to be collected via a proof-of-concept study for real-world (RW) standardised prospective data collection in patients with AD.

Independent observatories of health outcomes for patients being the guardians of health data

This topic will support activities to provide a legal and ethical framework for the management of patient reported outcomes (PROs), collect process, integrate and make health data available in an ethical manner, and contribute to standardising and integrating health data. The objective of this project is to work collaboratively with patient associations and empower individual patients to monitor their outcomes in a

standardised manner. The data, when collected, will provide transparency of patient outcomes on specific diseases on a per country or regional basis. This will provide the evidence required for making informed decisions on resource allocation. At the same time, it will also create a unique value proposition for patients to collect their health data.

E-product information. Leveraging digital technology to drive the correct use and understanding of medicines: a user-centric approach to adherence and risk minimisation

This topic addresses two critical challenges associated with the use of medicinal products in Europe: lack of adherence to the health-authority-approved product information, and poor understanding of this information in relation to treatment. Such challenges affect multiple stakeholders across Europe, and it is of utmost importance that these diverse perspectives are captured to ensure that any future solution is fit-for-purpose for citizens, healthcare providers, health authorities and industry alike. It embraces all medicinal products registered in European Member States. It is assumed that the paper version of the package leaflet (PL) will continue to exist according to current legislation. However, the delivery method for the product information will be examined (e.g. printing the PL at the pharmacy instead of always in the pack) as well as options for reconstruction of the health-authority-approved text in ways which are more personalised to an individual's needs. The overall objective is to optimise provision of information on medicines to users across the EU so that adherence to the product information is improved, and users' understanding of their medicine is increased. These two challenges are related and have profound implications for patient safety and well-being, as well as widespread effects within healthcare systems and industry across the EU.

Digital priorities are also addressed in the "Digital Transformation of Clinical Trial Endpoints in pain" topic in the section on Neurodegeneration above.

Expected impact of the topic(s)

- improved transparency of data reuse and of its impact on research & development;
- faster translation of insights from real-world health data to biomedical research and development approaches;
- enable more efficient and cost-effective clinical trials and real-world studies;
- enhanced drug efficacy and effectiveness via a better understanding and adherence to medicines.

Oncology

Patient-reported outcomes and quality of life endpoints

There is an increased emphasis on patient-centred care, health-related quality of life (HRQL), and other patient-reported outcomes (PRO), that quantify how a patient feels and/or functions. These parameters may acquire an even more prominent role as important endpoints in cancer clinical trials. However, so far, no standardization in the use and analysis of HRQoL and PRO data in cancer clinical trials is given. Such a lack of standardisation can lead to variations in the analysis of data and could result in two identical trials being analysed in different ways, leading to different conclusions. In particular, in oncology such a lack of standardization can undermine the credibility of the HRQoL and PROs since this can lead to differences in interpretation of the findings depending on how the data were analysed. Thus, this topic aims to develop and recommend international standards for the analysis of HRQOL data from cancer clinical trials.

Expected impact of the topic(s)

- better assessment of the risks and benefits of cancer therapies and fostering of patient-centred cancer care.
- a large positive impact on treatment outcomes, to support the adequate reimbursement of innovations in this field.

The Oncology area is also addressed in the CAR-T topic in the "Facilitating the translation of advanced therapies to patients in Europe" section below.

Facilitating the translation of advanced therapies to patients in Europe

Accelerating research and development of Advanced Therapies

There are key research and regulatory issues in gene therapy development. The objective of this topic is to provide the research data, mechanism and a pathway with the view of improving the available research tools and developing recommendations for a unified regulatory approach accepted by global health authorities. Sustained therapeutic efficacy is key to the success of gene therapy. However, there are risks around the persistence of the effect and re-dosing the vector. Understanding these factors could allow us to (1) treat a broader population and (2) design protocols to overcome existing limitations as may be relevant to research and development and clinical trial activities, exploring use cases including ultra-rare diseases.

ATMP Patient Registries Outcomes Data and Evidence

This topic aims to: (1) pilot the benefits of a holistic, pan-EU registry for a specific rare disease (e.g. Duchene muscular dystrophy; haemophilia) serving the needs of academia, scientific associations, industry, patient organisations and healthcare payers; (2) to directly address the current gap in patient centricity and patient perspectives in advanced therapies medicinal products (ATMPs), which are not recorded in any existing efforts. Once completed, the pilot could potentially serve as a model for other rare diseases and provide optimal access of innovative medicines to patients.

CAR-Ts

CAR-T cell therapies (chimeric antigen receptor T-cell therapy) are complex medicinal products. Their translation from basic and pre-clinical research to clinical trials therefore poses many challenges that slow down clinical development. The objective of the topic is to develop pre-clinical models to better predict safety and efficacy. Definition of a regulatory frame for the translation of pre-clinical findings into the clinic and standardisation of monitoring methods will be also addressed.

Innovative Manufacturing of Advanced Therapeutic Medicinal Products, ATMPs

This topic addresses the challenges of manufacturing of Advanced Therapies Medical Products (ATMPs). Activities will include developing closed and automated production systems, highly sensitive analytical tools/methods for increased scale and improved robustness of manufacturing processes. A further objective is to foster progress of manufacturing know-how and education related to ATMP acceptance / reimbursement and Current Good Manufacturing Practice (CGMP).

Expected impact of the topic(s)

- to enhance research and development of advanced therapies in the EU and the Horizon 2020 Associated Countries as a fully-fledged industrial activity to make the EU more competitive and make advanced therapy products available to all patients in need;
- a powerful public-private innovation platform for efficiently addressing all challenges in the pathway from science to healthcare systems and patients including those with rare diseases.

Other enablers of research topics

Handling of biologic drug products

The objective is to get insight into the impact of the handling of biologic drug products – after they are released by the manufacturer and up to their administration – on the stability of the drug. Routine handling or unintentional mishandling of therapeutic protein products may cause degradation that can potentially compromise the clinical safety and efficacy of the product. This topic supports activities that should allow for identification of the risk factors and addressing them in drug production and supply processes.

Expected impact of the topic(s)

- increased safety and efficacy of biological drug products;
- reduction of costs via increased efficiency of drug discovery and drug production.