

HEALTH

What is this about?

Health is a top concern for Europeans. A 2018 Eurobarometer survey showed that it is the number one concern of members of the public in nine Member States. People want to spend more years of their lives in good health and have safe, efficient and personalised therapies if they develop disease.

An ageing population, the increasing burden of non-communicable diseases, **with often more than one disease affecting a patient**, expensive innovative healthcare and medicinal products, and the slow pace of digitalisation uptake are putting health and care systems under pressure.

R&I will provide the evidence to better understand how to keep people healthy, to more effectively predict, prevent, diagnose, treat or cure diseases, and to deliver more effective and safer innovations and systems, while boosting European healthcare SMEs and industry. Personalised medicine and digitalisation are providing new approaches and solutions and their effectiveness now needs to be demonstrated through pilot actions or implementation research. The uptake of R&I results for the benefit of citizens and healthcare professionals is a priority, to be tackled in synergy with other EU programmes.

This will foster a successful socio-economic transition towards sustainable and resilient health and care systems, accessible to all citizens.

Key R&I areas are:

- Personalised medicine – the EU has invested heavily in projects aiming at developing technologies and understanding the molecular and genetic drivers of health and disease; and furthermore to design predictive, diagnostic and therapeutic tools personalised to the needs of individuals. Thanks to emerging technologies, such as artificial intelligence and big data, the promise of personalised medicine is becoming a reality.
- Antimicrobial Resistance (AMR) is a global threat that undermines our capacity to cure infectious diseases. New tools and solutions are needed to improve prevention, diagnostics, treatment, and to overcome the reluctance of companies to develop new antibiotics whose sales and use would be restricted to safeguard them from AMR. The EU is a key global actor and coordinator of R&I in this field.
- A rare disease is one that occurs in fewer than five out of 10,000 people in Europe. Overall, there are an estimated 6,000-8,000 rare diseases affecting more than 30 million European patients. Only a pan-European collaboration can give access to large enough patient populations.
- Environmental risks – our health is defined by genetic and environmental factors ('genes load the gun, environment pulls the trigger'). Research on environmental factors, such as chemicals, air pollution, noise and stress, is fragmented and suffers from under-investment despite their huge impact on health.

Some facts and figures

- Europe is ageing quickly; life expectancy is increasing by two years every decade. People want to spend more years in good health and have personalised therapies if they develop a disease.
- Life expectancy at birth in the EU28 went up from 79.9 to 81.0 years from 2010 to 2016, according to Eurostat (from 78.5 to 78.7 years only in the US).
- Pharmaceuticals and biotech R&D spending in 2016-17 accounted for €40 billion, making the industry the second biggest R&D investor in absolute terms (after automotive).
- The EU pharmaceutical sector produces €250 billion in revenues and employs 750,000 people in highly skilled jobs.
- Cardiovascular diseases were the number one killer in the EU in 2017, accounting for 36% of deaths, followed by cancers (28%) and neurological disorders (12%).
- Antimicrobial resistance (AMR) is currently responsible for an estimated 33,000 deaths per year in the EU, but inaction could bring the global death toll in the millions by 2050.

Key policies

- Communication on 'Digital Transformation of Health and Care in the Digital Single Market' (25 April 2018): bringing better health and care to more citizens in better and more effective ways.
- Communication and proposal for a Council Recommendation on strengthening EU cooperation on vaccine-preventable diseases (adopted 7 December 2018). This new initiative proposes a set of actions to improve vaccine coverage in Europe and to reinforce EU cooperation on vaccine-preventable diseases.
- European One health action plan against antimicrobial resistance (AMR; June 2017), to support the EU and its Member States in delivering innovative, effective and sustainable responses to AMR; strategically reinforce the research agenda on AMR; and enable the EU to actively promote global action and play a leading role in the fight against AMR.

Example projects from Horizon 2020 and FP7

- 65,000 heart valve replacements are carried out in Europe each year to treat acquired or congenital aortic valve disease. ESPOIR and ARISE have brought together researchers, cardiologists and surgeons from seven European countries to first develop (ESPOIR) a regenerative cell-free heart valve, then test it for aortic valve replacement (ARISE). Such valves are expected to lower the risk of transplant rejection, and could last the patient's lifetime.
- New life-saving diagnostics, treatments, and vaccines for Ebola have been developed with €160 million of EU research funding since the 2014 Ebola outbreak. Thousands of people are being protected against Ebola with a vaccine developed by Johnson & Johnson supported by the EBOVAC project funded through the Innovative Medicines Initiatives (IMI).

- The MCD (Mosquito Contamination Device) project developed a simple and inexpensive device to control mosquitoes: plastic tubes with nets inside coated with insecticide. The device prevents mosquitoes from entering houses, while still allowing ventilation.

Key (existing) partnerships and initiatives

- The Innovative Medicines Initiatives (IMI) is a public-private partnership between the EU and the pharmaceutical industry in Europe. The goal of IMI, particularly in its second phase (IMI2, 2014-2020) is to develop next-generation vaccines, medicines and treatments, such as new antibiotics. IMI2 has a €3.3 billion budget.
- The European & Developing Countries Clinical Trials Partnership (EDCTP) is a public-public partnership between countries in Europe and sub-Saharan Africa, and the European Union. It supports research that accelerates the clinical development of new or improved interventions to prevent or treat HIV/AIDS, tuberculosis, malaria and other infectious diseases.
- The Commission leads or participates in several multilateral initiatives, such as the International Rare Diseases Research Consortium (IRDIRC), the International Consortium for Personalised Medicine (ICPerMed), the International Human Epigenome Consortium (IHEC), the Global Alliance for Chronic Diseases (GACD), the International Traumatic Brain Injury Research consortium (InTBIR), and the Global Research Collaboration for Infectious Disease Preparedness (GLOPID-R).