

What are Emerging Epidemics?

- Infections that are new in a population or that existed previously but that rapidly increase in incidence or geographic range. For example: Ebola, Chikungunya, West Nile virus, Dengue, MERS.
- Many of these diseases are transmissible between animals and humans, and rely on animal populations as reservoirs of infection.
- Up to 75% of recently emerging infectious diseases that affect humans are of animal origin.
- Many different factors contribute to the emergence of new infectious diseases, such as population growth and mobility, and ecological changes linked to climate change.

→ Implementing the One Health Concept is crucial when addressing EE/Zoonoses.

The European Commission has funded a lot of research projects in the area of EE/zoonoses under FP7/H2020 and its strategy in this area is built on several pillars – One Health is always part of it.

1. Understanding diseases:

- To study why and how zoonotic pathogens cause epidemics in humans,
- To identify risk patterns for surveillance, control, intervention and preparedness.

For example the ANTIGONE project

- is investigating why some animal viruses/bacteria can cross the species barriers, adapt to humans and can then be transmitted from human-to-human.
- translate this understanding in options for prevention/intervention of human pandemics coming from zoonotic pathogens.
- developing/implementing a One Health training programme, combining human and veterinary medical expertise with those from other relevant disciplines, in order to equip the future generation of scientists with the necessary knowledge to deal with emerging zoonotic infectious diseases.

2. Early detection:

- To establish networks capable of prediction, identification, modelling and surveillance of zoonoses,
- New genome technology for the detection of/response to disease outbreaks among humans and animals worldwide.

COMPARE aims :

- to improve the rapid identification of emerging infectious diseases and foodborne outbreaks,
- by developing a cross-sector and cross-pathogen analytical framework and globally linked data and information sharing platform,
- that integrates state-of-the-art strategies, tools, technologies and methods for collecting, processing and analyzing sequence-based pathogen data in combination with associated (clinical, epidemiological and other) data,

- for the generation of actionable information to relevant authorities and other users in the human health, animal health and food safety domains;

3. Rapid Response:

- A coordinated research effort both in emergency situations and in the inter-epidemic periods is a crucial element of preparedness.

The Commission has established the **Global Research Collaboration for Infectious Disease Preparedness (GloPID-R)** - a global network of research funding organisations from a number of countries on all 6 continents, with the WHO as observer. The objective of this network is to launch a coordinated research response within 48 hours of any significant outbreak. Triggered in Ebola – Zika outbreak.

4. Development of drugs and vaccines:

- screening of molecules and drugs for their ability to prevent dangerous RNA viruses from reproducing in cells.
- Developing a universal influenza vaccine.

5. Effective communication in outbreak management:

- To study what are the most effective communication tools and strategies to be used in case of outbreaks.
- Communication between human – veterinary and environmental experts is not always ideal, efficient.

Furthermore, DG R&I participates as a co-funder with DG AGRI to combat zoonoses by jointly targeting human and animal diseases:

- **European Joint Programme Co-fund on "One Health" (zoonoses – emerging threats),**
 - **New H2020 instrument:** European Joint Programme Co-Fund (EJP) is a co-fund action designed to support coordinated national research and innovation programmes.
 - Main emphasis: **food-borne microbial infections and intoxications**
 - Also addressed: **antimicrobial resistance & Important non zoonotic food-borne pathogens** transmitted via the food chain.
- **STAR-IDAZ (International Research Consortium on Animal Health) = Global Strategic Alliances for the Coordination of Research on the Major Infectious Diseases of Animals and Zoonoses**
 - A four-year EU-funded global initiative to address the coordination of research programmes at international level
 - Network now operating under a MoU signed, as of 27/4/2016, by 28 funding organisations from 21 countries
 - Objectives: To coordinate research at international level to contribute to new and improved animal health strategies for at least 30 priority diseases/infections/issues.
 - The deliverables include: Candidate vaccines, Diagnostics, Therapeutics, Other animal health products and procedures, Key scientific information/tools to support risk analysis and disease control.
