



ZOonotic Disease Integrated ACTION

## ZODIAC: An IAEA initiative towards the early detection and prevention of the next zoonotic outbreaks; moving forward from COVID-19

Scientific research and development are crucial to understand and combat diseases such as COVID-19, originating from humble beginnings which can culminate in a pandemic, affecting the wellbeing, livelihood and socioeconomic status of billions of people worldwide.

To strengthen the preparedness and capabilities of Member States to respond to the threats of zoonotic diseases, such as the COVID-19 disease, the IAEA is launching the Zoonotic Disease Integrated Action (ZODIAC) initiative: a systematic and integrated approach to support the early detection, prevention and control of outbreaks of zoonotic diseases.

Nuclear and nuclear derived techniques are reliable tools, tried and verified, that can play an important role in investigating, detecting, preventing, and containing outbreaks of zoonotic diseases.

### Why the IAEA?

The IAEA, with its expertise in nuclear sciences and applications used for both animal and human health, applied research and development laboratories, coordination of laboratory networks, such as the VETLAB Network, and collaboration with scientific institutions worldwide, technology transfer mechanisms as well as the acquired experience gained from previous outbreaks of animal and zoonotic diseases, is uniquely placed to undertake, coordinate and efficiently deliver the integrated, multisectoral and multidisciplinary approaches required to support Member States in building their resilience to zoonotic diseases.

### How will ZODIAC achieve this?

ZODIAC places research, development and innovation at its core. In cooperation with the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO) and the World Organisation for Animal Health (OIE), the IAEA will integrate emergency assistance measures into a holistic approach ranging from identification, early detection and monitoring of zoonotic disease pathogens as they move from the environment to animals and eventually to people, supporting global preparedness, monitoring, and emergency response in case of a new outbreak.

**Z**oonotic diseases affect around 2.6 billion people every year. Zoonoses are caused by infectious agents transmitted from animals to humans.

**D**isease detection and characterization before it has caused an outbreak, or at an early stage, are essential to prevent and control transboundary animal and zoonotic diseases.

**I**ntegrated, multisectoral and multidisciplinary approaches are necessary to pre-empt and prevent zoonotic disease outbreaks.

**A**ctions need to be taken now to prevent the next pandemic.

## How will IAEA Member States benefit?

### Strengthening detection and diagnostic capabilities

Member States will have access to guidance, training, equipment, technology packages, expertise and support for the implementation, maintenance and certification of diagnostic techniques. Member States will benefit from a global network of national diagnostic laboratories that can conduct coordinated monitoring, surveillance, early detection, differentiation and control of emerging and re-emerging zoonotic disease outbreaks.

### Making real-time decision-making support tools available for timely interventions

Member States will have access to spatial and temporal data on animal pathogens/diseases to facilitate swift decision-making and allow their veterinary and health authorities to respond in a timely manner and disseminate information such as easily customized maps to all relevant stakeholders, available through an IT platform.

### Providing access to data on the impact of zoonotic diseases on human health

Member States will gain from coordinated research activities at their clinical institutions to better understand and address how zoonotic diseases impact human health, including patients with pre-conditions such as cancer or cardiovascular diseases. This will help enable national authorities to take science-based decisions regarding the risk categories of people in case of a zoonotic disease outbreak.

### Developing and making novel technologies available for the detection of zoonotic diseases

Member States will benefit from laboratory-led research and the development of novel, accurate diagnostic technologies. They will learn how to test and verify novel diagnostic kits, develop animal irradiated vaccines when and where relevant, and learn how to work in a high-level secure environment. Member States will have access to a reference laboratory as well as a laboratory and field implementation back stopping facility to provide the needed expertise, guidance and know-how. Member States will learn about the methodologies for early detection, surveillance and early warning on emerging or re-emerging zoonotic diseases.

### Providing access to an IAEA coordinated response team in case of an outbreak

Member States will have access to an IAEA Response Team in case of an emergency in relation to a zoonotic disease outbreak. Member States will benefit from the streamlined, facilitated and coordinated preparedness and response of the IAEA and its partners in case of a zoonotic outbreak of major significance or impact.



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*“The coronavirus has been a painful reminder of how deadly and disruptive a pandemic can be. Through the ZODIAC project, the IAEA will help countries systematically prepare and quickly detect new viruses in order to prevent pandemics.”*

**Rafael Mariano Grossi, IAEA Director General**