

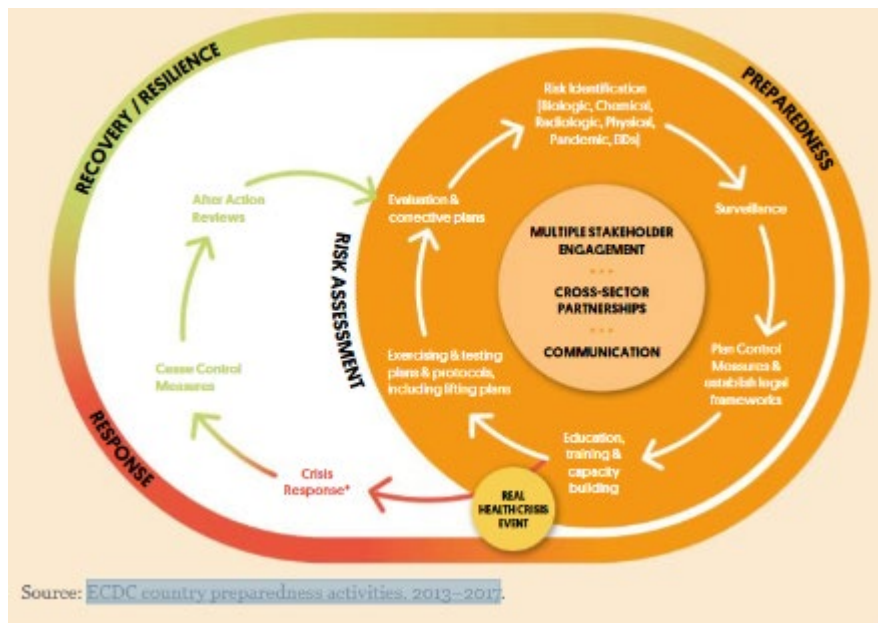
PR3 Model

ISGlobal has coined the term *PR³* as the concept that combines different phases of preparing for and responding to crises, i.e. Preparedness, Response, Recovery and Resilience. It integrates the different preparedness and response phases:

- **Preparedness:** Activities designed to increase the ability of a community/organization/administration to respond if/when an emergency or a disaster occurs. Typical preparedness measures include developing mutual aid agreements and memorandums of understanding (including chain of command and responsibilities); core protocols and questionnaires, surveillance mechanisms and communication strategies that can be adapted to a particular crisis; training for both response personnel and concerned citizens; conducting exercises to reinforce training and testing capabilities; and presenting education campaigns related to all possible types of hazards (natural, biological, chemical, radiological).
- **Response:** Actions carried out during, and immediately after a crisis, which are aimed at saving lives, alleviating suffering, maintaining healthy populations, and reducing economic losses. Response actions include a) *alert* activating the emergency operations center b) *containment*, ie. evacuating threatened populations, opening shelters and providing mass care, emergency rescue and medical care, fire fighting, urban search and rescue, contact tracing and quarantine, depending on the type of crisis; c) risk identification including surveillance of exposures/infection distribution and evolution; d) surveillance of affected populations (health and other impacts), de) *mitigation*, i.e. measures that reduce the damaging effects of unavoidable emergencies including development and testing of medical countermeasures and e) communication throughout the entire response phase.
- **Recovery:** Actions taken to return a community to normal or near-normal conditions, including the restoration of basic services and the repair of physical, psychological, social and economic damages. Typical recovery actions include sustained care for displaced human and animal populations, debris cleanup, financial assistance to governments and individuals, rebuilding of critical infrastructure including water, electricity, communication services and roads, bridges and key facilities, risk-benefit evaluation towards policy decision, and communication.
- **Resilience:** The capacity to recover quickly and strengthen to be less susceptible. Resilience applies to societies, cities and, in particular, to affected communities and individuals. Typical actions to build resilience include engaging and empowering communities through communication, stakeholder engagement or provision of tools to evaluate exposure (e.g. self testing/measurement) so that persons can regain control of their lives. Resilience activities that make societies or localities less susceptible loop into the preparedness phase by minimising the impact of future crises.

Our PR³ model takes into account the wide variety of hazards that could end up in a public health crisis and includes several steps in the continuous spectrum of preparedness, response and recovery/resilience phases, of note is that the phases could overlap in responses to certain health crises. They are based on the successes and

challenges observed during COVID-19 health crisis in which ISGlobal researchers and policy advocates actively participated. For more information on the model, access [here](#).



Several key elements should be present at all stages of PR3, including early engagement of multiple stakeholders, establishment of cross-sectoral partnerships and constant communication within responders and with the affected population through a planned risk communication strategy.

Regarding preparedness, in the absence of any imminent hazard, there should be a process to identify potential risks affecting a community or population and establishment of appropriate surveillance mechanisms for each of the hazards. The process of risk identification and assessment will be carried on in the first quarter of 2022 by the new EU HERA. Surveillance mechanisms could include wastewater surveillance for chemicals and infectious diseases agents. The process will include establishing alliances with different local, national and international groups/organizations that could provide an early warning mechanism. Once potential risks are identified, control strategies should be planned to respond efficiently to the different hazards and establish legal and collaborative frameworks that will allow real-time, concerted and evidence-based implementation of control measures. These steps align with the possible creation of the Pandemic Treaty or the new WHO Hub for Pandemic and Epidemic Intelligence.

All control measures plans should be the subject of exercises and drills by all relevant stakeholders to identify gaps and challenges that need to be worked out and implemented in their revised versions. This will allow the partners involved to build capacity to ensure an efficient planned response. ISGlobal has played an important role in advising authorities and contributing with novel research during the COVID-19 pandemic. It also has the know-how and expertise to continue contributing as a subject matter expert to the design of PR3 plans, including preparedness and response for crises related to new infections, radiological and chemical accidents and climate change, training and education, and communication.

In particular, as explained above, it is extremely important to establish capacity to predict and model the level of risk in a population in order to provide an early warning system in specific populations. Several groups in ISGlobal have worked on modelling and prediction mechanisms for COVID-19 and the lessons learned will inform their research on prediction and modelling for other future health crises.

Communication with the citizens and the public health authorities is key to maintain communities well-informed and provide strategic guidance to authorities. ISGlobal has contributed to this area during the COVID-19 response. For a comprehensive health crisis response, it will be important to develop capacities to ensure risk communication and behavioural change research is incorporated. These areas are of special interest if we want to engage with the communities and increase population compliance with crisis management strategies. In particular, urban preparedness is of key importance.

Many of these steps feed into current scientific knowledge and private and public academic and research institutions could play a significant role by providing up-to date knowledge and infrastructures, contributing to the training and capacity building in our societies, engaging with public health agencies and contributing to risk communication and fighting disinformation –one of the big problems we have faced during this crisis–.

About ISGlobal

The Barcelona Institute for Global Health, ISGlobal, is the fruit of an innovative alliance between the "la Caixa" Foundation and academic and government institutions to contribute to the efforts undertaken by the international community to address the challenges in global health. ISGlobal is a consolidated hub of excellence in research that has grown out of work first started in the world of health care by the Hospital Clínic and the Parc de Salut MAR and in the academic sphere by the University of Barcelona and Pompeu Fabra University. Its working model is based on the generation of scientific knowledge through Research Programmes and Groups, and its translation through the areas of Training and Analysis and Global Development. ISGlobal has been named a Severo Ochoa Centre of Excellence and is a member of the CERCA system of the Generalitat de Catalunya.

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