



Public Report: Pandemic Risk and Emergency Management (PANDEM)

Context

Pandemics and outbreaks of infectious disease have had a major impact on the health and security of human populations for millennia. Some of the diseases we face today have been causing social and economic alarm at least since the time of the Egyptian pharaohs. Dramatic events such as the Black Death which killed one third of Europe's population in the Middle Ages and the Spanish flu which struck down 40-50 million people in the early 20th century are etched into the historical and folk memory.

Since the beginning of the new millennium, a new disease called Severe Acute Respiratory Syndrome (SARS) has emerged in China and spread from Hong Kong through international transport hubs to multiple countries within days causing major disruption and economic damage estimated at US\$80 billion. The most recent H1N1 influenza pandemic in 2009 spread around the world in weeks affecting all continents with significant health, economic, political, social, cultural and environmental consequences. More recently, outbreaks of Zika virus, Ebola and MERS-CoV have caused death, illness and alarm, and led to severe social and economic disruption. The world also faces the threat of drug resistant strains of known bacteria or viruses that are becoming increasingly difficult to treat with current medical countermeasures.

Future epidemics and pandemics are hard to predict or prevent, but improved preparedness and response can dramatically reduce the disruption they cause. The Pandemic Risk and Emergency Management (PANDEM) project was funded by the European Union under the Horizon 2020 EU Framework Programme for Research and Innovation to understand more about the current state of preparedness and response, and to make recommendations for future improvements.

Description of project and work performed

PANDEM brings together experts in public health, security, defence, information technology, communications and law from a range of institutions across Europe: the Université catholique de Louvain in Belgium, the World Health Organisation, the Public Health Agency of Sweden, the Swedish Defence Research Agency, the National University of Ireland, Galway (NUIG), the London School of Hygiene and Tropical Medicine and IGS Strategic Communications in the United Kingdom. PANDEM is co-ordinated by Professor Máire Connolly of NUIG.

The objectives of PANDEM were to review and assess current best practice for pandemic preparedness and response at national, EU and global level in priority areas, such as risk assessment, communications and public information, governance and legal frameworks. Once gaps had been identified, the next phase was to identify potential areas for improvement, priority research questions, potential technological and systems solutions, and contribute to impact reduction for future pandemics.

During the 18-month project, PANDEM has conducted a comprehensive review of pandemic management across the 28 European Union Member States and beyond, allowing us to identify gaps in technologies, systems and capacity at national, EU and global levels. An initial expert workshop was held in February 2016 to identify best practice and define improvement needs for strengthening pandemic surveillance, communication and governance.



The PANDEM consortium then conducted a gap analysis and solution specification that was reviewed during a second expert workshop, held in September 2016. Bringing together the outcomes of these two workshops with expert input and the work of other EU projects, our consortium has since refined and prioritised potential solutions. These have been tested with all our partners, and are now being presented to the European Commission as proposed next steps to improve pandemic preparedness and response across the European Union.

Main results

Based on research and expert inputs, as well as gaps identified to date, the consortium has recommended that the European Commission should move on to a demonstration project to further explore innovative solutions across three primary areas of work:

1. Governance, Planning and Communications
Advance planning and engagement to build trust and resilience
2. Situational Awareness and Decision Support
State of the art surveillance, detection and prediction tools that support effective decision-making
3. Workforce Capacity, Training and Networking
Enhanced knowledge-sharing and immersive multi-sectoral learning, cross-sectoral simulation exercises and networking to maximise operational preparedness and response.

These three strands are mutually reinforcing; in many cases the solutions proposed are closely linked and cross-cutting. They include targeted research to advance knowledge and practice in key areas, to leverage progress in information technology, and make best use of innovative training, learning and knowledge sharing methodologies.

Potential social and socio-economic implications

Improved early warning, preparedness and response will help the European Union to limit the impact of future outbreaks and pandemics. This will not prevent outbreaks from occurring – they are a biological certainty – but with improved systems in place, the potential impact on the lives, health and futures of people across Europe can be reduced.

Our research and analysis have clearly identified the areas where further work is needed, in order to improve the European Union's readiness to respond to future outbreaks. This additional work will help to improve the intricate web of systems, coordination, communications and governance that are needed in order to ensure that the EU, its Member States and its populations are as prepared as possible to respond to the next pandemic.



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