

Can Advances in Science Ensure People Security?

Lahlou Amine Idriss*

Department of microbiology, Mohammed V University, Rabat, Morocco

Before answering this question, let us recall that the “theory of emerging diseases” was developed in the 1990s [1] and in the era of globalization, new epidemic risks continue to appear, constituting a major problem for public health and global security.

Thus, according to Lederberg, emerging infectious diseases are defined as diseases of infectious nature whose incidence in humans has increased over the last twenty years, or threatens to increase in the near future.

This definition incorporates a social dimension to the question and the conditions for the occurrence of emergence, which adds a dimension of anticipation, essential for the future management of epidemic or pandemic events.

This complex approach of the emergence institutionalizes the relationship between emergence and threat, between public health and safety. Indeed, some biological pathogens that can infect humans, animals or plants can represent an extremely important threat to both public health and national and/or global economy.

Recent pandemics or zoonoses of SARS, avian influenza A(H5N1) or influenza A(H1N1)2009 seem to confirm the theory of emerging diseases and the validity of increased epidemiological surveillance.

Additional research on these pathogens would focus special attention and help to minimize the risks associated with human infection, leakages in the environment, transport of dangerous pathogens and misuse of pathogens.

In this context of emerging infectious diseases, basic research is necessary to understand the mechanisms of transmission of these viruses, proteins involved in their virulence in humans and for preventive and therapeutic purposes.

Taking the example of influenza virus A(H5N1), which is particularly deadly in humans with a mortality rate of 60% and has worried health officials since 2003 when it first occurred in Southeast of Asia, we know now that from a few simple genetic mutations, scientists from the department of virology at the Erasmus Medical Center of Rotterdam and the University of Wisconsin, created a strain of A(H5N1) that can easily spread by air, but this time not between birds but among mammals [2].

The proof was obtained in vivo in ferrets, considered as one of the best animal models for studying human influenza.

Given this knowledge, are people’s safety ensured? We can say yes because the increased bio-safety conditions are important for such research and limit the risks.

Indeed, to allow such research to take place, international law requires such the research be restricted to high containment biological laboratories level 3 or 4, and be necessary to protect manipulators and environment.

Moreover, strict bio-safety rules concerning detention and storage of these highly pathogenic strains and contagious to humans are applied in these laboratories.

It seems unlikely that an accidental leak or intentional misuse would occur because of the many existing security controls in place.

But in the case of these results the concern of ensuring that the A(H5N1) mutated virus will not spread to the environment seem legitimate.

It seems even more justified if we remember the example of the foot and mouth disease (FMD) outbreak at Pirbright in Britain [3] during the summer of 2007, which was due to a leak in a pipeline bringing contaminated wastewater to an inactivation station.

This failure in infrastructure allowed the FMD virus to spread into the environment causing the outbreak.

Moreover, if the secrets of its manufacture were obtained by malicious groups, new mutated A(H5N1) could be used as a biological weapon.

For this reason, the U.S National Science Advisory Board for Bio-security (NSABB) has objected to the “total” publication of the study in the magazine “Science”, fearing that this new virus could be developed, triggering a global pandemic.

Despite the ongoing debates, do we succeed in this necessary coexistence of scientific advances and population safety, while preserving the independence of science?

Are the concepts of bio-safety and bio-security really universal?

Are they applicable in all laboratories?

For optimum safety, is it legitimate to create new national or regional agencies of bio-security in order to monitor and control research studies that can carry a risk for people?

Is the scientific censorship justified?

What is the risk that the data of some research studies will be misused by malicious groups?

Will freedom of publication be compromised if bio-security agencies involve themselves to accept or reject the results of each major scientific step?

Will the current moratorium on this subject have a real effect on the dynamics of research?

Because of viral and terrorist threats, it could help to redefine

*Corresponding author: Lahlou Amine Idriss, Professor, Department of microbiology, Mohammed V University, Rabat, Morocco, E-mail: idr_lahlou@yahoo.com

Received February 13, 2012; Accepted February 14, 2012; Published February 16, 2012

Citation: Idriss LA (2012) Can Advances in Science Ensure People Security? Biosafety 1:e104. doi:[10.4172/2167-0331.1000e104](https://doi.org/10.4172/2167-0331.1000e104)

Copyright: © 2012 Idriss LA. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

the terms of the contract between biologists, the community, and institutions that fund research.

We remain optimistic, although even in the community of virologists, positions can be radically different. It is essential that studies conducted under appropriate conditions continue to increase the knowledge to reduce risks posed by the influenza A(H5N1).

Such research is useful to have an efficient response to important questions concerning virulence of influenza virus strains and also crossing species barrier.

The risks of accidental or deliberate contamination are extremely low if bio-security and bio-safety are respected.

Moreover, it seems very difficult to recreate and modify the A(H5N1) virus.

It is necessary to have a highly specialized team and sophisticated equipment. The risk of bioterrorism is very small because manipulations

to transform the virus A (H5N1), a highly pathogenic agent, are complex.

So where is the lesser evil?

Anticipate improving monitoring and when appropriate, having quickly an effective response (vaccine or drug)?

Prohibit such research studies by fear of an accident or their diversion for malicious purposes?

Can we have trust in man? Those are the questions.

References

1. Joshua Lederberg, Robert E Shope (1992) Emerging infections: Microbial threats to health in the United States. National Academies Press.
2. Pavia AT (2012) Laboratory Creation of a Highly Transmissible H5N1 Influenza Virus: Balancing Substantial Risks and Real Benefits. *Ann Intern Med*.
3. Final report on potential breaches of biosecurity at the Pirbright site 2007.