

HIGHLIGHTS OF THE 7TH SEMINAR OF THE VAL-DE-GRÂCE SCHOOL ON EMERGING INFECTIOUS DISEASES

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CONTEXT



This seminar is designed for decision-makers, experts and scientists interested in human and animal health, social sciences, environmental sciences, prospective analysis, biosecurity and defence. It is placed under the patronage of the French Ministry of Solidarity and Health and the Ministry of Solidarity and Ecological Transition. The 2018 seminar opened with a conference on the **link between EIDs, travel and human migration** followed by an **interactive session on the expertise and the role of experts in health crises affecting plants, animals and humans** and ended with a conference on **precision health in the era of big data and social networks**. We present here the transversal analysis of the presentations and exchanges and the priority proposals of this 7th edition.

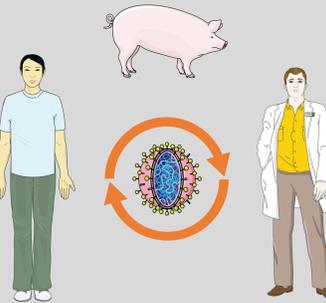
SUMMARY

A GLOBAL APPROACH



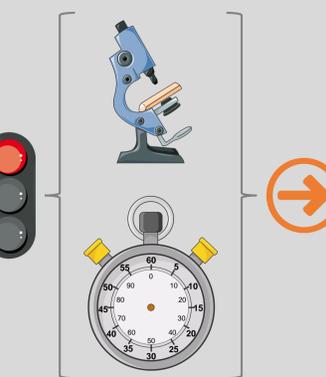
- The EIDs can take a global dimension either by their worldwide diffusion or by their social, economic and political impact.
- The acceleration of apparition of EIDs over the past 40 years, as a result of globalized exchanges, reveals a strong connection between human, animal and plant health. Well known emergences like influenza, arboviruses or highly resistant bacteria are favoured by large-scale movement of human populations and transport of livestock and agro-food products.
- The rapid control of the spread of EIDs remains mandatory before they reach an irreversible and sometimes disastrous stage. However, considering our inability to predict the next emergence - and possibly to contain its expansion- a better coordination must be implemented at all levels of action.

THE PLACE OF MAN IN EIDs: FROM THEIR ORIGIN TO AN ADAPTED EXPERTISE



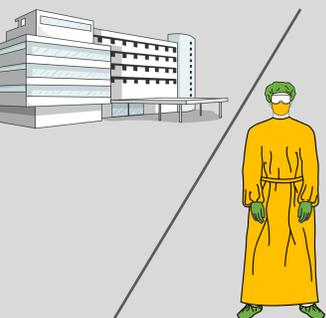
- Man is
 - in part responsible for EIDs since EIMs often arise from human-environment interactions, but also from population movements, wars, etc.
 - a victim of EIDs, with flagrant disparities between northern and southern countries in terms of access to knowledge, care and expertise.
 - an actor through his ability to develop expertise that is understanding and analysing the multifactorial determinants of the EIDs including human behaviour.
- Expertise can be limited by inadequate methodology or when collegiality is missing. Collegial expertise should be reinforced into the functioning of organizations and agencies in charge of managing EIDs (institutional, associative, etc.). The expertise process should bring together all necessary skills for effective management (scientific, clinical, epidemiological, sociological, political...). This cross-disciplinary approach must be developed during both crisis and inter-crisis periods to have efficient measures in the event of an alert.
- The first decisions can be dictated by the experience of past EID crises, or based on the use of theoretical models which may then prove to be wrong. So the expertise must be a permanently adaptive process in order to obtain *in fine* the most relevant handling. The possibility of "going backwards" is particularly important in the case of unprecedented emergence or in the event of unexpected changes in the situation (increase in virulence, new recognized transmission route, etc.).
- Knowledge and experience acquired by experts during EIDs crisis situations should be diffused to citizens to obtain their understanding and adhesion regarding decisions made and resources allocated.

MANAGEMENT OF THE EARLY SIGNAL OF EMERGENCE



- The initial signal of EID detection is often based on the detection of suspect symptoms in human, animal or plant cases secondarily confirmed in reference laboratories.
- The emergence of a pathogen is directly correlated with the interest in its detection (concept of "knowledge emergence"). Another attitude consisting in seeking asymptomatic pathogen carriers before the appearance of symptoms could reduce the time before an emerging pathogen is recognized as a preoccupying EID.
- A reliable microbiological diagnosis is fundamental in EIDs signalling despite its cost and frequent logistical difficulties. An essential element in reporting EID detection is the ability of issuing an alert secondarily using pre-established channels. The subsequent countermeasures must be deployed basing on already-existing frameworks and newly-acquired data at this stage of development of the EID (e.g. dissemination mode, incubation time, necessary therapeutic resources).
- Some organizational aspects present in the field of animal and plant health such as taking initial decisions at a European level could be transferable to human health expertise to favour a more inclusive approach.
- The analysis of big data could revolutionize the signalling of EIDs through the detection of indirect ("proxy") signals. For example, the use of massive data from digital technologies has already been implemented in the field during the Ebola virus crisis with strategies based on mobile phone geolocation data, which lead to optimize the vaccination campaigns.
- New digitalized technologies (e.g social networks) seem to be promising tools but only if sociological and economical data are included in the analysis.

THE EXPERTS : AT THE INTERFACE BETWEEN ACTORS AND DECISION- MAKERS



- The experts should be positioned between the field actors and the political decision-makers who coordinate the response and decide on the resources allocated.
- The perception of seriousness of the illness by decision-makers can be influenced by the public's perception of it. As a consequence, actors and decision-makers can face different realities and some operational dysfunctions can happen. A real-time feedback between operational actors and decision-makers via the experts is therefore mandatory to fight efficiently against EIDs.
- One of the experts' missions is to offer decision-makers the available knowledge and recommendations for crisis management options, integrating several scenarios, so that the public authority can adapt its decision with regard to the objectives set. Significant progresses remain to be made in this field.
- Every expertise is provisional since new data or different approaches can lead to modify the expertise conclusions and recommendations. This raises the problem of the gap between the gradual and evolving scientific approach during EIDs expertise and the necessarily more immediate political decision.
- A shared expertise between the North and the South would be a next logical step in the management of EIDs. This translation of expertise to the South could lead to more fluidity, efficiency, relevance and adequacy of the implemented means.
- The use of local channels familiar with the specificities of the concerned region and population could improve the local interventions and subsequent control measures.

PRIORITY PROPOSALS

- Promote cross-disciplinarity and collegial expertise
- Favour interactivity and exchanges between the institutions implied in EIDs management.
- Consider a multiscale approach to adjust the mesh of the organization, management and expertise
- Evaluate and strengthen the EID monitoring systems in the South where EIDs first develop
- Integrate digital tools data in monitoring systems and anticipation scenarios using complementary sociological and economic approaches.
- Increase the adaptability of political decision-makers considering that expertise process is constantly evolving in EIDs
- Implement systematic transparent and multidisciplinary review of allocated resources and implied actors after each EID crisis.