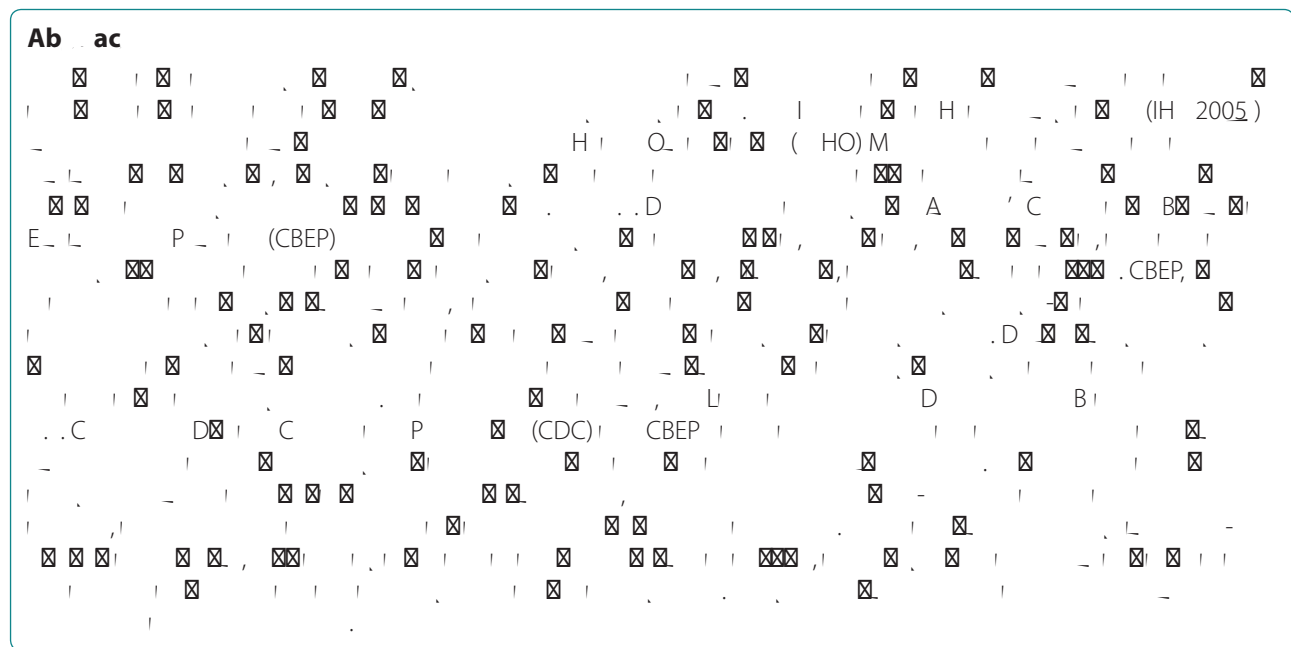

Integrated Disease Investigations and Surveillance planning: a systems approach to strengthening national surveillance and detection of events of public health importance in support of the International Health Regulations

[illegible]

Abstract

[illegible]

Introduction

The International Health Regulations (IHR[2005]) [1] requirements parallel a number of biosurveillance programs' core elements and represent a language that is acceptable to leadership around the world. They focus on establishing processes and building national capacity for reporting of any event that could be perceived as a threat to global health security. Additional standards and/or guidance provided by the International Organization for Animal Health (OIE) and The United Nations' Food and Agriculture Organization (FAO) represent complementary frameworks to engage country leadership on the animal health and food security fronts. Furthermore, the tripartite strategic alignment published by FAO-OIE-WHO in 2010 [2] and the One Health Initiative [3] offer additional directives to improve coordination at the animal, human and ecosystems interfaces and reiterate the commitment to coordinate global activities to address health risks. These global mandates compel the strengthening of partner countries' detection and response systems in a holistic and systematic manner.

Enhancing disease surveillance systems requires the integration of multiple technical disciplines and stakeholders in a structured and informed design process. e final design and set of interventions ought to di er based on the context and challenges existing locally, therefore requiring customizable and adaptable implementation strategies to ensure the feasibility and e ectiveness of the interventions. Because surveillance and preparedness require coordination and collaboration among various programs, first line providers (veterinarians or clinicians), epidemiologists, information system specialists and laboratory personnel, design e orts must consider each of

health outcomes. Forums should be established that bring together various stakeholders to work toward a comprehensive understanding of the existing landscape and reflect on where the system could and should be improved, and how to best coordinate and leverage partnership in country. Recognized outside experts from these various disciplines may act as moderators of these discussions to shape the dialogue.

Mapping of existing detection and surveillance systems

At the national level, surveillance and detection systems for human and animal infectious diseases are typically under the responsibility of different departments and ministries. Understanding the inter-relationship between existing networks of these ministries and their interaction with the private sector is critical to mapping multi-sectorial linkages and coordination. ese findings will inform the needs for broader involvement in discussions about system strengthening and sentinel detection, reinforcing the importance of linking syndromic recognition, case definitions, laboratory capacity, testing algorithms, and reporting mechanisms. is knowledge should be an early product of system evaluation activities.

Mapping of the system linkages can be done in writing or using flow diagrams. e key is to capture enough details to make the information relevant and usable during the planning process. Examples are provided within the tools to guide this activity.

System recommendations and design

Focused discussions with senior leadership need to outline the pros and cons of making changes to the existing system, address financing and governance implications, and identify sustainability strategies. ese discussions may require performing additional fact finding and may be facilitated by the use of case scenarios of routine infectious disease reporting and testing, and of a rapid response to a suspected case or cluster of cases. A high level of detail is required at this stage to avoid creating parallel systems, unfeasible or impractical requirements, or unrealistic expectations. e outcome of this phase should be an agreed upon architecture of inter-connected networks capable of monitoring, detecting, assessing, and reporting events, while being sustained within the constraints defined during the evaluation process.

e recommendations should go beyond detection capability, and require addressing the impact and value added of implementing changes. Larger system-wide issues should be addressed early on in order to improve the overall e ectiveness of focused interventions. Strengthening management, use of recognized standards and best practices that will guide the entire network, as well as focus on workforce development and strategic

workforce planning are critical elements of the establishment of sustainable systems. While planning for the design of a sustainable inter-related detection system, it is important to consider the high costs of responding to false alarms, while balancing the risks of delaying a case investigation. Finding a balance between faster, often less-sensitive but a ordable diagnostic tools, and more specific and more complex methods is critical, as these of c

- *Information and data system*: Organized reporting and flow of information.

ese indirect outcomes and processes can be leveraged by the partner to address other disease detection programs needs due to their cross-cutting nature. Mechanisms and

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