A Modular Approach for Creating Laboratory Response Plans

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ABSTRACT

Background: The need for public health laboratories to respond to a terrorist or other public health emergency requires that plans be developed at multiple levels. Development is required for analytical protocols, sample triage plans, organizational plans, and state-wide emergency operation plans. At each level, there is a need to address similar or identical safety, security, communications, and analytical issues. Design and integration of these plans is a daunting task that can be made easier with the use of a modular approach. Breaking complex processes into manageable pieces simplifies development, training, and validation of each plan. At the Minnesota Department of Health Public Health Laboratory (MDH-PHL), we have adopted this modular approach by which a combination of new and existing protocols can be incorporated into multiple plans and at various organizational levels. Methods: The modular approach begins with a high-level graphic representation of the elements necessary to build a comprehensive plan. Each element is then expanded to describe specific details and document standard operating procedures. Key decision points and criteria are identified with respect to each module. Common modules such as laboratory notification and results reporting can be integrated into multiple plans. Through exercises and competencies each module is validated. Results: The unknown environmental sample plan is completed. The modules from that plan can then be integrated into intra and inter agency plans that are being developed simultaneously. This plan is also used for training of personnel, competencies, and planning exercises to test the overall process. Conclusions: The MDH-PHL systematic approach creates comprehensive and adaptable documents. Creating modules streamlines efforts, reduces variability between multiple plans, and simplifies validation, training, and drills. The use of modules linked with key decision points provides a flexible system that can be used with multiple scenarios. While no plan can account for all contingencies and remain useful, building flexibility into a plan will increase its effectiveness.

Multiple Organizational Levels of Emergency Preparedness and Response

Minnesota Emergency Operation Plan (MEEP): Statewide plan that defines the roles of state agencies during an emergency response. This plan tells the “WHAT” (broad functions) and assigns roles that need to be performed by each agency.

MDH Response Plan: Agency plan that defines the roles of the divisions within the department during an emergency response. This plan tells the “WHAT” and to some extent the “HOW” that will perform the lead and support roles during a public health emergency.

PHL Division Response Plan: Division plan that defines the role of the public health lab during an emergency response. This plan further defines the “WHAT” and adds the “HOW” by documenting specific processes and procedures.

While every emergency begins with a local response, preparedness planning occurs at all levels of government and other public health agencies and divisions. The modular approach of response planning that MDH-PHL has adopted is scalable. This allows coordination of intra and inter agency plans.

Health Agency Emergency Response Plan

Due to the complex nature of public health emergency response, an incident Management System (IMS) structure is necessary to identify and coordinate the involved divisions within the department. Using an IMS structure allows MDH to interact effectively with other emergency management partners. Each individual box above has a corresponding divisional plan that includes multiple SOPs.

Example of Divisional Plan Summary

A road map of the overall process graphically represents the individual steps necessary to carry out the laboratory response. When necessary, new process SOPs are created to adapt existing routine SOPs to emergency response situations. By including key decision points and criteria, the plan is flexible and scalable.

Identifying a Common Module by Overlapping Lab Plans

As specific response plans within the lab are developed, a comparison of their essential components reveals areas of overlap that define common modules. This approach provides a consistent hierarchy by which plans can be linked together in an emergency plan maintenance and update. The module depicted shows overlap regarding “notification” SOP.

Common Module for Notification SOP

This notification SOP demonstrates the multiple ways the lab is contacted by outside response partners who are requesting laboratory analyses. Plan flexibility is demonstrated by recognizing the different sources of requests. This plan is developed so that all requests funnel through a single identified point (i.e., Lab Pager) by a defined pathway. This module will be included in multiple lab plans that require contact by a partnering agency.

CONCLUSIONS

An example of this modular method is the Minnesota Department of Health’s Unknown Environmental Sample Plan.

Complex response plans are developed by merging new protocols with established procedures.

Consistency within and between laboratory plans increases when common modules are developed and incorporated.

Procedure validation and training are facilitated because a complex process is constructed using distinct parts.

Using this approach, specific modules of the entire plan can be tested when participating in various emergency response exercises.

REFERENCES

2. Alamance County Public Health Department (2002), Alamance County Bioterrorism Response Plan, Oakland, California

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