New Strategy to Monitor and Assess Laboratory Biosafety Programs

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Objective

To develop a toolset to monitor and assess laboratory biosafety program performance and cost

Introduction

Laboratory biosafety – a component of biosecurity – has specific elements that together, comprise a facility's capability to both protect employees and the surrounding public and environment. Measuring these elements permits assessment and the costing of program-specific safety interventions. In the absence of a strategy and toolset, we developed a conceptual framework and toolset that monitors and assesses laboratory biosafety programs (LBPs) and provides useful information (e.g., return on investment [ROI]) for decision makers.

Methods

We conducted academic and open source literature reviews of LBPs and affiliated organizations laboratory manuals to identify objectives, goals, and indicators. These findings were aligned to laboratory biosafety-specific inputs, activities, outputs, and outcomes to create a strategic, conceptual framework (logic models) used to assess performance and measure the cost and ROI. Indicators were identified in existing literature or developed and mapped to the logic model elements.

Results

Six logic models were created: laboratory biosafety, biosurety, procedural, biocontainment, information security, and training. The laboratory biosafety logic model served as the overall framework for the remaining five sub-logic models. We also established a database containing 161 indicators mapped to each of the logic model elements.

Conclusions

We developed a strategic framework that monitors and evaluates LBPs. While evaluation of cost-impacts in LBPs provides business intelligence for resource planning, this integrated approach also provides information about gaps. We plan to pilot this toolset and refine indicators using principal component analysis.

Keywords

Laboratory biosafety; Evaluate Laboratory; program performance

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