Special FOCUS

Proposals for Aligning Disaster Health Competency Models

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ABSTRACT

To standardize the key building blocks of disaster health competency models (content, structure, and process), we recommend a reinterpretation of the research, development, test, and evaluation construct (RDT&E) as a novel organizing framework for creating and presenting disaster health competency models. This approach seeks to foster national alignment of disaster health competencies. For scope and completeness, model developers should consider the need and identify appropriate content in at least 4 broad areas: disaster-type domain, systems domain, clinical domain, and public health domain. The whole disaster health competency model should reflect the challenges of the disaster setting to acknowledge the realities of disaster health practice and to shape the education and workforce development flowing from the model. Additional issues for consideration are whether competency models should address response and recovery just-in-time learning and whether the concept of "daily routine doctrine" can contribute to disaster health competency models. The recommendations seek to establish a strategic reference point for disaster competency model alignment within the health workforce. (*Disaster Med Public Health Preparedness*. 2013;7:8-12)

Key Words: disaster medicine, competency, workforce, knowledge, disaster education

Competencies are used in a number of ways, including to specify roles or jobs in the workplace, to assess individuals in the workplace, to design educational and training curricula, and to identify desired learner outcomes.[1-4] The term *disaster health* refers to the discipline that "integrate[s] preparedness into the public health and medical communities."[5(p 4)] Recently, a large number of competency models have been developed in the area of disaster health; several such models and a reference to others are cited here.[6-14] Indeed, a literature search conducted by Daily and colleagues in 2007 identified 39 articles presenting competencies related to disaster health.[15]

A number of challenges related to competencies in disaster health have included the large volume of competencies,[15] multiple definitions of competency,[10,15] competency statements that do not contain a behavior and context for that behavior,[15] difficulty in assessing competency attainment,[15] and lack of validation.[15,16] These challenges make a comparison of competency models difficult and hinder their application. Daily and colleagues recommend that "Further efforts must be directed to developing a framework for the articulation of competency sets for disaster health professionals that can by [sic] accepted and adapted universally."[15(p 394)]

In response, the following proposals are offered to assist in the articulation of disaster health competency models. This report reflects the interagency-approved strategic plan for the National Center for Disaster Medicine and Public Health, particularly in areas focusing on competencies and continuous learning improvement. These proposals are offered for stakeholder consideration and discussion, and would not have been possible without the outstanding work by many colleagues and organizations in the disaster health community.

ALIGNMENT PROPOSALS

The disaster health competency model recommendations focus on 3 important areas: an organizing framework, the spectrum of disaster health, and context as a focal point, as summarized in the Box.

Recommendation 1: Apply an Organizing Framework

Competency model development and application is a complex, long-term, and potentially costly endeavor. Using a systematic process to create a competency model allows for model evaluation and comparison and promotes a model that focuses on the outcomes of competencies (curricula and learner performance rather than the competencies themselves). We suggest that an existing framework[17] can be adapted for competency model creation, application, and continuous improvement.

The research, development, test, and evaluation (RDT&E) construct[18] typically informs multiyear

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BOX

Recommendations for Aligning Disaster Health Competency Models

1. Apply an Organizing Framework
   - Research: articulate the need for the model, specify the gap filled, state the target audience, and suggest intended use(s) for the model
   - Development: provide detail consistent with the methods section of a scientific report to describe the process used to develop a competency model, including consideration of assessment of individuals and teams
   - Test: estimate potential value and validity of the model. This could include reviewing with stakeholders (educators, health professionals, leaders), assessing that the model reflects practice in exercises or simulations, and envisioning competency model implementation scenarios; the process and timing for updating the model should be described
   - Evaluation: assess the outcome of the actual interaction of the model with the stakeholder community, including the uptake or usage of the model in the community (ie, curriculum development, professional endorsement, and language incorporation in position descriptions)
2. Address the Spectrum of Disaster Health
   Consider the need and identify the appropriate content in at least the following four broad areas:
   - Disaster-type domain
   - Systems domain
   - Clinical domain
   - Public health domain
3. Ensure Context Is a Focal Point
   The entire disaster health competency model should reflect the challenges of the disaster setting to acknowledge the realities of disaster health practice and to shape the education and workforce development flowing from the model.

fiscal planning and budgeting for highly technical and complicated engineering projects. The RDT&E construct is proposed here as a novel organizing framework for disaster health competencies because it provides a guide for use in model creation and it offers a practical framework for thoroughly presenting the competency model to stakeholders. Clear articulation provides transparency, facilitates communication, and enables stakeholders to critically appraise the model. Each part of the RDT&E continuum is important and has equal value. The following is our reinterpretation of this framework for competency development in the context of adult learning, including unique definitions.

Research

Research includes articulating the need for the model, specifying the gap filled, explicitly stating the target audience (ie, which health care providers should attain the competencies), and suggesting intended use(s) for the model.

We find a distinction by Miner and colleagues[4] helpful in understanding the intended uses of competency models. The authors distinguish between "workforce competencies" and "instructional competencies." Workforce competencies "apply competencies to the identification and design of worker roles, responsibilities, and job descriptions…and are traditionally used for managerial and administrative purposes," whereas instructional competencies "are used primarily in the development of curricula and instructional materials."[4(p 11)] Specifying the intended use(s) of the model, be it workforce, instructional, or some other use, informs the entire process of competency creation, clarifies how the model should be applied, and allows for appropriate comparison between models. While we believe many of these research elements are understood by the authors of competency models, opportunities for more explicit articulation still exist.

Development

The level of detail available regarding the process used to develop a competency model should be consistent with that expected in the methods section of a scientific report. For shorter documents presenting competency models (eg, fact sheets), readers should be referred elsewhere.

In the development phase, a particularly noteworthy component of competency models to be considered is assessment.[15] Either the competency developers or the disaster health community will need to develop assessment strategies. From a learning perspective, competency model developers should consider how learners or professionals will be assessed on the competencies they are being asked to acquire. When guidance is provided as to how the competencies will be assessed in individuals and in teams, the path to usage by stakeholders of the model in the target population becomes clearer. Addressing assessment also minimizes the risk that aspects of the model are only theoretical. While fully developing an assessment scheme for the competencies may not be feasible during model development, we suggest competency model authors should at least describe the setting(s) and suggest the means by which the individual competencies could be assessed, such as an actual disaster (supervisory feedback), disaster drill (scenario content and evaluation), routine work setting (performance appraisal), and educational setting (student assessment).

Test

Testing estimates the potential value and validity of the model with a sample population of the target community who

must possess the competencies and a sample population of the target community who will teach the competencies. Testing is strongly encouraged before the formal release of the model as an "in vitro" process and should be fully documented. Testing a competency model could include the following:

- Review of the model with identified stakeholders, such as:
  - faculty and other educators consider whether the model could be practically incorporated into education and training
  - health professionals at novice and expert levels consider whether the model reflects their practice
  - leaders consider whether the model reflects their needs.
- Assess whether the competency model reflects actual practice by introducing a nascent competency model into exercises or simulations.
- Envision how the model could be implemented in various education and training scenarios.

The important effort of ongoing continuous improvement and reexamination of existing competency models has been noted.[1,11,12,19-21] Competency models should address questions of how and when they will be revisited to account for an evolving knowledge base in disaster health and educational methodology (eg, the technology of social media and its emerging value in disaster preparedness and response[22]). Based on findings from testing, the method and periodicity for continuous improvement should be determined and stated.

Evaluation

Evaluation assesses the outcome of the actual interaction of the model with the stakeholder community. An aspect of evaluation includes examining the uptake or usage of the model in the community. Uptake of disaster health competency models can be ascertained by evaluating some of the following:

- curriculum development based on the model
- endorsement of the model by professional standards organizations
- incorporation of the model's language in position descriptions.

Juxtaposed with the in vitro aspects of test in RDT&E, evaluation could be seen as an in vivo process of enhancing the competency model based on its larger use after publication. Developers of competency models should state whether the model has been evaluated in the target population, and, if not, describe barriers and challenges to evaluation. If there are plans to evaluate the model in the future, those should be stated along with a timeframe. As indicated with testing, evaluation plans can inform the length of the updating cycle for the competency model.

The organizing framework of RDT&E is a continuous learning improvement cycle. We regard the RDT&E process as a whole, and stopping after development or conducting limited testing represents an incomplete process. The publication of competency models should occur between the test and evaluation phases; this plan allows the published model to undergo some refinement through testing and dissemination to the community, which is necessary for evaluation. In addition, test and evaluation inform the research foundation for the next iteration of the model. This RDT&E organizing framework is offered to foster national alignment on disaster health competency models.

Recommendation 2: Address the Spectrum of Disaster Health

Because the disaster health field is broad and multifaceted, it is recommended that explicit consideration of this wide spectrum benefits the scope and completeness of competency models. We propose considering this spectrum in terms of at least 4 broad domains-no domain being more important than another.

Disaster-Type Domain

Examples of the disaster-type domain could include epidemiology of disasters, likely patient presentations for a particular type of event (eg, chemical, biological, radiological, nuclear, natural disasters, and technological or human-made disasters), and procedures specific to particular types of disasters such as decontamination for chemical and nuclear events.

Systems Domain

Examples of the systems domain include the National Response Framework,[23] National Incident Management System,[23] incident command system,[23] emergency medical services (EMS), emergency action plans for entities or organizations, the role of the hospital, mutual aid procedures, patient-tracking capabilities, patient transportation and evacuation, and medical and mass care of displaced populations.

Clinical Domain

Examples of the clinical domain can include but are not limited to acute and long-term health needs of disaster-affected populations (including effects on palliative care and home health care), the unique needs of vulnerable populations, and the mental and behavioral health needs of both responders and patients.

Public Health Domain

Examples of the public health domain may include disease surveillance, needs assessment, risk communication, and community assessment.

Models do not need to articulate competencies in every category, but should consider them and identify how related

content may or may not be appropriate for the target population and the competency model.

Recommendation 3: Ensure Context Is a Focal Point

Context is critical in disaster health practice because disasters are challenging, unpredictable, and markedly different from daily routine. Disaster events bring challenges associated with the adequacy of reliable information, resource scarcity, and demand for urgent decisions. These challenges affect the individual and are frequently encountered in a team-based environment. Not only is context an attribute of the practice of disaster health, it is also important in learning and professional development.[24]

Competency models should be robust and reflect the disaster setting in their articulation. For example, describing the disaster context (incomplete information, inadequate resources, and severe time constraints) for certain competencies performed during the response phase helps align the educational process for those competencies (especially the crafting of learning objectives[24,25]). It also provides a level of precision and authenticity for disaster health workforce development. A context-infused competency model provides a realistic bridge between the disaster setting and the curriculum, and it also aids in the assessment of learner competencies and educational program evaluation.

ADDITIONAL ISSUES TO CONSIDER

In developing these recommendations, we identified 2 additional issues for consideration. First, given the large volume of knowledge and skills required of disaster health professionals, and the promise of providing just-in-time knowledge,[26] should just-in-time learning in response and recovery be considered in competency models? Perhaps future competency models may explicitly discuss how competencies in the model are acquired, refreshed, or deepened on a just-in-time basis during disaster events.

Second, we are intrigued by the "daily routine doctrine" concept, which was articulated by Byrnes[27] in the context of a hospital in Belfast, United Kingdom, responding to patients from rioting and bombings, but has since been applied to triage in disasters[28] and EMS work in general.[29] In brief, the concept is that if practices are applied during the daily routine, they will be more easily applied in the challenges of the disaster context. We believe that this idea may contribute to disaster health competency models by focusing just-in-time training.

CONCLUSIONS

These recommendations are offered as key building blocks of content, structure, and process for standardizing disaster health competency models. They seek to establish a strategic reference point for competency model alignment within the disaster health community. Organizations or groups can use these recommendations in several ways. Authors of disaster health competency models might use them as they revisit their models for updating and continuous improvement. Those planning to develop a new disaster health competency model might use these concepts to guide the creation and articulation of their model. These recommendations should also inform the language of grants.

As we strive to make a difference in this field, we should remember that the ultimate goal is to reduce suffering and death. These outcomes are directly affected by the education and training provided to the disaster health workforce. Competency models and the curricula they generate are key components of that learning.

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