

Design for Six Sigma in Disaster Medicine Curriculum Development for Emergency Medicine Residents

Franc JM†‡, Naismith A†, Kjelland C†, Verde M‡.

†The University of Alberta, Edmonton, Alberta, Canada

‡L'Universita' degli Studi del Piemonte Orientale, Novara, Italy

INTRODUCTION: Although disaster medicine may be an important part of residency training in emergency medicine, many residency programs do not have a structured disaster medicine curriculum. Rather than simply designing a curriculum by consensus, use of the design for six sigma business process management technology – which emphasizes creation of product solution based on customer needs - may allow a more structured approach to curriculum design. The present study describes the use of design for six sigma to create a disaster medicine curriculum for emergency medicine residency training.

METHODS: The project team included two physicians with training and expertise in disaster medicine, and the assistant program directors from the two emergency medicine residency programs at the University of Alberta. The project followed the design for six sigma phases of Define, Measure, Analyze, Design, and Verify. During the Define phase, seven residents of the two residency programs attended a focus group to reveal their initial impressions of their needs for a disaster medicine curriculum. Ideas from the focus group were used to create a survey instrument. During the Measure phase, twenty residents completed the survey instrument. In addition, twenty-one residents completed a pre-test in disaster medicine to determine which areas were common gaps in knowledge. During the Analyze phase, data from the focus group was analyzed using a tree diagram, while pretest and survey data was analyzed using Pareto analysis. During the Design phase, results of the tree and Pareto analysis were used to design a curriculum. The Verify phase, which is now ongoing, will apply this curriculum to the next cohort of residents. Further study the efficacy of the new curriculum by a questionnaire on resident satisfaction and changes on the pre and post test scores.

RESULTS: The focus group revealed that residents feel disaster medicine training is important and should receive more emphasis during the residency program. They also voiced a strong preference for independent study and focus on exam preparation. In the needs survey, residents voiced a strong preference for four type of learning activities: computer simulation, seminars with a disaster medicine instructor, lectures, and sample exam questions. Pretest scores were highest for the topics of disaster management, definition of terms, and risk analysis, while scores were lowest for the topics of historical

perspectives of disasters, psychosocial aspects of disasters, and philosophy of disaster medicine. The final curriculum includes: 1) yearly computer simulation emphasizing emergency department disaster management, 2) once yearly didactic presentation on disaster medicine at emergency medicine grand rounds, 3) a set of sample exam question modules that residents will complete independently during their Emergency Medical Services rotation, and 4) a seminar with a disaster medicine instructor to review problems with the written exam questions and perform a short practice oral exam. Content of the curriculum will be focused on addressing those areas most concerning on the pre-test instrument.

CONCLUSIONS: The design for six sigma technique was easily implementable for the creation of a new curriculum in disaster medicine. By providing a structured approach to definition, measurement, and analysis prior to design, the curriculum may be better suited to the needs of the residency training program. Further study is ongoing to verify its efficacy.