Future Vision of Battlefield Medical Response: The Virtual Soldier

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The Defense Advanced Research Projects Agency (DARPA) has initiated a new program called Virtual Soldier. The Virtual Soldier Program will develop an information (computational) representation of the individual soldier that can be used to augment medical care on and off the battlefield. Oak Ridge National Laboratory will play an important role in development of the computational infrastructure for the Virtual Soldier Program. We will create a middleware software to facilitate connections between the various forms of data (including X-ray/CT, MRI, ultrasound, and vital signs data) and the modeling software. We will also support the development of a holographic medical electronic representation (or holomer), which will display, in an integrated fashion, the soldiers physiological and anatomical information with model results for purposes of predicting outcome of a wound. This talk will present the background for the Virtual Soldier: the Advanced Biomedical Technologies program at DARPA, the Physiome Project, the ORNL Virtual Human Project, and the Federation of American Scientist's Digital Human Project. The Virtual Soldier program will then be described and ORNL's role will be discussed in detail. Finally, some of the biomedical engineering issues in the Virtual Soldier, in particular the 3D-computational model of the heart and associated physiological models, will be discussed.