Background: Public health threats in the 21st century include those faced by prior generations, but numerous new and emerging threats to individual and societal health have been identified. These include biological, chemical and radiological terrorism, emerging infections, food and water source contamination, impact of pharmaceutical treatments, psychosocial impact of the threat of terrorism, and other technologic threats to continuity of public and health services, (e.g., computer viruses). Successful detection and mitigation of an emerging health threat, such as an infectious outbreak or chemical weapons attack, depends on prompt (and even ultra-early) identification and response by a prepared medical community. All physicians have the potential to detect an unusual or suspicious pattern of illness and initiate action. However, physicians may not be trained to recognize these conditions. Thus, broad dissemination of this knowledge is essential to public safety, since most cases will not initially present to a physician who is an expert in one of these specific areas.

Medical principles related to these topics exist as core elements of typical civilian medical curricula. Relevant topics already taught include public health, epidemiology, infectious diseases, pharmacology, toxicology, environmental and occupational medicine, genetics, patient-doctor communication, behavioral health, and informatics. The terminal goal of this curricular initiative is to prepare graduating medical students to respond to the challenges posed by biologic threats to society (BTS).

Methods: Faculty are integrating the BTS theme throughout the four-year medical school curriculum, with content placement as appropriate into existing courses. Examples of the type of content integration are the mechanism of action of chemical weapons agents and antidotes within the neurosciences and cell signaling courses, and the technique of using gene mutation-counting as a means to estimate radiation exposure within the genetics curriculum. Ethics courses provide a venue to examine the dilemmas surrounding imposition of quarantine during an outbreak. Some of the added material will be covered by only a single problem or brief illustration. At strategic points in the curriculum, students will participate in focused sessions that promote assimilation of this content, including simulations and practical exercises.

Results and Conclusions: An initial module on biological and chemical weapons has been a component of the required internal medicine clerkship since July 2000. It has been educationally successful and well received. Additional content on biological and chemical weapons agents and disaster medicine was added in 2001. It is anticipated that the integrative approach and the current general interest in biodefense preparedness will bolster support for this innovative curriculum theme. Longitudinal integration of material on biologic threats to society into an existing curriculum can be achieved by designing discrete instructional units that are directly relevant to the goals of the target course. A second critical element is for this material to be revisited multiple times in varying contexts over time. Thus the content is non-invasive (limited curriculum time required) yet pervasive enough that student awareness of these issues is enhanced.