



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Diagnosics and Biomarkers

Open Abdomen Clinical Decision Support Tool (CDST)

Up to 25 percent of all trauma laparotomies require management with open abdomens. Damage control laparotomy (DCL) followed by temporary abdominal closure, resuscitation, and planned re-laparotomy is used to manage critically injured patients who cannot be closed primarily at the initial operation. No studies to date have evaluated objective criteria for predicting successful closure of the open abdomen after DCL; the appropriate timing of abdominal closure or coverage has yet to be determined. Leveraging its growing biobank/databank of trauma patients under the Tissue Data and Acquisition Protocol (TDAP), researchers at Surgical Critical Care Initiative (SC2i) at Uniformed Services University of the Health Sciences (USUHS) are developing a CDST to inform the timing of delayed fascial closure after DCL. Identifying risk factors for delayed fascial closure may help to avoid the complications of multiple attempts to close and optimize the chance of a successful planned staged ventral hernia; this could shorten time to recovery and potentially prevent some of the complications seen after DCL in this population. Preliminary findings indicate elevated peak serum and wound procalcitonin levels may be associated with delayed fascial closure after DCL. This challenge is particularly relevant to combat casualty care; the deployment of the aforementioned CDST, once validated through a clinical trial, has the potential to dramatically improve outcomes and lower resources utilization for the Military Health System (MHS).

