Preparing for Operational Experimentation: The USAISR Experience

Joint Force Innovation: Accelerating Development through Military Experimentation

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Disclosure

» The Authors have no conflicts to report

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Purpose:

To developed combat medical simulation capabilities within the USAISR Nexus laboratory that can be transitioned to operational experimentation events, improving realism, data quality, and combat casualty care readiness

Background:

USAISR established the NEXUS simulation laboratory to validate medical simulation techniques before their use in larger operational experiments. Capabilities such as dynamic hemorrhage systems, standardized prosthetic injuries, and multisensory environmental effects have been developed to create more realistic casualty scenarios and support military medical research.

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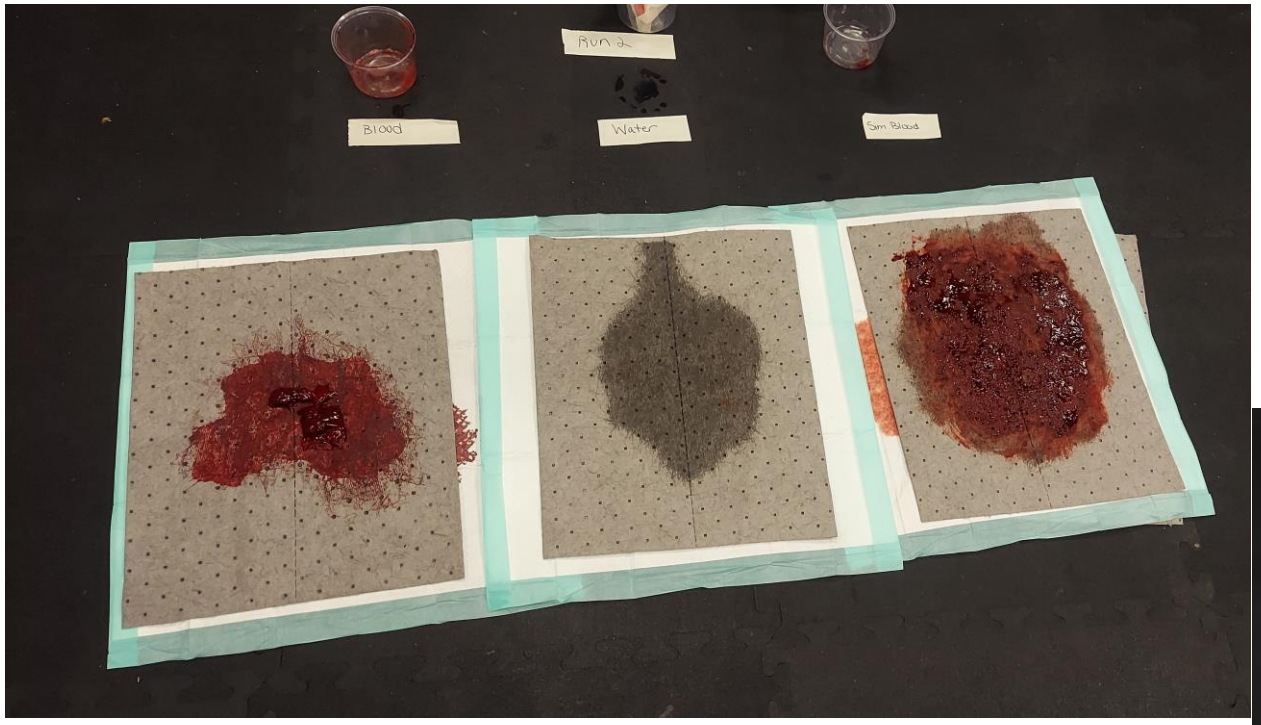
Problem Statement

- Traditional medical simulation methods often:
  - Lack the realism necessary to accurately replicate battlefield conditions
  - Limits training effectiveness and validity of research and experimentation data
- A scalable, standardized, and high-fidelity simulation capability is needed to better evaluate
  - Medical performance
  - Technologies
  - Operational readiness

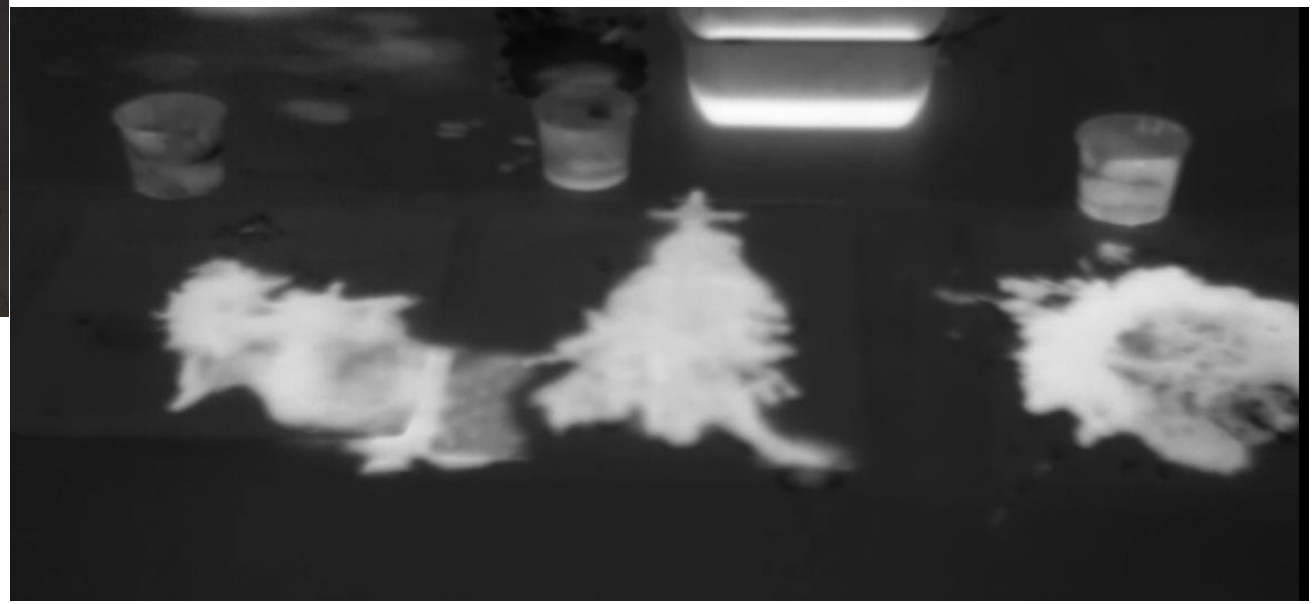
Hyper-Realistic Hemorrhage

* All video clips taken from USAISR NEXUS Lab

Heated Simulated Blood



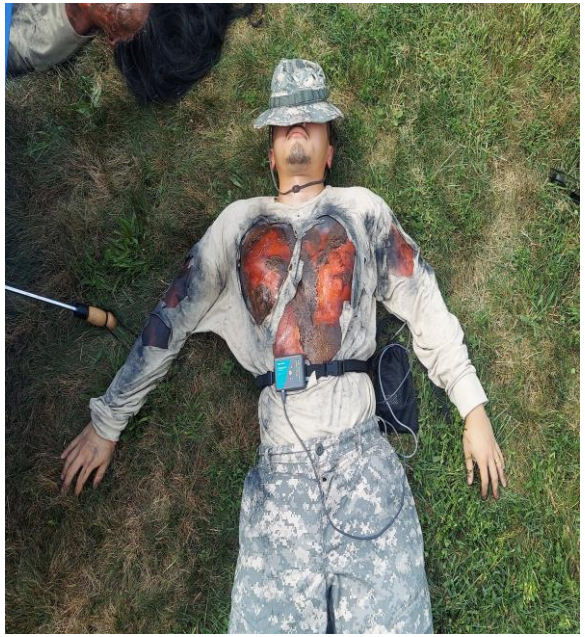
RGB Image taken in USAISR NEXUS Lab



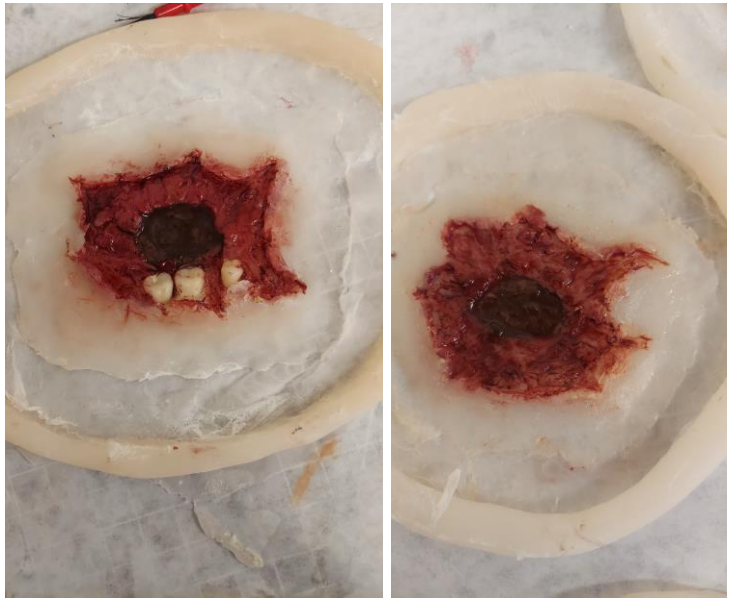
IR Image taken in USAISR Nexus Lab

Pre-Made Prosthetic Injury Patters

- Reusable silicone Prosthetics
- Standardized battlefield Injuries
- Repeatable Casualty presentations



USAISR Chest Burn Prosthetic



USAISR Facial Prosthetic

Audio and Olfactory Simulation

Video clip taken from USAISR NEXUS Lab

Summary

- Realistic simulation improves research validity, technology development, and combat casualty readiness
- USAISR's NEXUS provides proven framework for future operational experimentation

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"Military medicine is not just about treating injuries; it's about ensuring the health and readiness of those who serve, so they can accomplish their mission and return home safely."

- MG Paula C. Lodi, Commanding General, USAMRDC