

A new curriculum helps surgical trainees comprehensively treat victims of firearm violence

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Anatomy of Gun Violence:

Contextualized Curriculum to Train Surgical Residents in Both Technical and Non-Technical Skills in the Management of Gun Violence



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The Anatomy of Gun Violence: A contextualized curriculum to train surgical residents in both technical and non-technical skills in the management of gun violence. Credit: American College of Surgeons

Firearm violence impacts not only individuals and their communities, but also the health care providers who treat them. For surgeons, treating

these victims and understanding the impact of firearm violence as a public health issue requires both technical and non-technical skills. Researchers at Washington University School of Medicine, St. Louis, Mo., developed a multidisciplinary curriculum to train surgical residents so that they can best treat victims of firearm violence and feel confident in contributing to the national conversation on firearm violence as a public health problem. The study findings appear as an "article in press" on the *Journal of the American College of Surgeons* website ahead of print.

The Anatomy of Gun Violence (AGV) [curriculum](#) was developed at Washington University School of Medicine to teach surgical trainees about managing [firearm](#) injuries while also understanding the injuries within the context of the public health epidemic of firearm [violence](#). To achieve these goals, the curriculum was delivered over six weeks to general surgery residents in the 2017-18 and 2018-19 academic years. The curriculum contains multiple educational methods: a core curriculum of didactic lectures, mock oral examinations, a bleeding control training session, a Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) [training session](#), a gun violence survivor session, and the Surgery for Abdominal-thoracic ViolenceE (SAVE) simulation lab, along with other specialty programs. The authors believe this is the first effort to teach surgical residents about firearm violence as a disease process within its social context.

"We wanted to create a more holistic curriculum that not only involved epidemiological aspects of firearm violence, but also preventative medicine and the impact it has on the emotional and psychosocial parts of our lives," said lead study author Emily J. Onufer, MD, MPH, a general surgery resident at Washington University School of Medicine.

In both academic years, 60 surgical residents participated in the AGV curriculum and 41 and 36 residents, respectively, completed a survey

regarding their experiences with the curriculum. The residents reported an average 7.5 percent improvement in knowledge, with junior residents showing an even larger increase. The SAVE lab, where residents are grouped in teams and complete five penetrating trauma scenarios, was the highest rated component of the curriculum. Respondents also requested a debrief after the SAVE lab to discuss best practices and a session on firearm safety, policy, and opportunities for advocacy so that they can feel confident contributing to the national conversation on firearm violence.

Dr. Onufer and her coauthors emphasized the importance of the gun violence survivor session in the curriculum. She said that surgeons have the tendency to, as a coping mechanism, depersonalize the treatment of firearm violence victims. The survivor session helped humanize and personalize the firearm violence epidemic in St. Louis.

"One of the hardest things for [surgical residents](#) is that we see these patients and we do everything we can to help them, but then we may rotate off the service and we don't find out what happens to them," said study coauthor Erin Andrade, MD, MPH, a general surgery [resident](#) at Washington University School of Medicine. "Bringing a patient back through the gun violence survivor session meant getting to hear a story come full circle. The survivor was able to come back and show us the impact we can make in a patient's life."

The AGV curriculum also contained a section on STOP THE BLEED, training residents with hands-on practice of direct manual pressure, tourniquet application, and wound packing to stop severe bleeding. Residents assembled their own bleeding control kits during the training and, in their second year, if they had previously completed the STOP THE BLEED session, they had the opportunity to serve as an instructor for a session with hospital environmental services workers. Serving as an instructor gave residents the chance to teach lifesaving skills to members

of their community.

"The surgeon is relevant to the public health experience of violence. We can have an impact outside the operating room. I think a lot of residents who maybe never saw that possibility before now believe that," said study coauthor LJ Punch, MD, FACS, president, Power4STL, St. Louis, Mo.

Each scenario in the AGV curriculum represented actual patients who had been treated at the trauma center. Each scenario also was named after the residents who were involved in the care of that patient. Naming each scenario in this manner highlighted the tremendous impact surgical trainees have on the lives of firearm violence victims. "I went through the operative records and found the names of the residents who were taking care of the patient from the emergency room to the operating room and I named the case after them. That is not something residents often get feedback on—that their work is the reason why this person is alive," Dr. Punch said.

The researchers are exploring ways to track the curriculum's clinical impact beyond the six-week course. They noted this is a single center experience at an urban training program with a high prevalence of firearm injuries, which could limit the curriculum's applicability in other regions. However, they emphasized that firearm violence is an epidemic across the U.S. and this curriculum provides a way to standardize the teaching of penetrating traumatic injury for surgical trainees.

Addressing firearm violence from a public health approach is also the focus of the American College of Surgeons Improving Social Determinants to Attenuate Violence (ISAVE) task force, which recently outlined steps the medical community must take to understand and address the root causes of firearm violence.

More information: Emily Jean Onufer et al. Anatomy of Gun Violence: Contextualized Curriculum to Train Surgical Residents in Both Technical and Non-Technical Skills in the Management of Gun Violence, *Journal of the American College of Surgeons* (2020). [DOI: 10.1016/j.jamcollsurg.2020.09.025](https://doi.org/10.1016/j.jamcollsurg.2020.09.025)

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