

Automatic Acoustic Gunshot Sensor Technology's Impact on Trauma Care
Magdalene A. Brooke, MD, Stefania Kaplana, Gregory P. Victorino, MD, FACS
University of California, San Francisco - East Bay, Highland Hospital, Oakland, CA

INTRODUCTION: As cities nation-wide combat gun violence, use of acoustic gunshot sensor technology is increasingly common. With less than 20% of shots fired reported to police, there is clear potential for crime-fighting purposes. However, there have been no studies to date investigating whether these technologies affect outcomes for victims of gunshot wounds (GSW). We hypothesized that the ShotSpotter system would be associated with decreased prehospital time intervals.

METHODS: All GSW patients From 2014-2016 were collected From our institutional registry and cross-referenced with local police department data regarding times and locations of ShotSpotter alerts. Each GSW incident was categorized as related or unrelated to a ShotSpotter alert based on its temporal and geographic proximity. Admission data, trauma outcomes, and prehospital time intervals were then compared.

RESULTS: We analyzed 731 patients. Of these, 192 were ShotSpotter-related (26%) and 539 were not (76%). ShotSpotter-related patients were more likely to be female (Table 1). They also had higher injury severity scores (ISS), more ventilator days, longer total length of stay, and were more likely to require an operation. Mortality, however, did not differ between the groups. Both total prehospital time and EMS time on-scene were lower in the ShotSpotter group.

CONCLUSIONS: To our knowledge, this is the first study to investigate acoustic gunshot sensors' relationship to clinical trauma care. ShotSpotter patients experienced decreased prehospital and EMS on-scene times. Additionally, despite higher ISS and use of more hospital resources, mortality was similar to non-ShotSpotter counterparts. Thus, this technology may benefit both law enforcement and trauma centers.