

# A Consensus-Driven Agenda for Emergency Medicine Firearm Injury Prevention Research



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**Study objective:** To identify critical emergency medicine–focused firearm injury research questions and develop an evidence-based research agenda.

**Methods:** National content experts were recruited to a technical advisory group for the American College of Emergency Physicians Research Committee. Nominal group technique was used to identify research questions by consensus. The technical advisory group decided to focus on 5 widely accepted categorizations of firearm injury. Subgroups conducted literature reviews on each topic and developed preliminary lists of emergency medicine–relevant research questions. In-person meetings and conference calls were held to iteratively refine the extensive list of research questions, following nominal group technique guidelines. Feedback from external stakeholders was reviewed and integrated.

**Results:** Fifty-nine final emergency medicine–relevant research questions were identified, including questions that cut across all firearm injury topics and questions specific to self-directed violence (suicide and attempted suicide), intimate partner violence, peer (nonpartner) violence, mass violence, and unintentional (“accidental”) injury. Some questions could be addressed through research conducted in emergency departments; others would require work in other settings.

**Conclusion:** The technical advisory group identified key emergency medicine–relevant firearm injury research questions. Emergency medicine–specific data are limited for most of these questions. Funders and researchers should consider increasing their attention to firearm injury prevention and control, particularly to the questions identified here and in other recently developed research agendas. [Ann Emerg Med. 2017;69:227-240.]

0196-0644/\$-see front matter

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<http://dx.doi.org/10.1016/j.annemergmed.2016.08.454>

## INTRODUCTION

### Background

In the United States, firearms were the cause of 114,633 injuries in 2014 alone. Of these, 81,034 were nonfatal.<sup>1</sup> The remainder were fatal injuries (10,945 homicides [70% of all homicides], 21,334 suicides [50% of all suicide deaths], and 1,320 due to unintentional, undetermined, or legal intervention).<sup>2</sup> Firearms are the second leading cause of death among US youths (14 to 24 years), the primary cause of death among black youths,<sup>2</sup> and the most common method of suicide deaths.<sup>3</sup>

Nonfatal firearm-related injuries have long-term consequences. They increase risk of future violent victimization and death, crime perpetration, and subsequent firearm violence; they are also associated with

high rates of physical disability and mental illness both among victims and bystanders.<sup>4-8</sup> The costs associated with firearm violence, injury, and death are substantial: an estimated \$630 million per year is spent on acute medical care alone, and significantly more on lost wages, long-term care, and legal proceedings.<sup>9</sup>

Relative to the burden of disease, there has been far too little high-quality firearm injury prevention and control research. In 2013, the Obama administration directed federal agencies to identify barriers to this research.<sup>10</sup> Despite specific recommendations from the Institute of Medicine and the National Research Council, research to reduce the burden of firearm-related injury and death is still lacking; as of this writing, no funds have been appropriated to the Centers for Disease Control and Prevention (CDC) for research on firearm injury prevention and control.<sup>11-16</sup>

<sup>†</sup>All members are listed in the [Appendix](#).

## Importance

The initial evaluation and treatment of firearm injuries occurs routinely in the emergency department (ED).<sup>17</sup> Despite the significant health effects of firearm injuries, emergency medicine's well-established responsibility to care for patients with these injuries and its history of leadership in injury prevention research, and the American College of Emergency Physicians' (ACEP's) explicit endorsement of firearm injury prevention,<sup>18,19</sup> only limited rigorous, emergency medicine-focused firearm injury research exists.

In 2014, the ACEP Board of Directors tasked the ACEP Research Committee with developing an evidence-based agenda for emergency medicine firearm injury research. Primary goals included reviewing existing firearm research, identifying gaps in it, and using rigorous consensus techniques to develop a research agenda. Our report explicitly differs from firearm injury research agendas proposed by the Institute of Medicine<sup>11</sup> by focusing on pressing clinical and preventive questions relevant to emergency medicine.

## Goals of This Investigation

A technical advisory group for the ACEP Research Committee used nominal group technique to develop an emergency medicine-focused firearm injury prevention research agenda. The group considered both research to be conducted in EDs and emergency medicine-relevant research of other types. The objective of this article is to present the consensus research agenda that resulted from the committee's work.

## MATERIALS AND METHODS

### Study Design and Setting

We recruited a technical advisory group of national content experts and used nominal group technique to identify critical emergency medicine-focused firearm injury research questions.<sup>20,21</sup>

### Selection of Participants

Between November 2014 and January 2015, we identified a technical advisory group (TAG) according to previously published firearm injury prevention research, association with professional societies involved with emergency medicine-related injury prevention studies, and personal recommendations from leading researchers in the field. Our goal was to assemble a group of content experts, with a consolidated focus on public health research and management of firearm-related injuries. The final group consisted of 27 members (Appendix).

## Consensus Methods

We used the widely accepted nominal group technique to develop actionable, consensus-based research questions. The technique is a systematized method for collecting data and developing consensus in a small-group setting by recruiting content experts closely associated with a topic.<sup>20,21</sup> It involves 4 steps: idea generation, round-robin presentation of ideas and further idea generation, structured discussion and clarification of ideas (at which time ideas are checked for duplication and groupings are made), and ranking of preferred ideas, resulting in a prioritized list.<sup>20-22</sup>

Nominal group technique was chosen over other consensus approaches, such as the Delphi technique, because the ultimate goal was a list of research questions, not necessarily a convergence of opinion.<sup>20,23</sup> It facilitates the generation of a greater number of ideas than traditional group discussions. It also balances the influence of individuals so no individual can have excessive influence, limiting group process biases. Finally, the technique results in a prioritized list, a goal of our work.<sup>23-25</sup>

The group and process were specifically structured to address potential limitations to the technique.<sup>21</sup> Nominal group technique requires an experienced team leader; both chairs had used the technique previously.<sup>26-28</sup> It requires group members to participate in highly structured meetings during a certain period; all TAG members were consistently involved with the process. Expert bias may exist, but one of the chairs (M.N.S.) lacked expertise in this specific topic and focused more on the process, thereby limiting this bias. Potential bias by dominant individuals was purposefully minimized through use of the round-robin technique and by purposeful solicitation of opinions from less vocal group members.

The advisory group participated in 5 conference calls and 2 consensus-generating meetings from January 2015 to January 2016. The advisory group chairs (M.L.R. and M.N.S.) moderated each session. Written minutes were kept by ACEP staff.

### Process and Outcomes

*Phase 1: structuring the process.* Our first objective was to structure the consensus process. The group elected to focus on 5 widely accepted categorizations of firearm injury: self-directed violence (suicide and attempted suicide), intimate partner violence, peer (nonpartner) violence, mass violence, and unintentional ("accidental") injury.<sup>29</sup> Subgroups of up to 5 members were assigned to each topic. The Haddon matrix, a common injury prevention research model, was used to structure each subgroup's initial work.<sup>30</sup>

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