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Consensus-based Standards and Indicators to strengthen trauma center injury and violence prevention programs

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ABSTRACT

For decades, the American College of Surgeons Committee on Trauma (ACSCOT) has published *Resources for Optimal Care of the Injured Patient,* which outlines specific criteria necessary to be verified by the college as a trauma center, including having an organized and effective approach to prevention of trauma. However, the document provides little public health-specific guidance to assist trauma centers with developing these approaches. An advisory panel was convened in 2017 with representatives from national trauma and public health organizations with the purpose of identifying strategies to support trauma centers in the development of a public health approach to injury and violence prevention and to better integrate these efforts with those of local and state public health departments. This panel developed the *Standards and Indicators for Model Level I and II Trauma Center Injury and Violence Prevention Programs*. The document outlines five, consensus-based core components of a model injury and violence prevention program: (1) leadership, (2) resources, (3) data, (4) effective interventions, and (5) partnerships. We think this document provides the missing public health guidance and is an essential resource to trauma centers for effectively addressing injury and violence in our communities. We recommend the Standards and Indicators be referenced in the injury prevention chapter of the upcoming revision of ACSCOT's *Resources for Optimal Care of the Injured Patient* as guidance for the development, implementation and evaluation of injury prevention programs and be used as a framework for program presentation during ACSCOT verification visits.

THE ROLE OF TRAUMA CENTERS IN REDUCING THE BURDEN OF INJURY

Injury remains one of the most significant but preventable burdens on the US healthcare system. The Centers for Disease Control (CDC) estimates the societal cost of injury to the USA exceeds $670 billion.[1] The CDC and the US Department of Health and Human Services, Health Resources and Services Administration (HRSA) recognize primary prevention applied within a public health framework as the most effective measure to reduce the burden of injury. Prevention is outlined as a fundamental component of inclusive trauma systems in HRSA's 'Model Trauma Care System Plan'.[2] Accordingly, the American College of Surgeons Committee on Trauma (ACSCOT) *Resources for Optimal Care of the Injured Patient*[3] requires all trauma centers to have an organized and effective approach for injury prevention managed by someone in a leadership position. An organized approach requires an institutional strategy to guide program development and sustainability. An effective approach requires using a public health strategy for planning, implementing, and evaluating injury prevention initiatives.[4–7]

THE NEED FOR PUBLIC HEALTH GUIDANCE IN TRAUMA CENTER-BASED INJURY PREVENTION

Within the context of trauma system planning, HRSA emphasizes the integration of healthcare and public health resources as essential to effective injury prevention.[2] The public health approach is a four-step scientific and systematic process that includes: (1) describing the problem through data collection and surveillance; (2) identifying factors that increase or decrease risk of injury; (3) designing, implementing, and evaluating intervention strategies aimed at decreasing risk factors; and (4) ensuring proven strategies are widely disseminated and implemented in communities nationwide.[8–10] Although the ACSCOT resource document promotes the use of public health models, it provides little specific guidance to assist trauma centers with developing these approaches. This critical gap becomes even more challenging when we consider that most trauma center personnel in the USA tasked with conducting injury prevention activities have clinical healthcare backgrounds with little or no formal public health education or experience.[11] Moreover, unlike trauma program managers and trauma registrars, there is no ACSCOT training requirement for hospital injury and violence prevention professionals (HIVPPs). Despite several national courses and resources developed specifically to assist HIVPPs with obtaining public health-based injury prevention education (table 1), many HIVPPs reported not being provided the opportunity to use these resources.[11]

Furthermore, many hospital-based injury prevention programs across the country are significantly underfunded, understaffed, and lack the infrastructure to develop or measure population-level reductions in injury.[11] In 2017, a survey conducted by the Safe States Alliance and the National Association of County and City Health Officials (NACCHO) revealed consistent deficits in hospital-based injury prevention programs related to staffing, funding, equipment, and training.[12] A subsequent survey of HIVPPs in 2019 highlighted organizational barriers to developing effective approaches for injury prevention, again citing lack of the institutional support and insufficient allocation of fiscal and staffing resources.[11] The ramifications of low

Table 1 Public health-based injury prevention education and courses

Organization	Description
American Trauma Society	Designed for hospital-based injury prevention professionals, this 2-day course provides an overview for developing hospital-based approaches for injury and violence prevention.[24] ► Injury Prevention Coordinators Course
Johns Hopkins Bloomberg School of Public Health—Summer Institute	This 3.5-day competency-based course uses a problem-solving paradigm to introduce the principles and practice of injury prevention. Students use class lectures in behavioral, biomechanical, environmental, epidemiological, legislative, policy and community partnership approaches to injury prevention to develop a strategy for addressing a specific injury problem.[25] ► Principles and Practice of Injury Prevention
Safe States Alliance	For additional support and guidance in injury and violence prevention, Safe States offers a suite of online tools and training. Below are links to key resources to help IVP professionals strengthen their skill set as well as inform their programs.[26] ► Core Competencies for Injury and Violence Prevention: the essential knowledge and skills widely considered necessary to work in the field of injury and violence prevention. Glossary of Injury and Violence Prevention Terms: a glossary developed by Society for Advancement of Violence and Injury Research (SAVIR) and Safe States to provide clarity to terms that could be ambivalent or unclear to potential readers of the Core Competencies for Injury and Violence Prevention. ► Injury Prevention Inventory: a Compendium of Injury Prevention Strategies, Sample Measures, & Resources. ► IVP Orientation Toolkit: a free, online resource to assist IVP program managers and staff establish a foundational skill set in the IVP practice. Users can create a learning profile and take self-assessments. ► Safe States Training Center: resource for accessing training and other learning opportunities that can raise awareness, increase knowledge and build skills for preventing injury and violence.

IVP, injury and violence prevention.

institutional prioritization of injury prevention were perhaps best illustrated during the COVID-19 pandemic when trauma centers across the USA saw an unprecedented increase in violent injuries.[13–17] During this time when injury prevention strategies should have been urgently redirected to reducing interpersonal and community violence, a national survey by the American Trauma Society (ATS) assessing the professional and personal impact of the pandemic on ATS members revealed that injury prevention programs were being suspended or scaled back with injury prevention staff being furloughed or reassigned to clinical duties (ATS member survey, distributed electronically via email on May 8, 2020).

CONSENSUS ON NATIONAL STANDARDS FOR TRAUMA CENTER INJURY PREVENTION PROGRAMS

The field of hospital-based injury and violence prevention has yet to reach full potential for reducing the burden of injury on US populations. This may be due in part to the absence of clear guidance for trauma centers to develop an organized, institutionally supported, and sustainable, public health approach to injury prevention. To fill this gap, the 2017 document *Standards and Indicators for Model Level I and II Trauma Center Injury and Violence Prevention Programs*[12] (https://www.safestates.org/page/TraumaIVP) was developed as the national consensus-based guidelines for trauma center injury prevention programs. A secondary purpose of the document was to promote better integration of trauma center injury prevention efforts with those of local and state public health departments.[12] The project was funded by the CDC and facilitated by Safe States Alliance (www.safestates.org) and NACCHO (www.naccho.org). The year-long process incorporated guidance from an advisory panel of national trauma and public health organizations, findings from key informant interviews, and results from an online 68-item survey of injury prevention professionals at 591 level I and II trauma centers. The advisory panel identified the primary elements for an organized approach to injury prevention outlined in the ACSCOT *Resources for Optimal Care of the Injured Patient: 2014*,[3] crosswalked these elements with the components of a public health approach to injury prevention outlined in three key documents,[18–20] then defined five core components essential for trauma centers to develop an effective approach to reduce the burden of injury and violence in local communities (leadership, resources, data, effective interventions, and partnerships).

The Standards and Indicators document provides a rational for each of the five core components along with a model standard for each component that is intended to guide trauma centers in program development (table 2). The document also provides a comprehensive list of indicators for each component and accompanying standard that can be used to identify program strengths and opportunities for growth. For example, indicator L-2 for the core component of Leadership states 'The IVP program demonstrates how its activities and priorities align with those of the hospital's strategic plan'[12] (p6).

In consideration of size and institutional differences across trauma centers, the indicators are divided into two main categories: those applicable to newer, or smaller hospital injury prevention programs (referred to as core model programs), and those that apply to larger, more established programs (enhanced model

Table 2 The Five Core Components and Corresponding Model Standards[12] (p4)

Core component	Model standard
Leadership	The program is sufficiently supported by trauma center administrators and/or senior hospital administrators who are invested in IVP interventions and activities that are implemented by the hospital or in collaboration with community partners.
Resources	The program has adequate resources (eg, staff and funding) to perform injury prevention activities, and it is overseen by an injury prevention professional who has and continually updates his or her expertise in IVP and ensures that staff have access to relevant training and professional development opportunities.
Data	The program collects, analyzes, interprets, and uses qualitative and quantitative data to determine priority program and policy interventions, evaluate progress, internally 'make the case' for investment in IVP, and/or increase awareness among external audiences of the value of IVP programs.
Effective interventions	The program selects, implements, and evaluates or researches evidence-based and/or evidence-informed prevention strategies that respond effectively to the major causes of injury and violence in the community.
Partnerships	The program identifies and strengthens relationships at the community, local, state, regional and national levels that amplify the program's impact and contribute to coordinated, effective IVP efforts.

IVP, injury and violence prevention.

programs). It is important to note the Standards and Indicators were not developed for use as mandates but rather outline voluntary actions meant to guide trauma centers in program development and identification of existing hospital efforts that could be integrated into an organized local, state, and/or national injury prevention approach. Such efforts may include hospital initiatives like the Affordable Care Act mandated community health needs assessment for charitable hospital organizations,[21] population health initiatives,[22] injury and violence prevention research, and established collaborations with local and state public health programs. To date, anecdotal examples of successful application of the Standards and Indicators by trauma centers have included (1) creating an injury prevention program summary for use during ACSCOT verification surveys, (2) identifying critical gaps in administrative support and data analyses, (3) demonstrating program strengths to hospital administration, and (4) planning for professional development of injury prevention personnel.[23]

CONCLUSION

The criteria established by the ACSCOT for trauma centers to have an organized and effective approach to prevent injuries and violence in the USA remain a critical component of an inclusive trauma care system. The *Standards and Indicators for Model Level I and II Trauma Center Injury and Violence Prevention Programs*[12] are an essential resource to trauma centers for strengthening injury prevention approaches and more effectively addressing injury and violence in our communities. We recommend the Standards and Indicators be referenced in the injury prevention chapter of the upcoming revision of ACSCOT's *Resources for Optimal Care of the Injured Patient*[3] as guidance for the development, implementation and evaluation of injury prevention programs and be used as a framework for program presentation during ACSCOT verification visits.

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REFERENCES

1 National Center for Injury Prevention and Control Centers for Disease Control and Prevention. Web-based Injury Statistics query and reporting system fatal injury data. 2018. https://wisqars-viz.cdc.gov:8006/explore-data/home (28 Dec 2020).
2 US Department of Health and Human ServicesHealth Resources and Services AdministrationTrauma-EMS Systems Program. Model trauma system planning and evaluation. 2006. https://www.hsdl.org/?abstract&did=463554 (22 Jan 2021).
3 American College of Surgeons. Committee on Trauma. *Resources for optimal care of the injured patient*. 6th edn, 2014.
4 Sleet DA, Dahlberg LL, Basavaraju SV, Mercy JA, McGuire LC, Greenspan A, . Centers for Disease Control and Prevention (CDC). Injury prevention, violence prevention, and trauma care: building the scientific base. *MMWR Suppl* 2011;60:78–85.
5 Haegerich TM, Dahlberg LL, Simon TR, Baldwin GT, Sleet DA, Greenspan AI, Degutis LC. Prevention of injury and violence in the USA. *Lancet* 2014;384:64–74.
6 Wilkins N, McClure RJ, Mack K. Injury prevention: achieving population-level change. *Inj Prev* 2018;24:i1–2.
7 Doll L, Haas EN, Bonzo S, Sleet D, Mercy J. *Handbook of injury and violence prevention*: Springer Science & Business Media, 2007.
8 Centers for Disease Control and Prevention. Our Approach. retrieved from Injury Prevention & Control. https://www.cdc.gov/injury/about/approach.html (09 Jan 2020).
9 Hanson DW, Finch CF, Allegrante JP, Sleet D. Closing the gap between injury prevention research and community safety promotion practice: revisiting the public health model. *Public Health Rep* 2012;127:147-55.
10 Smith LS, Wilkins NJ, McClure RJ, LS Smith, N. W. A systemic approach to achieving population-level impact in injury and violence prevention. *Syst Res Behav Sci* 2021;38:21–30.
11 Adams CM, Strack Arabian S, Edwards C, Tinkoff G. Hospital-based injury and violence prevention: defining the role of injury prevention professionals at trauma centers in the United States. *Am Surg* 2020.
12 The Safe States Alliance and National Association of County and City Health Officials. Standards and indicators for model level I and II trauma center injury and violence prevention programs [Report]. 2017. https://www.safestates.org/page/TraumaIVP (08 Dec 2020).
13 Boserup B, McKenney M, Elkbuli A. Alarming trends in US domestic violence during the COVID-19 pandemic. *Am J Emerg Med* 2020;38:2753–5.
14 Gosangi B, Park H, Thomas R, Gujrathi R, Bay CP, Raja AS, Seltzer SE, Balcom MC, McDonald ML, Orgill DP, *et al*. Exacerbation of physical intimate partner violence during COVID-19 pandemic. *Radiology* 2021;298:E38–45.
15 Chang E-S, Levy BR. High prevalence of elder abuse during the COVID-19 pandemic: risk and resilience factors. *Am J Geriatr Psychiatry* 2021. [Epub ahead of print: 19 Jan 2021].
16 Abdallah HO, Zhao C, Kaufman E, Hatchimonji J, Swendiman RA, Kaplan LJ, Seamon M, Schwab CW, Pascual JL. Increased firearm injury during the COVID-19 pandemic: a hidden urban burden. *J Am Coll Surg* 2021;232:159–68.
17 Hatchimonji JS, Swendiman RA, Seamon MJ, Nance ML. Trauma does not quarantine: violence during the COVID-19 pandemic. *Ann Surg* 2020;272:e53–4.
18 NACCHO. Standards and indicators for local health department injury and violence prevention programs. 2011. https://www.safestates.org/page/LocalHealthIVP.
19 Joint Committee on Infrastructure DevelopmentNational Training Initiative for Injury and Violence Prevention (NTI)SAVIR. Core competencies for injury and violence prevention. 2005. https://www.safestates.org/page/CoreCompetencies.
20 Texas Governor's EMSTrauma Advisory Council (GETAC). *Texas hospital-based injury prevention program core components for level III & IV trauma centers*, 2014. https://www.dshs.texas.gov/emstraumasystems/GETAC/PDF/IPPE-TXHospitalBasedIP-CoreComponents2018Update.pdf.
21 Community health needs assessment for charitable hospital organizations. https://www.irs.gov/charities-non-profits/community-health-needs-assessment-for-charitable-hospital-organizations-section-501r3.
22 Mason D. From individual to community: the mandate on population health. *JAMA Health Forum* 2013.
23 Williams S, Stephens Stidham S, Alonso J, Adams C, 2019. Practical application of the standards and indicators for model level i and ii trauma center injury and violence prevention programs [Workshop]. Injury Prevention Professionals Symposium, Las Vegas;30 Apr 2019;.
24 America Trauma Society. Comprehensive education for the injury prevention professional [Internet]. 2020. https://www.amtrauma.org/page/InjuryPrevention (12 Jul 2021).
25 Johns Hopkins Bloomberg School of Public Health. Summer Institutes: Principles and Practice of Injury Prevention (305.670.11) [Internet]. https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-injury-research-and-policy/what-we-do/training-and-education/summer-institutes.html (12 Jul 2021).
26 Safe States Alliance. Safe states alliance training center [Internet]. https://www.safestates.org/page/Training_Center (12 Jul 2021).