

8-15-2023

The Impact of Police Transport of Patients with Penetrating Traumas on Mortality

Breanne Grove

Follow this and additional works at: https://jdc.jefferson.edu/mspas_capstones



Part of the [Trauma Commons](#)

[Let us know how access to this document benefits you](#)

This Article is brought to you for free and open access by the Jefferson Digital Commons. The Jefferson Digital Commons is a service of Thomas Jefferson University's [Center for Teaching and Learning \(CTL\)](#). The Commons is a showcase for Jefferson books and journals, peer-reviewed scholarly publications, unique historical collections from the University archives, and teaching tools. The Jefferson Digital Commons allows researchers and interested readers anywhere in the world to learn about and keep up to date with Jefferson scholarship. This article has been accepted for inclusion in Master of Science in Physician Assistant Studies Capstone Presentations (Center City) by an authorized administrator of the Jefferson Digital Commons. For more information, please contact: JeffersonDigitalCommons@jefferson.edu.

The Impact of Police Transport of Patients with Penetrating Traumas on Mortality

Breanne Grove PA-S, Thomas Jefferson University Physician Assistant Program

Introduction

2020: For people aged 1 to 44 in the U.S., firearm-related injuries ranked in the top five leading causes of death.¹

2022: 44,343 total gun violence deaths, 38,593 gun injuries & 646 mass shootings²

1987: Philadelphia became first U.S. municipality to allow police personnel to follow a “scoop and run” policy.^{3,4} Necessity for police transport came from the lack of EMS availability when firearm homicide rates rose by 123%.⁵

PICO Question

For patients with acute penetrating traumas, would allowing police to transport patients to the hospital, compared to other transportation options, decrease patient mortality?

Methodologies

Databases: Journal of the American Medical Association, Ovid, PubMed, Google Scholar, ScienceDirect & SAGE Journals

PubMed Search: ((penetrating trauma) AND (police)) AND (transport)

Number of Articles: 42 journal articles initially screened, then narrowed down based on publication year to 19 articles for abstract evaluation. Only 6 articles met all inclusion criteria.

Journals: Journal of the American Medical Association (JAMA), Journal of Trauma and Acute Care Surgery & Air Medical Journal

Inclusion Criteria: Publication within 5 years, adult patients, large sample size, police or EMS transportation, penetrating trauma injury, mortality as outcome of interest & prospective, retrospective or randomized control studies

Exclusion Criteria: Published over 5 years ago, small sample size, commentary pieces & articles not published in medical journals

Results & Discussion

Decreased Mortality	Nasser et al. ⁶ Winter et al. (2022) ⁷
No Mortality Difference	Taghavi et al. ⁸ Winter et al. (2021) ⁹ Maher et al. ¹⁰
Other	Wandling et al. ¹¹

Conclusions

Conclusion: Despite differences in the ultimate conclusions between these six articles, when compared they ultimately provided evidence to suggest noninferiority of police transportation on patient mortality.⁶⁻¹⁰

Further Research: Studies should be completed in significantly more urban, rural, and suburban settings to investigate the effectiveness and practicality of implementing police transportation on a larger scale.

Clinical Relevance: Continuing to investigate this topic will advance the field of emergency medicine for physician assistants plus all emergency providers and ultimately improve the mortality rates of patients afflicted by penetrating traumas.



Figure 1. Ambulance¹²



Figure 2. Police Car¹³

Level of Evidence:

- Six retrospective cohort studies
- Large sample sizes ranging from 588 to 103,029 patients

Limitations:

- Retrospective cohort studies that pulled data from existing databases.
- Patient demographics limited to Pennsylvania, city of Philadelphia & urban settings.

Analysis & Trends:

- Studies showed either a positive impact on mortality or no difference in mortality between police and EMS.⁶⁻¹¹
- Police transport has overall not demonstrated any significant negative impacts on patient mortality.⁶⁻¹¹
- Patients transported by police arrived at the hospital in more severe conditions often requiring more interventions than patients brought in by EMS.⁷⁻¹⁰

References

1. Fast Facts: Firearm violence prevention. Centers for Disease Control and Prevention. <https://www.cdc.gov/violenceprevention/firearms/fastfact.html>. Published May 4, 2022. Accessed April 16, 2023.
2. Gun Violence Archive Past Summary Ledgers. Gun Violence Archive. <https://www.gunviolencearchive.org/past-tolls>. Published 2023. Accessed April 16, 2023.
3. Jacoby SF, Reeping PM, Branas CC. Police-to-hospital transport for violently injured individuals: A way to save lives? *The ANNALS of the American Academy of Political and Social Science*. 2020;687(1):186-201. doi:10.1177/0002716219891698
4. Jacoby SF, Branas CC, Holena DN, Kaufman EJ. Beyond survival: The broader consequences of prehospital transport by police for penetrating trauma. *Trauma Surgery & Acute Care Open*. 2020;5(1). doi:10.1136/tsaco-2020-000541
5. Sakran JV, Mehta A, Fransman R, et al. Nationwide trends in mortality following penetrating trauma: Are we up for the Challenge? *Journal of Trauma and Acute Care Surgery*. 2018;85(1):160-166. doi:10.1097/ta.0000000000001907
6. Nasser A, Khouli Y. The impact of prehospital transport mode on mortality of penetrating trauma patients. *Air Medical Journal*. 2020;39(6):502-505. doi:10.1016/j.amj.2020.07.005
7. Winter E, Byrne JP, Hynes AM, et al. Coming in hot: Police transport and prehospital time after Firearm Injury. *Journal of Trauma and Acute Care Surgery*. 2022;93(5):656-663. doi:10.1097/ta.0000000000003689
8. Taghavi S, Maher Z, Goldberg AJ, et al. An analysis of police transport in an eastern association for the surgery of Trauma Multicenter trial examining prehospital procedures in penetrating trauma patients. *Journal of Trauma and Acute Care Surgery*. 2022;93(2):265-272. doi:10.1097/ta.0000000000003563
9. Winter E, Hynes AM, Shultz K, Holena DN, Malhotra NR, Cannon JW. Association of Police Transport with survival among patients with penetrating trauma in Philadelphia, Pennsylvania. *JAMA Network Open*. 2021;4(1). doi:10.1001/jamanetworkopen.2020.34868
10. Maher Z, Beard JH, Dauer E, et al. Police transport of firearm-injured patients—more often and more injured. *Journal of Trauma and Acute Care Surgery*. 2021;91(1):164-170. doi:10.1097/ta.0000000000003225
11. Wandling MW, Nathens AB, Shapiro MB, Haut ER. Association of prehospital mode of transport with mortality in penetrating trauma. *JAMA Surgery*. 2018;153(2):107. doi:10.1001/jamasurg.2017.3601
12. Ambulance Car Image. <https://www.vecteezy.com/free-vector/ambulance-car/>.
13. Police Car Clip Art. <https://clipartix.com/police-car-clip-art/>.

Results

Mortality Results	Database Utilized	Patient Sample Size	Studies	Conclusions
Decreased Mortality	American College of Surgeons Trauma Quality Improvement Program	92,427	Nasser et al. (2020) ⁶	When compared to ground ambulance, police, private vehicle, and helicopter transport had decreased odds of mortality for patients with penetrating traumas. ⁶
	Pennsylvania Trauma Systems Foundation Database	1,297	Winter et al. (2022) ⁷	For Philadelphia, Pennsylvania patients with firearm injuries who are transported by police arrive to the hospital quicker, have more serious injuries, and higher survival rates upon arrival to the hospital. ⁷
No Mortality Difference	Multicenter Investigation from 25 Urban Trauma Centers	588	Taghavi et al. (2022) ⁸	There was no statistically significant difference in hospital mortality for patients with penetrating traumas transported by police versus EMS, but patients transported by police tended to have <u>more severe injuries</u> and require <u>more emergency department interventions</u> . ⁸
	Pennsylvania Trauma Outcomes Study Registry	3,313	Winter et al. (2021) ⁹	Police and EMS transported patients with penetrating traumas had similar mortality rates , despite patients transported by police <u>arriving at the hospital in worse condition</u> . ⁹
	Single Level I Urban Trauma Center in Philadelphia	2,007	Maher et al. (2021) ¹⁰	Patients transported by police <u>arrive in worse condition</u> , tend to <u>require more resuscitative interventions</u> , but ultimately have similar in-hospital mortality compared to patients transported by EMS. ¹⁰
Other	National Trauma Databank	103,029	Wandling et al. (2018) ¹¹	Private vehicle transportation of penetrating trauma patients has significantly lower mortality when compared to ground ambulance. ¹¹