

Bryan Harmer PhD, CCP, FAEMS

Education

School	Degree/Certificate	Year Graduated
Western Michigan University <i>Kalamazoo, Michigan</i>	Doctor of Philosophy in Interdisciplinary Health Sciences <i>Dissertation: A Mixed Methods Investigation of Pediatric Medication Administration Dosing Errors in Emergency Medical Services</i>	2023
Embry-Riddle Aeronautical University <i>Daytona Beach, Florida</i>	Graduate Certificate in Human Factors	2023
Michigan State University <i>East Lansing, Michigan</i>	Master of Arts in Health Professions Education <i>Thesis: Promoting Teamwork in Emergency Medical Services</i>	2013
Siena Heights University <i>Adrian, Michigan</i>	Bachelor of Applied Science in Emergency Medical Services Minor: Healthcare Management	2011
Kellogg Community College <i>Battle Creek, Michigan</i>	Associate of Applied Science in Emergency Medical Services	2004

Certification/Licensure

Title	Type	State/Organization	Date
Paramedic	License	Michigan	2004- Present
Paramedic Instructor-Coordinator	License	Michigan	2009- Present
Critical Care Transport	Certification	University of Maryland-Baltimore County	2005- Present

Basic Life Support	Certification	American Heart Association	2005- Present
Advanced Cardiac Life Support	Certification	American Heart Association	2004- Present
Pediatric Advanced Life Support	Certification	American Heart Association	2004- Present
Pediatric and Neonatal Critical Care Transport	Certification	University of Maryland- Baltimore County	2010-2013
International Trauma Life Support-Instructor	Certification	International Trauma Life Support	2008-2014

Experience

Employer	Position and Responsibilities	Dates
Creighton University <i>Omaha, Nebraska</i>	Assistant Professor/ Graduate Program Director Responsibilities: • Experimental human factors research in prehospital pediatric patient safety • Instruction and administration within the Master of Science in Paramedicine program. • Design and development of the Master of Science in Paramedicine program • Graduate student advising	August 2025-Present
University of Michigan School of Medicine <i>Ann Arbor, Michigan</i>	Postdoctoral Lead Research Specialist Responsibilities: • Co-investigator on the mTEAM study: Advancing Emergency Medicine Trainee Skills using Multimodal Debriefing System in Simulation-based Training.	December 2023-August 2025

- Grant proposal development
- Conducting human-centered design studies that include cognitive task analysis, use of AI in examining communication and clinical performance, and biometric feedback.

Lansing Community College
Lansing, Michigan

Professor/ EMS Simulation Coordinator

August 2013- Present
(Became Adjunct in January 2024)

Responsibilities:

- Instruction and coordination of Paramedic Simulation Program
- Instruction of EMT skill courses
- Instruction and coordination of EMS Instructor-Coordinator Program

Additional Roles/ Activities:

- Interim Director of EMS- 6-month period in 2014-2015
- Perform Curriculum Comparison of 68W Military Medic to National Paramedic Curriculum.
- Developed Military Medic to Paramedic (MM2P) Simulation Program
- Developed and instructs Blended Team Simulation Program
- Developed EMS Instructor-Coordinator Online/Hybrid Program
- Developed Michigan's first college-based Community Paramedicine Program.
- Curriculum integration and management of extended reality (XR) in EMS simulation programs

Western Michigan University School of Medicine
Kalamazoo, Michigan

Adjunct Clinical Assistant Professor

May 2022- Present

Responsibilities:

- Co-investigator on the ATOM research team, examining the use of

head-mounted displays to reduce error in EMS.

- Participate in grant writing activities.
- Engage medical students in high-fidelity simulation as part of the Emergency Medical Responder course.

Western Michigan
University
Kalamazoo, Michigan

Doctoral Assistantship

August 2020-
May 2022

Responsibilities:

- Doctoral assistantship is funded by the International Food Protection Training Institute (IFPTI)
- Completed work on the “*Governmental Food Safety Professional Workforce Estimation Model*”
- Working with e-learning department to implement and study the impact of XR training in food safety.
- Examining the use of remote assistance through augmented reality as a tool for quality assurance of food safety inspectors.

Michigan State University
East Lansing, MI

Adjunct Faculty- College of Osteopathic
Medicine

October 2013-
October 2016

Responsibilities:

- Worked directly with the Associate Dean of the COM to offer consultation regarding EMS education programs and the design of healthcare simulation.

Kalamazoo Valley
Community College
Kalamazoo, Michigan

Full-Time Adjunct Instructor

August 2012-
August 2013

Responsibilities:

- Instruction and coordination of all EMT Basic programs

- Clinical coordination of EMT Basic programs
- Collaborated with Kalamazoo Regional Educational Service Agency to instruct and coordinate the Education for Future Employment-EMT Basic program.

Reading Emergency Unit
Reading, Michigan

Critical Care Paramedic/ Assistant
Director of Education/ Quality
Assurance Manager

January 2009-
August 2012

Responsibilities:

- Provided advanced life support 911 response as a paramedic
- Provided critical care level inter-facility transportation for high acuity patients.
- Reviewed 911 responses and inter-facility transfers as part of the Quality Assurance Process.
- Addressed deficiencies in care rendered by EMTs and Paramedics by instituting instructional strategies to remediate providers.
- Instruction and Coordination of ACLS, PALS, and ITLS courses
- Instruction and coordination of REU Paramedic Program
- Coordination of clinical rotations in all initial education courses

Additional Roles/ Activities:

- Developed and taught specialty continuing education programs to EMS personal and staff from surrounding hospitals.
- Developed and coordinated EMS Skill Instructor Program
- Managed website and advertisement for educational programs.

Marshall Area Firefighters Ambulance Authority <i>Marshall, Michigan</i>	Critical Care Paramedic	June 2005- January 2009
Responsibilities:		
• Provided advanced life support 911 emergency medical response • Provided critical care level inter-facility transfers • Station and ambulance management		
Additional Roles/ Activities:		
• Assisted with and taught specialty continuing education courses to EMS providers. • Assisted with the training of new employees		

LifeCare Ambulance <i>Battle Creek, Michigan</i>	Critical Care Paramedic	April 2003- June 2005
Responsibilities:		
• Provided advanced life support 911 emergency medical response • Provided critical care level inter-facility transfers • Station and ambulance management		
Additional Roles/ Activities:		
• Assisted with the training of new employees • Assisted with recruitment efforts		

Presentations at Professional Conferences

Oral Presentation, August 2026: “A Simulation-Based Root Cause Analysis of Prehospital Pediatric Dosing Errors.” Florida Chapter NAEMSP Webinar. *Virtual*

Oral Presentation, January 2026: “A Simulation-Based Root Cause Analysis of Prehospital Pediatric Dosing Errors.” National Association of EMS Physicians Annual Meeting. *Orlando, FL*

Podium Presentation, April 2024: “Conducting Research in EMS” SW Michigan IC Summit. *Kalamazoo, MI*

Podium Presentation, April 2023: “Extended Reality in EMS Education” SW Michigan IC Summit. *Kalamazoo, MI*

Virtual Presentation, August 2022: “Community Paramedicine Program Model” Michigan CIP/MCA Summit. *Virtual*

Virtual Presentation, September 2020: “How We Changed Instruction” Michigan EMS Education eLearning Summit. *Virtual*

Podium Presentation, October 2019: "Inducing Stress in EMS Simulation" Society of Michigan EMS Instructor Coordinators- 81st Professional Development Conference- *Lansing, MI*

Podium Presentation, January 2015: “Teaching Teamwork in EMS Initial Education Programs” International Meeting on Simulation in Healthcare- *New Orleans, LA*

Research Interests

Human Factors in Patient Safety and Simulation (Focus in Emergency Medicine): Design and implementation of decision support systems and cognitive aids (static and dynamic). Human factors research in performance, limitation, and error (individual and clinical team).

Adverse Event Investigations in EMS: The use of Root Cause Analysis (RCA2) to identify root causes of adverse events in EMS and implement corrective actions to systems. Identification of potential failure modes in EMS systems through Failure Mode and Effects Analysis (FMEA).

Medical Device Usability in EMS: Examining causes of use related errors in EMS. Implementing human factor design principles for the improvement of emergency medical devices.

Conference Paper/Proceedings

Damşa, C., Echeverria, V., Popov, V., Chernikova, O., Karlgren, K., Milesi, M., Jin, A., Zhao, L., Alfredo, R., Yan, L., Gasevic, D., Martinez-Maldonado, R., Li, Y., Huang, K., Sample, A., **Harmer, B.**, Cooke, J., Cole, M., Zhang, X., Fischer, F., Akoyak-Yildiz, M., Sanchez, D., Esterhazy, R., von Arnim, H. A., Heyn, L. G., Johansen, E. A., Olesen, S., Larsen, E. W., Louwerens, C., & Eide, H. (2025). Enhancing Team-Based Medical Simulations: Learning Through Reflection With Analytics and Ai Tools. In Oshima, J., Chen, B., Vogel, F., & Järvelä, J. (Eds.), Proceedings of the 18th International Conference on Computer-Supported Collaborative Learning - CSCL 2025 (pp.

516-524). International Society of the Learning Sciences.
<https://doi.org/10.22318/csc2025.323151>

Peer-Reviewed Journal Publications

Leczna, A., Christopher, K., Wells, L., Fredericks, T., **Harmer, B.**, Edwards, A. P., Dunwoody, S., Hoyle, J. D., Jr., & Hong, G. (21 Jun 2026). Time to medication administration and errors using an augmented reality cognitive aid for pediatric cardiac arrests. *IISE Transactions on Healthcare Systems Engineering*.
<https://doi.org/10.1080/24725579.2026.2687660>

Harmer, B. M., Hoyle, J. D., Jr., Wells, L., Fredericks, T., Edwards, A., Lecznar, A., ... Fogarty, K. (2026). A Simulation-Based Root Cause Analysis of Pediatric Medication Dosing Errors in Emergency Medical Services. *Prehospital Emergency Care*, 1–9.
<https://doi.org/10.1080/10903127.2026.2634106>

Harmer, B. M., Hoyle, J. D., Jr., Edwards, A., Fredericks, T., Wells, L., Lecznar, A., ... Fogarty, K. (2025). Assessing the Influence of a Statewide Dosing Reference Aid on Prehospital Pediatric Medication Dosing Errors: A Mixed-Methods Simulation-Based Investigation. *Prehospital Emergency Care*, 1–13. <https://doi.org/10.1080/10903127.2025.2599515>

Harmer, B., Erickson, J. Ross, S., Bhatnagar, D., Dowker, S., Park, H., Sample, A., Hartley, S., Cooke, J., Cole, M., Popov, V. Development and Evaluation of a Multimodal Debriefing Dashboard for Virtual Reality Cardiac Arrest Simulation. *Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare* ():10.1097/SIH.0000000000000901, December 22, 2025. | DOI: 10.1097/SIH.0000000000000901

Li, K. Y., Huang, K., **Harmer, B.**, Ducharme, C., Heasman, B., Falahee, E. A., Cooke, J. M., Cole, M., Sample, A. P., & Popov, V. (2025). AutoCLC: Towards Automated Assessment and Feedback on Closed-Loop Communication in Team-based Healthcare Simulation Training. *ACM Transactions on Computing for Healthcare*.
<https://doi.org/10.1145/3768164>

Damşa, C., Echeverria, V., Popov, V., Chernikova, O., Karlgren, K., Milesi, M., Jin, A., Zhao, L., Alfredo, R., Yan, L., Gasevic, D., Martinez-Maldonado, R., Li, Y., Huang, K., Sample, A., **Harmer, B.**, Cooke, J., Cole, M., Zhang, X., ... Eide, H. (2025). Enhancing Team-Based Medical Simulations: Learning Through Reflection with Analytics and AI Tools. In *Proceedings of the International Conference on Computer-supported for Collaborative Learning* (pp. 516–524). 18th International Conference on Computer-Supported Collaborative Learning (CSCL) 2025. International Society of the Learning Sciences. <https://doi.org/10.22318/csc2025.323151>

Popov, V., **Harmer, B.**, Raphael, S., Scott, I., Sample, A. P., Cooke, J. M., & Cole, M. (2025). Elucidating cognitive processes in cardiac arrest team leaders: a virtual reality-based

cued-recall study of experts and novices. *Annals of Medicine*, 57(1).
<https://doi.org/10.1080/07853890.2025.2470976>

Harmer, B., Ivey, M., Hoyle, Jr., J.D., & Fogarty, K.J. (2024). Factors associated with increased use of cognitive aids. *International Journal of Paramedicine*. (7), 94-105.
<https://doi.org/10.56068/VGMR5544>

Harmer, B., Ivey, M., Hoyle, Jr., J.D., & Fogarty, K.J. (2024). Examining cognitive aid use in emergency medical services: A cross-sectional survey. *International Journal of Paramedicine*. (6), 48-61. <https://doi.org/10.56068/JMRQ7592>

Fogarty, K., **Harmer, B.**, Kami, C., Weiss, C., Dezendorf, P. K., & Wojtala, G. (2022). Governmental food safety professional workforce estimation model. *Journal of Environmental Health*, 84(8), 26-31.

Abstracts

Harmer, B., Ivey, M., Hoyle, J., Fogarty, K., (2023) Examining cognitive aid use in emergency medical services: A cross-sectional survey [Abstract]. Abstracts from the 2023 National Association of EMS Physicians Annual Meeting. *Prehospital Emergency Care*, 27(sup1), S1-96.

Harmer B, Hoyle JD, Christopher KR, Lecznar A, Wells LJ, Dunwoody S, et al. Simulation-based root cause analysis of prehospital pediatric dosing errors [abstract]. *Prehosp Emerg Care*. 2026;30(sup1):S4. doi: 10.1080/10903127.2025.2582675

Hoyle JD, **Harmer B**, Fredericks T, Wells LJ, Edwards A, Hong GY, et al. Augmented reality application dramatically reduces emergency medical services pediatric medication administration errors [abstract]. *Prehosp Emerg Care*. 2026;30(sup1):S9. doi: 10.1080/10903127.2025.2582675

Harmer B, Hoyle JD, Edwards A, Christopher KR, Lecznar A, Wells LJ, et al. Moving first, treating later: identifying which medications are delayed until after pediatric patients are transferred to the ambulance [abstract]. *Prehosp Emerg Care*. 2026;30(sup1):S25. doi: 10.1080/10903127.2025.2582675

Wells LJ, Hoyle JD, **Harmer B**, Fredericks T, Edwards A, Dunwoody S, et al. Failure modes and effect analysis for medication dosing accuracy in high acuity pediatric emergencies [abstract]. *Prehosp Emerg Care*. 2026;30(sup1):S45. doi: 10.1080/10903127.2025.2582675

Christopher KR, **Harmer B**, Fredericks T, Wells LJ, Lecznar A, Edwards A, et al. Is prehospital pediatric dosing documentation reliable? A simulation-based study [abstract]. *Prehosp Emerg Care*. 2026;30(sup1):S73. doi: 10.1080/10903127.2025.2582675

Edwards A, Christopher KR, Dunwoody S, Fredericks T, **Harmer B**, Hoyle JD, et al. Augmented reality guidance reduces self-reported intrinsic cognitive load in emergency

medical services pediatric medication administration [abstract]. *Prehosp Emerg Care*. 2026;30(sup1):S75. doi: 10.1080/10903127.2025.2582675

Oral Research Presentations

Harmer B, Hoyle JD, Christopher KR, Lecznar A, Wells LJ, Dunwoody S, et al. Simulation-based root cause analysis of prehospital pediatric dosing errors [abstract]. *Prehosp Emerg Care*. 2026;30(sup1):S4. doi: 10.1080/10903127.2025.2582675

Poster Presentations

Harmer B, Hoyle JD, Edwards A, Christopher KR, Lecznar A, Wells LJ, et al. Moving first, treating later: identifying which medications are delayed until after pediatric patients are transferred to the ambulance [Poster]. *Prehosp Emerg Care*. 2026;30(sup1):S25. doi: 10.1080/10903127.2025.2582675

Hoyle, J., Hughes, N., Rantz, B., Ford, M. Pazderka, P., Wheeler, J., **Harmer, B.**, Mastenbrook, J., Fales, B., Williams, M., User of a checklist and a metronome during simulated cardiac arrest by medical students trained as medical first responders. [Poster]. 41st Annual Kalamazoo Community Medical & Health Research Day. 2023, May 4. Kalamazoo, Michigan

Harmer, B., Ivey, M., Hoyle, J., Fogarty, K., Examining cognitive aid use in emergency medical services: A cross-sectional survey [Poster]. National Association of EMS Physicians Annual Meeting. 2023, January 27. Tampa, Florida.

Non-Peer-Reviewed Publications

Harmer, B. (2025). Cognitive aids: Unlocking their potential to improve patient care in EMS. *EMS1*.
<https://www.ems1.com/patient-assessment/cognitive-aids-unlocking-their-potential-to-improve-patient-care-in-ems>

Media Appearances

- Hillsdale Daily News. (Newspaper). Officials continue to educate, serve with Camp 9-1-1.
<https://www.hillsdale.net/story/lifestyle/2011/08/22/reu-officials-continue-to-educate/64094183007/>
- Fox 17 Grand Rapids. (TV Interview). Research team hopes to reduce errors in pediatric emergency care.

https://www.fox17online.com/news/local-news/research-team-hopes-to-reduce-errors-in-pediatric-emergency-care?fbclid=IwAR1jM_PC14N46MFWphJhp42l0h-i2TK8rsuFu0kLTSoiUSStI1jMKcBWx_rQ

- Western Michigan University Homer Stryker School of Medicine. (Press Release). Team of Michigan researchers awarded \$1.37 million grant to develop augmented-reality technology to stem EMS medication-dosing errors for children.
<https://wmed.edu/node/3355?fbclid=IwAR36L3OUaBonyqKiquPcEz1lEZPLyD7eadYpOILS6r8X0qUwdUcQ8xDRBQ>

Grant Support

- Agency for Healthcare Research and Quality 1R18HS029283-01. Augmenting the On-scene Medic (ATOM): Development of a head-mounted display application to reduce prehospital pediatric medication errors. Role: **Co- Investigator** 4/1/23-3/31/26. Effort: 25% all 3 years.

Awards and Recognitions

National Association of EMS Physicians

Fellow of the Academy of Emergency Medical Services - October 2024

Professional Affiliations

Society for Simulation in Healthcare (SSIH)- *January 2014 to Present*

Interests group affiliation:

- Emergency Medical Services Affinity Group
 - Vice Chair from January 2023- January 2024
- Patient Safety and Simulation Collaborative
- Serious Games and Virtual Environments Section

National Association of EMS Physicians (NAEMSP)- *June 2021 to present*

Committee Affiliation

- Quality and Safety Committee
- EMS Research
- Michigan Chapter- Interim Treasurer

Service Experience

National Association of EMS Physicians- Michigan Chapter Secretary- January 2024 to present.

Michigan Department of Health and Human Services- Data Committee- January 2024 to present.

Society of Simulation in Healthcare- EMS Affinity Group- Vice Chair- February 2022 to February 2024.

National Association of EMS Physicians- Quality and Safety Committee- December 2021 to present.

National Association of EMS Physicians- Research Committee- December 2021 to present.

National Association of EMS Physicians- Abstract Reviewer - August 2022 to September 2022.

Lansing Community College Community Paramedicine Program Committee- Chair- *November 2019 to 2023*

Lansing Community College Curriculum Committee *December 2017 to December 2019*

Michigan Department of Health and Human Services- EMS Instructor Coordinator-Curriculum Committee *November 2017 to 2022*

Lansing Community College Health and Human Services Simulation Center Committee *August 2016- 2020*

Reviewer Task Force 2016 International Meeting on Simulation in Healthcare: May 2015-January 2016

Reviewer Task Force 2020 International Meeting on Simulation in Healthcare: May 2019-January 2019

Hillsdale County Medical Control- Quality Assurance Committee-Reading Emergency Unit Representative- *August 2011 to August 2012*

Lifecare EMS Recruitment Committee *June 2004 to January 2005*