

International Journal of Paramedicine

An Official Journal of the National EMS Management Association



Number 6 — April-June, 2024

https://internationaljournalofparamedicine.com/index.php/ijop/issue/view/N6 https://doi.org/10.56068/XNNH8538



An Official Journal of the National EMS Management Association (USA)



Editorial and Production Team

Editor-In-Chief

Michael R. (Mic) Gunderson, EMT-P (Ret.), FAEMS – President, Center for Systems Improvement; Chief Strategy Officer, Cambridge Consulting Group; Adjunct Faculty, Department of Emergency Health Services, University of Maryland - Baltimore County; Madisonville, TN, USA

Managing Editor

Michael Touchstone, BS, FACPE, Paramedic – Fire Paramedic Deputy Chief, EMS Operations, Philadelphia Fire Department (Retired); Past President, National EMS Management Association (2015-16); Philadelphia, PA, USA

Associate Editor - Marketing

Andrew J. Steward, BS, NRP – Paramedic, Wellspan EMS; EMS Instructor, Harrisburg Area Community College; Tanytown, MD USA

Associate Editors - Peer-Review

Kevin T. Collopy, MHL, FP-C, NRP, CMTE – Clinical Outcomes & Compliance Manager, Novant Health AirLink/VitaLink; Wilmington, NC, USA

Cole Ettingoff, MPH – Medical Student, Trinity School of Medicine; Memphis, TN, USA

Jamie K. Jacobs, MS, NRP – EMS Lead, Senior Consultant, Environmental Systems Research Institute; Marshfield, MO, USA

Ginny Kaplan, PhD, MHS, Paramedic, FAEMS – Assistant Professor of Healthcare Administration, Methodist University, Clayton, NC, USA Christine McGuire-Wolfe, PhD, CIC, CPH, EMT-P/FFII – Assistant Professor of Healthcare Administration, Methodist University, Clayton, NC, USA

Scot Phelps, JD, MPH, Paramedic, FP-C
– Englewood Hospital and Medical Center
Mobile Intensive Care; Principal Researcher,
NYC Ambulance History Project / NJ
Ambulance History Project; Bordentown, NJ,
USA

Vincent D. Robbins, MSc, FACPE, LFACHE – Founder, President, and Chief Executive Officer, Cambridge Consulting Group; Cambridge, MD, USA

Associate Editor – Production

James D. Dinsch, MS, NRP, CCEMTP – Director of EMS, LifeCare Medical Center; Executive Director, Florida Association of EMS Educators; Executive Director, Florida Association of EMTs and Paramedics; Roseau, MN, USA

Senior Editors – Statistics and Methodology

Eihab Khasawneh, DDS ,RN ,Paramedic, PhD - Assistant Professor and Assistant Dean, Paramedic Program and Faculty of Applied Medical Sciences, Jordan University of Science and Technology; Irbid, Jordan

Sonja Maria, PhD, Paramedic – Associate Head of School, Head of Discipline for Paramedicine, Charles Sturt University; Chair of the Australasian Paramedic Clinical Practice Guidelines SIG, Australasian College of Paramedicine; Bathurst, NSW, Australia Nikiah Nudell, MS, MPhil, NRP, FACPE

– Paramedic Scientist, The Paramedic
Foundation; Research Manager, University of
Colorado Health; Loveland, CO, USA

Assistant Editors - Copy and Proof

Laura L. Chadwick, BS, MLS(ASCP)CM QLS CM, NRAEMT – Marshfield Clinic Health System (WI), Centerville, GA, USA

Craig Evans, MEd – Assistant Professor, George Washington University; Washington, DC, USA

Allison G.S. Knox, MPH, MA, EMT-B – Instructor, Political Science, Marist College; Instructor, Emergency Management & Fire Science, American Military University; Intermittent Emergency Management Specialist, Administration of Strategic Preparedness and Response; Pawling, NY, USA

Megan A. Mason MPH, NRP, FFII – Firefighter/Paramedic, Cranesville Fire Department; Cranesville, PA, USA

Martha A. Peribonio, BA – Executive Director, National Association of Mobile Integrated Healthcare Providers; Buford, GA, USA

Brian C. Wilcox, BS, NRP, CCEMTP –
Program Director, University of Pittsburgh
Medical Center – Chautauqua Regional
Paramedic Program; Clinical Coordinator/
Paramedic, Alstar EMS; Jamestown, NY, UA

Assistant Editor – Layout

Theron Becker, MMPA, FACPE, CP-C – Deputy Director of EMS, Raven Advisory; Fayetteville, NC, USA

Section Editors - Benchmarks

John R. Clark, JD, MBA, NRP, FP-C, CCP-C, CMTE – Chief Operating Officer, International Board of Specialty Certification; Apollo, PA, USA

Diane C. Flint, DPA, MS, NRP – Assistant Dean, School of Health Professions, Community College of Baltimore County; Baltimore, MD, USA

Ben Neal, BS, NRP – Division Chief of EMS, Fern Creek Fire and EMS; Vice-Chair, Kentucky Board of EMS; Louisville, KY, USA

Tanveer Ahmed Yadgir, PhD, MBA, PGDEMS – Academic Faculty & EMS Researcher, Fatima College of Health Scinces; Abu Dhabi, UAE

Section Editors - Case Scenarios

Becky J. Donelon, EdD, ACP – Paramedic Programs Faculty, Northern Lakes College; Applied Research & Graduate Studies, Justice Institute of British Columbia; Edmonton, AB, Canada

J. Paul LeSage – Founding Partner & Senior Analyst, SG Collaborative Solutions LLC; Portland, OR, USA

Luke A. Persin, MS-3, EMT-B – EMT, Mutual Aid Ambulance Service; MS-3, DeBusk College of Osteopathic Medicine; Greensburg PA, USA

Section Editors - Comparisons

Luc de Montigny, MFR, PhD – Conseiller en Analyse et Recherche Clinique, Urgencessanté; Adjunct Professor, McGill University; Montréal, QC, Canada

Brian A. Donaldson, CCP, ASM, AAS – Director of EMS, Peach County (GA); Centerville, GA, USA

Mark Weiss, DHA, MHA, MEP, NRP/FF

- Training Officer, District of Columbia Fire
Department; Principal, Expeditionary Medical
Education & Training; Alexandria, VA, USA

Section Editors - Externals

Jenifer A. Swab, PhD, Paramedic – Training Coordinator, Foxwall EMS; Pittsburgh, PA, USA

Robert K. Waddell II – Training Manager, SAM Medical; Beulah, WY, USA

Section Editors - Literature Searches

Shaughn Maxwell, PsyM, EMT-P – Deputy Chief, South County Fire and Rescue; Everett, WA, USA

Brenda M. Morrissey, DPA, FP-C, FACPE – Paramedic Communications Coordinator (Quality Management) & EMS Educator, Northwell Health; President, Second Chance Safety, LLC; Floral Park, NY, USA

Section Editors – Paramedicine Contents

Brad Buck, BS, NRP, CP – Community & Emergency Paramedic, Mayo Clinic Ambulance Service; Board of Directors, American Paramedic Association; Rochester, MN, USA

LaTosha A. Hogan, EMT-P, MA

– Paramedic, University of Chicago/
Adventhealth; Chicago, IL, USA

Julius McAdams, BA, Paramedic

– AirLink/VitaLink Clinical Education
Coordinator, Novant Health-New Hanover
Regional Medical Center; International
Board of Specialty Certifications Liaison,
International College of Advanced Practice
Paramedics; Wilmington, NC, USA

Sean M. Teed, CCP, MEd(c) – Paramedic Educator, Nova Scotia Health; Lead Faculty, Interprofessional Practice and Learning; Halifax, NS, Canada

Section Editors – Performance Indicators

Ian E. Blanchard, PhD, ACP – Scientist, Alberta Health Services; Adjunct Assistant Professor, University of Calgary; Calgary, AB, Canada

Todd Hatley, PhD, MBA, MHA – Chief Executive Officer, Integral Performance Solutions; Improvement Advisor, Institute for Healthcare Improvement; Wilmington, NC, USA

Oren Wacht, EMT-P, PhD – Department Head, Emergency Medicine, Ben Gurion University of the Negev; Medical Council, Magen David Adom; Beer Sheba, Israel

Section Editors - Perspectives

Albert Bouwer-Monroy, MS-1, NRP, FP-C – Deputy Chief, Foxwall EMS; Medical Student, Lake Erie College of Osteopathic Medicine; Pittsburgh, PA, USA

Elizabeth Lacy, MPS, BS, Paramedic – EMS Outreach Coordinator LCMC Health -University MedicalCenter New Orleans; New Orleans, LA, USA

Michael Thomas, MHA, EMT-B, FACPE – Director of Safety & Government Relations, Deputy Director of Compliance & Human Resources, Jan-Care Ambulance, Inc. / GEMS; Beckley, WV, USA

Section Editors - Podcast / Vlog

Chris Cebollero, CCEMT-P, BS, MBA

– Head of Operations - Partner Success,
QuikMedic; Elmhurst, IL, USA

Robert C. Lawrence, MCMI – Executive Director, California Ambulance Association; Director, Pro EMS; Las Vegas, NV, USA

Dean Pearcy – Video Production Technician, Spokane Fire Department; Spokane, WA, USA

Michael Verkest, AAS, FP-C, CCP-C, C-NPT, Paramedic – Learning Ambassador, ESO; Media Production Manager, FlightBridgeED, LLC; Portland, OR, USA

Section Editors - Profiles

Sean Caffrey, MBA, FACPE, NRP – Chief Executive Officer & Commissioner, Crested Butte (CO) Fire Protection District; President, National EMS Management Association; Crested Butte, CO, USA

Christoph Redelsteiner, DPH, PhDr, MS – FH-Professor DSA Mag., St. Pölten University of Applied Sciences; St. Pölten, Austria

Section Editors - Reflections

Michael S. Gerber, MPH, NRP – Paramedic, Bethesda-Chevy Chase Rescue Squad; Adjunct Instructor, The George Washington University; Washington, DC, USA

Scott A. Lancaster, PhD, MHA, NR-P – Director of Operations, Cataldo Ambulance Service; Adjunct Assistant Professor, Eastern Kentucky University; Goffstown, NH, USA

Section Editors - Social Media / Correspondence

Sean Ferguson, MCPara, FdSc, MSc, PGCert, FHEA, DDCM – Senior Lecturer, Paramedicine, University of Doha; Chief Education Officer, Alnawa Medical; Doha, Qatar

Ginny Kaplan, PhD, MHS, Paramedic, FAEMS – Assistant Professor of Healthcare Administration, Methodist University; Clayton, NC, USA

Joshua Kimbrell, BA, NRP, CLI – Quality Manager, MediSys Health Network; Brooklyn, NY, USA

Section Editors - Toolbox

Charles A. Foat, PhD, MEdT, NRP – Director of Emergency Medical Science, Johnson County Community College; Olathe, KS, USA

Emily R. Kaplan, DrPH, MPA, EMT-P – Director, Clinical Practice Group, DocGo; Adjunct Faculty, Westchester Community College; Mahopac, NY, USA

Editorial Advisory Board

- Mary Ahlers, MEd, BSN, ACP, NRP

 President & Chief Executive Officer,
 Paramedic Health Solutions; President,
 Paramedic Network; Cincinnati, OH, USA
- Ahed Al Najjar, FAHA, Paramedic, MPH, RN – EMS Education & Research Manager, National Ambulance; Professor, Trisakti University; Instructor, University of Pittsburgh; Abu Dhabi UAE.
- William K. Atkinson, PhD, MPH, MPA, FACHE, FACPE – Senior Advisor, Cambridge Consulting Group; Raliegh, NC, USA
- Maria Beermann-Foat, PhD, MBA, NRP
 EMS Training Coordinator, Eugene
 Springfield Fire Department; Battalion Chief of
 Operations (ret.), Johnson County MED-ACT;
 Cottage Grove, OR, USA
- **Scott S Bourn, PhD, RN** Research Chair, Senior Quality Consultant, ESO; Vice President, Clinical Quality & Impact, Securisyn Medical; Parker, CO, USA
- **Thomas Bouthillet** Battalion Chief of EMS (Ret.), Hilton Head Island Fire Rescue; Hilton Head Island, SC, USA
- Brooke Burton, NRP, FACPE Quality Improvement / Controlled Substance Manager, Unified Fire Authority; Salt Lake City, UT, USA
- Will Chapleau, Paramedic, RN, TNS Director, International Prehospital Medicine Institute; Chicago Heights, Illinois, USA
- Claire M. Corbett, MMS, MBA, Paramedic – Director of Performance Excellence, Novant Health; Wilmington, NC, USA
- **Bruce Evans, MPA, NRP, CFO** Fire Chief, Upper Pine River Fire Protection District; President, National Association of EMTs; Durango, CO, USA
- Rateb A. Abuzeid, PhD Head of Community Relations Unit, Researcher, EMS Faculty, Prince Sultan College for EMS, King Saud University; Riyadh, Kingdom of Saudi Arabia
- Nawfal Aljerian, MD Chief Executive Officer, Medical Referrals Center – Ministry of Health; Associate Professor of Emergency Medicine, King Saud bin Abdulaziz University for Health Sciences; Ryadh, Saudi Arabia
- David Beckerley, MPA, NRP Commander, Austin-Travis County EMS; Austin, TX, USA

- Louis Gonzales, MPH, LP, CPHQ, CPPS

 Director of Operations, University of Texas
 at Austin–EMS for Children Innovation &
 Improvement Center; Georgetown, TX, USA
- Michael W. Hubble, PhD, MBA, NRP

 Assistant Professor, Wake Technical
 Community College; Chapel Hill, NC, USA
- J. Sam Hurley, MPH, EMPS, NRP Director, Maine Bureau of Emergency Medical Services; Standish ME, USA
- Michael Jacobs, EMT-P Manager, Alameda County EMS Specialty Systems of Care; San Leandro, CA, USA
- **Thomas Judge, CCT-P** Executive Director, LifeFlight of Maine; Camden, MA, USA
- Margaret A. Keavney, Esq, MHA Attorney at Law, Keavney & Streger, LLC; Princeton, NJ, USA
- Baxter Larmon, PhD, MICP Professor, Emeritus Director, David Geffen School of Medicine at UCLA; Ventura, CA, USA
- William J. Leggio, EdD, NRP Chief of Staff, Office of the Chief Medical Officer—City of Austin; Round Rock, TX, USA
- Glenn Leland, MBA Chief Growth Officer, Priority Ambulance, LLC; Principal Instructor, Priority Ambulance Leadership Foundation; Knoxville, TN, USA
- Brian J. Maguire, DrPH, MSA, EMT-P Senior Epidemiologist, Leidos; CT, USA
- Gregg Margolis, PhD Director, Health Policy Fellowships and Leadership Programs, National Academy of Medicine; Adjunct Professor, University of Pittsburgh; Bethesda, MD, USA
- Jennifer McCarthy, MAS, NRP, CHSE-A

 President, 579Solutions; Director of Clinical
 Simulation, Seton Hall University; Nutley,
 NJ, USA

- Mike McEvoy, PhD, NRP, RN, CCRN EMS Coordinator, Saratoga County (NY); Senior Staff RN, Chair, Resuscitation Committee, Albany Medical Center; Waterford, NY, USA
- Peter O'Meara, PhD Adjunct Professor, Monash University; Kangaroo Flat, VIC, Australia
- Jerry Overton, MPA President, International Academies of Emergency Dispatch; Salt Lake City, UT, USA
- **David Page, MS, NRP** Director, Prehospital Care Research Forum at UCLA; Paramedic, Allina Health EMS; Los Angeles, CA, USA
- **Ernesto M. Rodriguez, MA, LP** EMS Chief (Ret.), Austin-Travis County EMS; Leander, TX, USA
- Walt A. Stoy, PhD, EMT-P Associate Advisor, Cambridge Consulting Group; Professor (Ret.), University of Pittsburgh; Director Emeritus, Center for Emergency Medicine; Pittsburgh, PA, USA
- Mike Taigman, MA, FAEMS Improvement Guide, FirstWatch; Assistant Adjunct Professor, University of California–San Francisco; Santa Barbara, CA, USA
- **Debbie Vass, RN, EMT-P** Corporate Vice President of Quality Initiatives, PatientCare EMS; Largo, FL, USA
- David Wampler, PhD, LP, FAEMS Professor, University of Texas Health Science Center at San Antonio; Boerne, TX, USA
- **Brett Williams, PhD, FACP** Professor and Head of Department, Monash University; Frankston, VIC, Australia
- David M. Williams, PhD Chief Executive, Medic Health; Principal, <u>DavidMWilliamsPhD.com</u>; Austin, TX, USA

Reviewers

- Deepak L. Bhatt, MD, MPH, FACC, FAHA – Director, Mount Sinai Heart Institute and Dr. Valentin Fuster Professor of Cardiovascular Medicine, Icahn School of Medicine; New York City, New York, USA
- **Ron Bowles, PhD** Justice Institute British Columbia; New Westminster, BC, Canada
- Jane H. Brice, MD, MPH Professor and Chair, Department of Emergency Medicine, University of North Carolina; Chapel Hill, NC, USA
- **Elliot Carhart, EdD, RRT, NRP** *Professor, Radford University; Seminole, FL, USA*
- Alix Carter, MD, MPH, FRCPC Director, Division of EMS, Dalhousie University; Halifax, NS, Canada

- Sally Cascio Chief Flight Nurse, NorthSTAR / University Hospital; Monroe, NJ, USA
- Sheldon Cheskes MD, CCFP (EM), FCFP, DRCPSC – Medical Director, Sunnybrook Centre for Prehospital Medicine; Professor, University of Toronto; Toronto, Ontario, Canada
- Jon M. Crownover, NRP, EMSI, CCEMTP Advanced Care Paramedic / EMS Instructor, University of Pittsburgh Medical Center; Paramedic, Ross/West View EMS; Pittsburgh, PA, USA
- Carol A. Cunningham, MD, FAAEM, FAEMS – State Medical Director, Division of EMS, Ohio Department of Public Safety; Columbus, OH, USA

- Ian R. Drennan, ACP, PhD Associate Professor, Department of Family and Community Medicine, University of Toronto; Professor, Georgian College; Toronto, ON, Canada
- Rommie L. Duckworth, MPA, LP, EFO, FO – Director, New England Center for Rescue & Emergency Medicine; EMS Coordinator, Ridgefield Fire Department Sherman, CT, USA
- **Bram Duffee, PhD, EMT-P** Assistant Professor of Communication, Kennesaw State University; Research Fellow, Fielding Graduate University; Houston, TX, USA
- Peter I. Dworsky, MPH, EMT-P, FACPE President, Outcome Solutions; Edison, NJ, USA
- Katherine L. Elkins, MPH, CPH, NRP DrPH Student, John Hopkins Bloomberg School of Public Health; Captain Lifemember Paramedic, Wheaton Volunteer Rescue Squad; Kensington, MD, USA
- Mary E. Fallat, MD Professor of Surgery, University of Louisville; Director of Surgical Quality, Norton Children's Hospital; Louisville, KY, USA
- Rob Farmer, MBA, FACPE Tomball, TX, US
- Antonio R. Fernandez, PhD, NRP Research Scientist, ESO; Adjunct Assistant Professor, University of North Carolina – Chapel Hill; Apex, NC, USA
- **Jay Fitch, PhD** Founding Partner, Fitch & Associates; Board Member, American College of Paramedic Executives; Natchez, MS, USA
- **Paul M. Gallo, BS, EMT-P, EMSI** Assistant Chief (ret.), Reading Fire Department; Reading, OH, USA
- Erik S. Gaull, NRP, CEM Paramedic / Firefighter III, Cabin John Park VFD; Cabin John, MD, USA
- Mary George, MD, MSPH, FACS Decatur, GA, USA
- Daniel R. Gerard, MS, RN, NRP President, International Association of EMS Chiefs; EMS Coordinator, Alameda Fire Department; Washington, DC, USA
- **Stacy Gerlich, MA, EMT-P** Battalion Chief, Los Angeles City Fire Department (Ret.); Westlake Village, CA, USA
- Judah P. Goldstein, PCP, PhD Research Coordinator, Emergency Health Services, Nova Scotia; Assistant Professor, Dalhousie University; Halifax, Nova Scotia, Canada
- Sean P. Graham, BS, NRP, CCP-C Medical Science Liaison, Stryker Emergency Care; Bothell, WA, USA
- Frank Gresh, MS, BS Interim Chief Operating Officer, Chief Information Officer, Emergency Medical Services Authority; Oklahoma City, OK, USA

- Mike Grill, MS, NRP, EFO Larkspur, CO, USA
- Jacob E. Guillott-Creel, MS, FP-C, CMTE Clinical Administration Coordinator, PHI Air Medical; Phoenix, AZ, USA
- Todd Heffern, MD, FACEP, FAEMS, NRP Assistant Professor, University of Tennessee Health Science Center; Knoxville, TN, USA
- Arthur Hsieh, MA, NRP Faculty Coordinator, Santa Rosa Community College; Windsor, CA, USA
- Mack Hutchison, MHA, FACPE, NRP Clinical Manager, MEMS, Little Rock, AR, USA
- Jeffrey L. Jarvis, MD, MS, EMT-P Chief Medical Officer & System Medical Director, MedStar Mobile Healthcare; Fort Worth, TX, USA
- Jan L. Jensen, ACP, MAHSR Executive Director, Emergency Health Services Operations; Assistant Professor, Dalhousie University; Dartmouth, NS, Canada
- Randy D. Kearns, DHA, MSA, FACHE, FRSPH, CEM, NRP (Ret.) – Program Director / Associate Professor University of New Orleans; Associate Professor of Research, Louisiana State University - New Orleans; New Orleans, LA, USA
- **Adam Kipust, EMT-P** Field Training Officer, UCLS EMS; Los Angeles, CA, USA
- Judah A. Kreinbrook, BS, EMT-P Medical Student, Duke University School of Medicine; Durham, NC, USA
- Jon R. Krohmer, MD, FACEP, FAEMS Adjunct Associate Professor, Department of Emergency Medicine, Michigan State University; Holland, MI, USA
- Brian LaCroix, BS, FACPE, CPPS, NRP (Ret.) – Co-Founder, Vice President & Chief Operator Officer, Cambridge Consulting Group; Farmington, MN, USA
- Jeffrey T. Lindsey, PhD, PM, EFO Program Director, University of Florida; Gainesville, FL, USA
- Cassie Longhart, DHA, MHA/ED, EMT-I
 EMS Data Manager, Office of EMS and
 Trauma, Department of Public Health;
 Atlanta, GA, USA
- Beth Lothrop-Adams, MA, BSN, NRP

 Quality Manager, Fairfax County Fire
 & Rescue Department; Adjunct Assistant
 Professor, The George Washington University,
 Washington DC, USA
- Jon Lovett, AS, NRP Manager, Prehospital EMS, Lawrence General Hospital; Senior Education Specialist, Boston Children's Hospital; Plaistow, NH, USA
- **Robbie MacCue, FP-C, MBA** Founding Partner, EMS Leadership Academy; Assistant Chief, Town of Colonie EMS Department; Albany, NY, USA

- Russell D. MacDonald, MD, MPH, FRCPC, DRCPSC – Medical Director, Toronto Paramedic Services and Toronto Central Ambulance Communication Centre; Professor, Faculty of Medicine, University of Toronto; Toronto, ON, Canada
- Renŭe S. MacPhee, PhD Associate Professor, Wilfrid Laurier University; Waterloo, ON, Canada
- Matthew McElhenie, DPA, NRP General Manager, Cambria Community Services District; Professor, Hartnell College; Cambria, CA, USA
- Kim D. McKenna, PhD, RN, NRP Director of Education (Ret.), St. Charles County Ambulance District; Kirkwood, MO, USA
- Russell Metcalfe-Smith, MSc. BSc(Hons), FRSPH, FHEA, NRP – Executive Director Simulation and IPE; Associate Professor, Department of Surgery, Cedars-Sinai Medical Center; Los Angeles, CA, USA
- Dennis M. Mitterer, PhD, BSN, CSP, ARM – Instructional Professor / Advisor, University of Florida; Gainesville, FL, USA
- Carl Moen, MPM, EMT-P Former Executive Director, Southern Alleghenies EMS Council; Everett, PA, USA
- Anne Montera, MHL, BSN, RN Anne Montera, MHL, BSN, RN – President/Chief Executive Officer, Caring Anne Consulting, LLC; Senior Advisor, Cambridge Consulting Group; Director of Nursing, VRpatients; Oxford, FL, USA
- Graham G. Munro, PhD, MHSM, BHSc, GradCert, RP – Adjunct Senior Lecturer, Charles Sturt University; Pyrmont, NSW, Australia
- Kenneth Navarro, MEd, LP Training Specialist III, Emergency Medicine, University of Texas Southwestern Medical Center; Dallas, TX, USA
- Jeannie Newton-Riner, EdD, MHS / MHSA, CP-C – Board Member, American Paramedic Association; Part-time Faculty, Kennesaw State University; Acworth, GA, USA
- Richard W. Patrick, MS, Paramedic, EFO Director, National Fire Programs Directorate, U.S. Fire Administration (DHS / FEMA); Frederick, MD, USA
- Blaine Patterson, RN, FP-C Director of EMS, St Luke's Health System; Boise, ID, USA
- **Brett A. Patterson, EMD-I** Chair, Medical Council of Standards, International Academies of Emergency Dispatch; Clearwater, FL, USA
- P. Daniel Patterson, PhD, NRP Associate Professor, University of Pittsburgh; Pittsburgh, PA, USA

- Terry Payer, MPSLA, CCP-C, NRP Director of EMS, Indian Health Service-QNBMHCF; Belcourt, ND, USA
- **Debra G. Perina, MD, FAEMS** *Professor Emeritus, Emergency Medicine, University of Virginia; Operational Medical Director, Thomas Jefferson EMS Council; Ruckersville, VA, USA*
- **Les Polk, MS, FACPE, NRP** National Director of Clinical Excellence, DocGo; ALS Educator, RWJ Barnabas Health; Cranbury, NJ, USA
- Mark A. Potts, MPA, NRP, CEMSO, FP-C Critical Care Paramedic, Cape Fear Valley LifeLink; Pinehurst, NC USA
- Jonathan Pritchard, RN, MN, CCRN, CEN, CNRN, TCRN, NRP – Deputy Chief, Cottage Grove Fire Department; Staff Nurse, Regions Hospital Emergency Department; Cottage Grove, MN, USA
- Louise Reynolds, RP, PhD, FACP Associate Professor in Paramedicine, Victoria University; Altona North, VIC, Australia
- Sattha Riyapan, MD, MPH Assistant Professor in Emergency Medicine Siriaj Hospital - Mahidol University; Bangkok, Thailand
- Eric A. Rosen, MA, BAS, NRP, FP-C, CCP-C, DICO-C – Adjunct Professor / Clinical Educator Temple University Health System; Jenkintown, PA, USA

- Wayne W. Ruppert, CVT, CCCC, NRP Director of Clinical Outreach, Bravera Health Hospitals; Wesley Chapel, FL, USA
- Ritu Sahni, MD, MPH, FAEMS, FACEP Medical Director, Clackamas County EMS; Medical Director, Washington County EMS; Lake Oswego, OR, USA
- Jose V. Salazar, MPH, NRP, FACEP, LMC Founder / Owner, High Performance Coaching and Consulting, LLC; Deputy Chief of EMS (Ret.), Loudoun County Fire & Rescue; Sterling, VA, USA
- **Brian Schaeffer, MPA, EMT-P** Fire Chief / Paramedic, Spokane Fire Department; Spokane, WA, USA
- Hezedean Smith, DM, CFO, FACPE Fire Chief, Polk County (FL) Fire Rescue; Adjunct Faculty, Embry Riddle Aeronautical University; Charlottesville, VA, USA
- Larry Starr, PhD Program Director, Leadership Doctorates, Thomas Jefferson University; Assistant Adjunct Professor of Pharmacy Systems Science, Geisinger Commonwealth School of Medicine; Wynnewood, PA, USA
- Robert Suter, DO, MHA Professor, University of Texas Southwestern; Brigadier General, US Army Reserve; Dallas, TX, USA
- John Todaro, BA, NRP, RN, TNS, NCEE, CHSE, CHSOS – Director, Eagle Emergency Education Consultants; Associate Advisor, Cambridge Consulting Group; Land O Lakes, FL, USA

- Robert S. Wales, BS, NRP, ALM Medical Education Program Manager, Medtronic, Inc.; Plano, TX, USA
- Jonathan D. Washko, MBA, FACPE, NRP, AEMD – Assistant Vice President for CEMS Operations, Northwell Health; Northport, NY, USA
- Katherine H. West, RN, BSN, MSEd Consultant, Infection Control, Emerging Concepts, LLC; Palm Harbor, FL, USA
- Marquita F. Whisonant, EdD(c), MS, CNS, NRP – Assistant Director, CTCCE Virginia Commonwealth University, Assistant Professor, Reynolds Community College; Henrico, VA, USA
- Joseph Williams, IV National Director, Healthcare IT Products, Quality Outcomes Research Analytics, American Heart Association; Detroit, MI, USA
- Matthew M. Womble, EMT-P (Ret.), MHA

 Regional Chief Operating Officer, American
 Red Cross; Edenton, NC, USA
- Joshua A. Worth Sr., BS, NRP, CEMSO

 Chief of EMS Operations, Medical Rescue
 Team South Authority; Board Member,
 American Paramedic Association; Pittsburgh,
 PA, USA

International Journal of Paramedicine (online ISSN 2831-6967) is an official journal of the National EMS Management Association. It is published quarterly by the National EMS Management Association, 2901 Williamsburg Terrace, Suite G, PO Box 472, Platte City, MO 64079. This journal is published exclusively online as an open-access resource at https://internationaljournalofparamedicine.com. Information on submissions is available at https://internationaljournalofparamedicine.com. Editorial query letters may be addressed to Mic Gunderson, Editor-In-Chief, at mic.gunderson@internationaljournalofparamedicine.com. For inquiries about sponsorships or advertising, please contact Pat Songer, Executive Director, National EMS Management Association; +01 816-858-6172; internationalgournalofparamedicine.com. For inquiries about sponsorships or advertising, please contact Pat Songer, Executive Director, National EMS Management Association; +01 816-858-6172; mic.gunderson@internationalgournalofparamedicine.com. For inquiries about sponsorships or advertising, please contact Pat Songer, Executive Director, National EMS Management Association under Creative Common Attribution 4.0 International (CC BY-ND 4.0) licensing. Additional terms apply and can be accessed at https://creativecommons.org/licenses/by-nd/4.0/.

Copyright © 2024 National EMS Management Association. All rights reserved.





Table of Contents

April-June, 2024	Number 6
RESEARCH REPORTS	
Comparison of Out of Hospital Finger and Needle Thoracostomy Performed by Ground Emergency Medical Services	9
Ciaraglia A, Smith A, Axtman B, Eastridge B, Stewart R, Nicholson S, & Jenkins D	
The Effect of Paramedics in Emergency Department Triage on Ambulance Patient Offload Times: A Retrospective Observational Study	18
Kuhner C, Su J, Quinn E, Wolin J, Kimbrell J, Friedman M, Lobel D, Dickman E, & Eng D	
Assessing the Accuracy of ECG Chest Electrode Placement by EMS and Clinical Personnel Using Two Evaluation Methods	29
Clopton E & Hyrkäs E	
Examining Cognitive Aid Use in Emergency Medical Services: A Cross-Sectional Survey	48
Harmer B, Ivey M, Hoyle J, & Fogarty K	
The Relationship Between Emotional Intelligence, Self-Compassion, and Wellbeing in Ambulance Staff	62
Parker B, Ashton A, Eccles F, & Fletcher I	
Factors Associated with Caregiver Decision Not to Transport Pediatric Patients Assessed by Emergency Medical Services	83
Johnson K & Ward C Australian Paramedica' Experiences of Strassors During the COVID 10 Pandamia	08
Australian Paramedics' Experiences of Stressors During the COVID-19 Pandemic	
REVIEWS	
Incidence and Outcomes of Adult Syncope Presentations to Emergency Medical Services: A Systematic Review	113
Cividin M, Wilkinson-Stokes M, D'Arcy A, & Olaussen A	
Occupational Factors Influencing Paramedic Health and Wellbeing: A Scoping Review	132
Betts C, Stoneley A, Anderson J, & Sutton C	
Paramedic Exposure and Response to Non-Traumatic Dental Injury: A Scoping Review	152
Berry R, Bettiol S, & Edwards D	

CONCEPTS
Breaking Bad News in the Prehospital Setting: A Guide for EMS Clinicians163
Tillett Z, Jacobs S, & Crispo M
SPECIAL REPORTS
When Should EMS Call a Child a Small Adult: Disparities in Protocol Definitions171
Solazzo E, McCans K, Owusu-Ansah S, & Williams K
LITERATURE SURVEILLANCE
Paramedicine Contents: December 2023 - February 2024
Paramedicine Literature Search: December 2023 - February 2024
Guidelines for Authors
Errata and Corrigenda259