

International Journal of Paramedicine

An Official Journal of the National EMS Management Association



Number 8 — October-December, 2024

https://internationaljournalofparamedicine.com/index.php/ijop/issue/view/N8 https://doi.org/10.56068/FSUS7637



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

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; Chair, Global Critical Care Transport Higher Education Council; 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 – Chair and Assistant Professor of Healthcare Administration, Methodist University; Clayton, NC, USA

Christine McGuire-Wolfe, PhD, CIC, CPH, EMT-P/FFII – Assistant Professor, University of South Florida, College of Public Health; Director, Infection Control for Emergency Responders Collaborative and Training Hub (ICER); Tampa, FL, 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, 115 4

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

Associate Editors - Production

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

Theron Becker, MPH, MPA, FACPE, CP-C – Deputy Director of EMS, Raven Advisory; Fayetteville, NC, 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 – Fairview Park Hospital, Dublin, 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

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

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

Julius McAdams, BME, FP-C, CCP-C – Education Coordinator, Novant Health AirLink/VitaLink; IBSC Liaison, I-CAPP; 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

Christopher Suprun, BS, NRP, FP-C – Director, Clinical Operations, September 11 Foundation; Dallas, TX, 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

Mike Verkest, AAS, FP-C, CCP-C, C-NPT, Paramedic – President, FireDog Productions; Manager, Content Development, ESO; Manor, TX, USA

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

Eoin Walker, MSc, BSc, Dip IMC RCSEd, FEWM, AFHEA – Senior HEMS Marketing Manager, Airbus Helicopters; Augsburg, Bavaria, Germany

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 – Chair and 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, 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; Riyadh, Saudi Arabia
- David Beckerley, MPA, NRP Commander, Austin-Travis County EMS; Austin, TX, USA
- 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

- 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
- 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, NI, USA
- Baxter Larmon, PhD, MICP Professor, Emeritus Director, David Geffen School of Medicine at UCLA; Ventura, CA, USA
- William J. Leggio, EdD, NRP Operations Administrator, Mayo Clinic Health System; 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, DavidMWilliamsPhD.com; Austin, TX, USA

Reviewers

- **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

- Julie D. Charbonneau, RN, MS Executive Director, Regional Emergency Medical Services Authority (REMSA), City of Sioux Falls; Sioux Falls, SD, USA
- Jamie Chebra, MS, FACPE, NRP Chief Executive Officer, Harris County ESD 11 Mobile Healthcare; Spring, TX, USA
- Brad Chernock, MD, MS, PA-C, NRP Surgical Critical Care Fellow, Rutgers-Robert Wood Johnson Medical School; Morristown, NJ, USA
- Sheldon Cheskes MD, CCFP (EM), FCFP, DRCPSC – Medical Director, Sunnybrook Centre for Prehospital Medicine; Professor, University of Toronto; Toronto, ON, Canada
- Lance Corey, EMTP-P, I/C, CCEMTP, BS New Era, MI, USA

- 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,
- 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/QA, 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
- Renne 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

- Nicholas R. North, MSNc, RN, NRP, CMTE – Flight Nurse/Outreach Coordinator, Mass Memorial Health Life Flight; EMS Coordinator, Mercy Medical Center; Belchertown, MA, 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, IISA
- **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
- Athan Ryals, BS, NRP Simulation Operations Specialist, Jump Simulation Center Urbana; Champaign, IL, 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
- Ahmad Sharayah, PhD, MHS, Paramedic, FAEMS – Head of Trauma Department, Adjunct Assistant Professor, Royal Jordanian Medical Services College; Amman, AMM, Jordan
- **Hezedean Smith, DM, CFO, FACPE** Global Emergency Consulting Group, LLC; Embry Riddle Aeronautical University; Orlando, FL 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
- Simon Taxel, NRP, BA Crew Chief/Public Safety Diver, City of Pittsburg Bureau of EMS; Medical Specialist, Pennsylvania USAR Strike Team 1; Pittsburgh, PA, USA

- **Stephen E. Taylor, Paramedic, PhD, FAEMS** EMS Specialist, East Carolina University; Pitt County EMS
- 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
- James J. Warin, MPA, NRP, MICP, CHSE
 Simulation Operations Specialist, Valley
 Health System; Paramedic, Hackensack
 Meridian Health; Hopatcong, NJ, USA
- Jonathan D. Washko, MBA, FACPE, NRP, AEMD – Assistant Vice President for CEMS Operations, Northwell Health; Northport, NY, USA
- Siegfried Weinert, NKV, EMD, SFK Cross Border EMS Management, Notruf Niederösterreich; NKA, LBA-EH, LBA-San, PAS, Austrian Red Cross; Wiener Neudorf, Lower Austria, Austria
- 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/index.php/ijop/about/submissions. 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; mic.gunderson@internationaljournalofparamedicine.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/.





Table of Contents

October-December, 2024 Number 8
EDITORIALS
Not Too High and Not Too Low: The Goldilocks Approach to Prehospital Treatment of Severe Hypertension with Stroke
POSITION STATEMENTS
Toint Position Statement on EMS Performance Measures Beyond Response Times
RESEARCH REPORTS
An International Community Paramedic Career Structure: A Synthesis of the Literature, Regulatory Frameworks, and Community Paramedicine Expert Advice
Shedding Light on Mobile Stroke Unit Dispatch Protocols: A Global Survey Analysis
The Association Between Pandemic-Related Instructional Delivery Modifications and Emergency Medical Technician (EMT) First Attempt Pass Rates: A Single Center Retrospective Study42 Hansen N & Foat C
Cross-Sectional Analysis of Ketamine Use in a Large Urban/Suburban Area51 Kruse A, Cooley C, Lewis A, Schoggin H, & Wampler D
Factors that Influence Medical Retrieval Decisions in Remote Central Australia: A Qualitative Study
A Cross-Sectional Analysis of ALS/BLS Care in Low Acuity 9-1-1 Response by Geography and Insurance Status Utilizing the 2019 Nemsis Dataset81 Pesarsick J, Bhandaril R, Groth C, Findley S, & Hendricks B
The Experiences of and Attitudes Towards Continuing Professional Development: An Interpretative Phenomenological Analysis of UK paramedics (EAT CPD)90 Handyside B & Watson K

Helicopter Emergency Medical Services (HEMS) Transportation Utilization for Acute Ischemic Strokes at a Comprehensive Stroke Center in South Florida Persaud L, Olivia J, Belnap S, & LaRosa F An Examination of the Differences in Accuracy Between Paramedics and Emergency Medical Technicians (EMTs) in Identifying Low-Acuity Pediatric Patients Yang J, Brown K, Simpson J, Chamberlain J, & Ward C	
A Survey of Patient Utilization and Trust of Emergency Medical Services LaShell A, Sebok-Syer S, Supples M, Musey P, Faris G, Liao M, Vaizer J, Alexander A, & Glober N	144
Comparing the Efficacy of Simulated Out-Of-Hospital Ventilation with SMART Bag-Valve and Traditional Bag-Valve Devices Dawson I, Mills B, & Ford D	160
REVIEWS	
Quantifying Threat or Challenge Response of Undergraduate Paramedicine Students During High-Stress Clinical Scenarios: A Narrative Review Betson J, Fein EC, Long D, Horrocks P	174
CASE REPORTS	
Aggressive Hyperkalemia Treatment in the Prehospital Setting: A Case Report	191
CONCEPTS	
Exploring the Role of Paramedics in Identifying Criminal Activity: A Concept Paper	197
A Literature Supported Model for Implementing Effective Use of Simulation and Debriefing in Paramedic Education Konzelmann J	206
LITERATURE SURVEILLANCE	
Paramedicine Contents: June-August 2024 Buck B & McAdams J	217
Paramedicine Literature Search: June-August 2024	222
GUIDELINES	
Guidelines for Authors	269



With nearly 800 members, NEMSMA represent CEO's, chiefs, and managers from every state and type of service, offering voice and vision for professional development and leadership.

NEMSMA is a frequent participant in panels, workgroups, and boards involving EMS in both governmental and non-governmental sectors.



