

Occupational Hazards of First Responders

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Learning Objectives

Upon conclusion of this activity, participants should be able to:

- Define first responders
- Discuss the unique primary care issues faced by first responders
- Identify common diagnoses found in first responders
- Describe evidence-based interventions to assist first responders

Speaker(s)

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIP(S) WITH INELIGIBLE COMPANIES:

Name	Nature of relationship	Company
Brittany Strelow, DMSc, P.A.-C., M.S.	Other: for-profit entity for which I consulted and received personal compensation	Exact Sciences

REFERENCES TO OFF-LABEL OR INVESTIGATIONAL USAGE(S) OF PHARMACEUTICALS OR INSTRUMENTS:

Name	Manufacturer/Provider	Product/Device
None		

Personal Disclosure

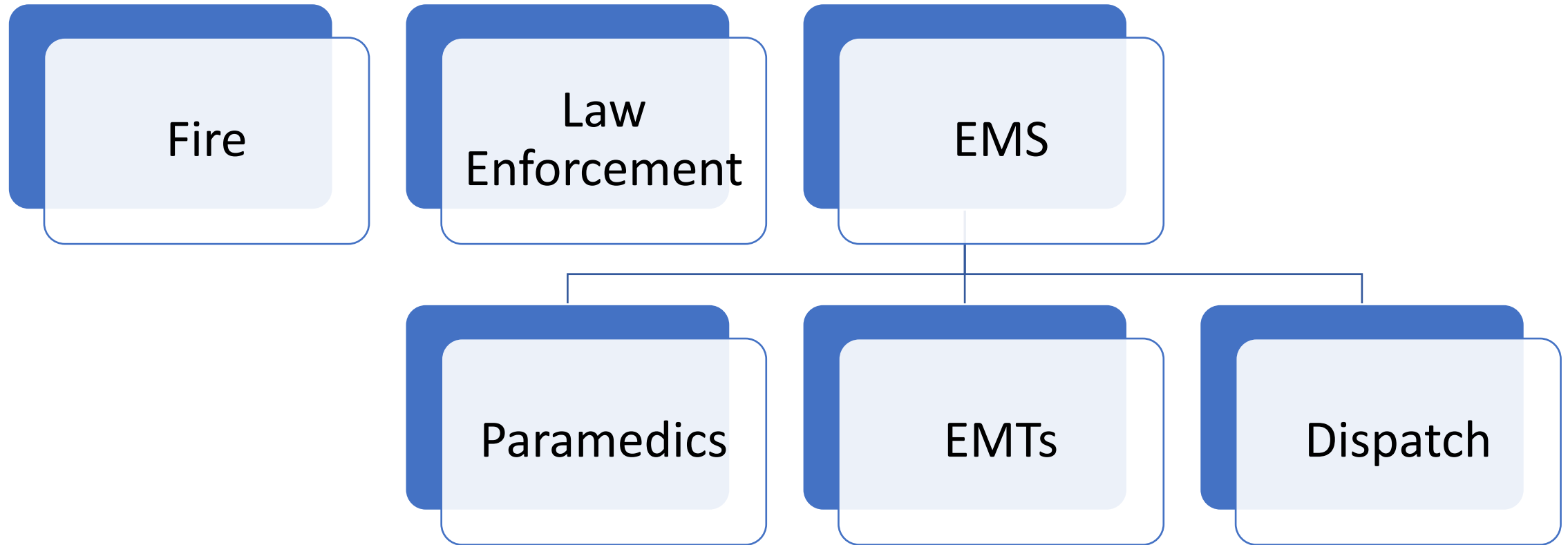




Trigger Warning



First Responder Definition



Definition



History:

- Job History
- Exposures at Work
- Hazards at Work

Occupation

- Garbage/Trash Collector
- Waste removal
- Waste Treatment Specialist
- City Worker
- Works for the City
- Street Cleaner
- Street Engineer
- Uber Driver
- Wells Fargo
- County employee
- DOT
- Public Works
- Zamboni Driver
- Public service
- Builds windmills
- Basement Saver
- Transportation Department
- Adult Daycare Provider/Babysitter
- Works for the state
- Park Maintenance
- Plumber
- Customer Service
- Window Tinter
- Cable Splicer
- Public Relations
- Dept of Commerce
- Yeoman Warder
- Government
- Problem Solver
- Mortician
- Taxi driver
- Paper Pusher

Healthcare Reluctance

- Fear
- Judgement
- Vulnerability
- Avoidance
- Comfort Level
- Discrimination
- Court

Exposure

- Organ/System:
 - Respiratory: asbestos, radon, smoke, glues
 - Dermatologic: dioxin, nickel, arsenic, cement, PCBs, glues, rubber cement
 - Liver: carbon tetrachloride, methylene chloride, vinyl chloride
 - Kidney: cadmium, lead, mercury, chlorinated hydrocarbon solvents
 - Cardiovascular: carbon monoxide, tobacco smoke, carbon disulfide,
 - Reproductive: Methylmercury, carbon monoxide, lead, ethylene oxide
 - Hematologic: arsenic, benzene, nitrates, radiation
 - Neuropsychologic: tetrachloroethylene, mercury, arsenic, lead, methanol, vinyl chloride

Exposures:

- Suicides
- Motor Vehicle Accidents
- Bodily Fluids
- Inhalation Toxins
- Gun Violence
- Drugs





Exposures: Suicide



Exposures: Motor Vehicle Accidents



- Boats
- Snowmobile
- Vehicles
- ATVs
- Motorcycle
- Pedestrian

Exposures: Bodily Fluids

- Blood
- Urine
- Feces
- Saliva



Exposures: Inhalation Toxins

- Vehicular Traffic
- Fires
- Chemical Accidents
- Drugs
- Riot Control Agents/Self-Defense Spray
- Lead
- Forensics
- World Trade Center



Exposures: Gun Violence

- Homicide
- Violent Crime
- Unintentional Death or Injury
- School Shooting
- Mass Shooting
- Gangs



Exposures: Drugs

- Overdoses
- Naloxone





Mental
Health &
Well-Being

- Traumatic Stress
- PTSD
- Compassion Fatigue
- Mood Disorders
 - Depression
 - Anxiety

Common Medical Disorders

- Sleep Disorders
- Pulmonary
- Infectious Disease
- Cardiovascular
- Obesity
- Hearing
- Musculoskeletal

Sleep Disorders

- Sleep Apnea
- Insomnia
- Shift Work Disorder
- Excessive Daytime Sleepiness
- Restless Legs

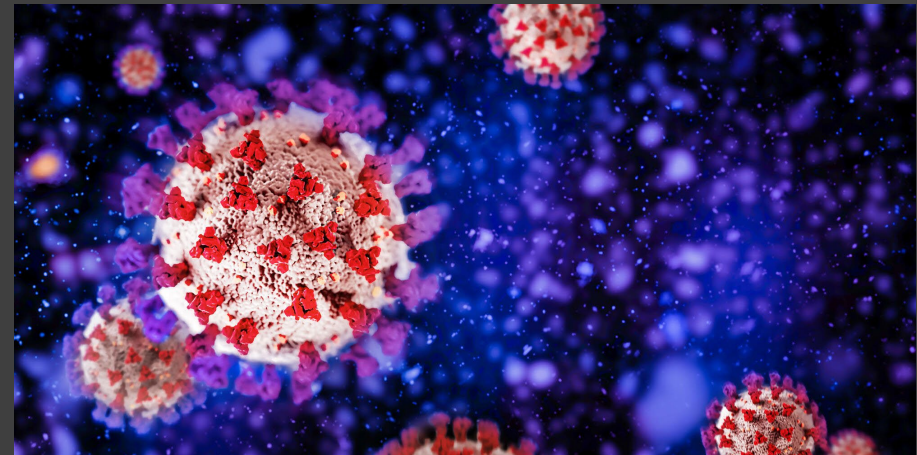


Pulmonary

- Chemical Exposure

Infectious Disease

- HIV
- Hepatitis
- Airborne Diseases
- Vector-borne diseases
- MRSA
- COVID-19



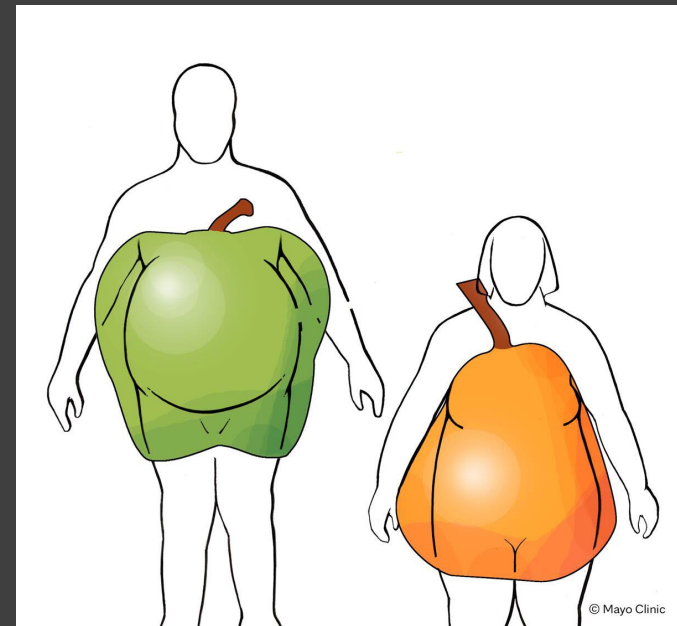
Cardiovascular

- Cholesterol

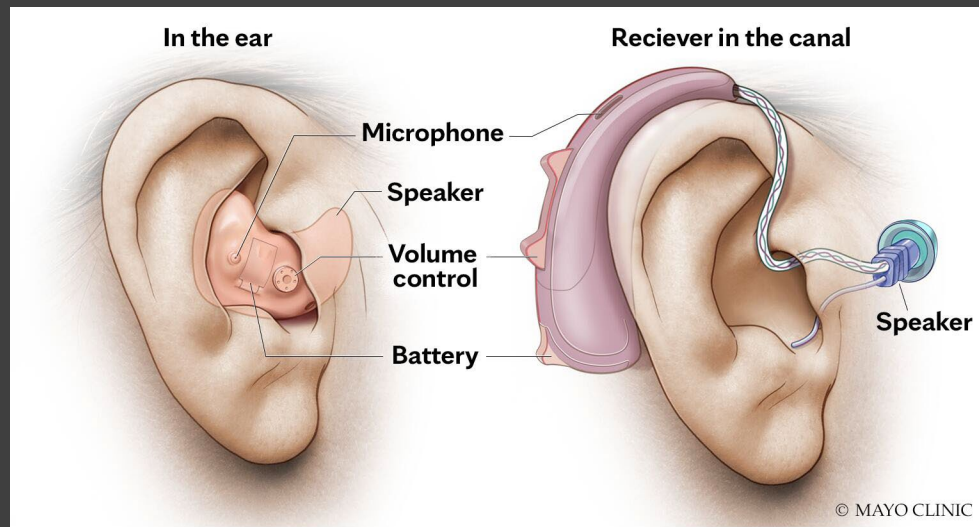


Obesity

- Deconditioning



Hearing



- Impairment

Musculoskeletal

- Back Pain
- Trigger Finger
- Arthritis



Substances

- Alcohol
- Drugs



Miscellaneous

- Cancer



Interventions

- Resiliency Training
- Psychotherapy
- Social Support

Nutrition/Hydration

- Evaluate
- Monitor
- Weigh

Tactical Training - OMC



<https://www.olmmed.org/clinical-services/sports-medicine-athletic-performance/tactical/>

Supplements



- Caffeine
- Creatine
- Protein
- Amino Acids

Family Support



Support Network



References

- Feldman, T. R., Carlson, C. L., Rice, L. K., Kruse, M. I., Beevers, C. G., Telch, M. J., & Josephs, R. A. (2021). Factors predicting the development of psychopathology among first responders: A prospective, longitudinal study. *Psychological trauma : theory, research, practice and policy*, 13(1), 75–83. <https://doi.org/10.1037/tra0000957>
- Antony, J., Brar, R., Khan, P. A., Ghassemi, M., Nincic, V., Sharpe, J. P., Straus, S. E., & Tricco, A. C. (2020). Interventions for the prevention and management of occupational stress injury in first responders: a rapid overview of reviews. *Systematic reviews*, 9(1), 121. <https://doi.org/10.1186/s13643-020-01367-w>
- Lewis-Schroeder, N. F., Kieran, K., Murphy, B. L., Wolff, J. D., Robinson, M. A., & Kaufman, M. L. (2018). Conceptualization, Assessment, and Treatment of Traumatic Stress in First Responders: A Review of Critical Issues. *Harvard review of psychiatry*, 26(4), 216–227. <https://doi.org/10.1097/HRP.0000000000000176>
- Gill, R., Superko, H. R., McCarthy, M. M., Jack, K., Jones, B., Ghosh, D., Richards, S., Gleason, J. A., Williams, P. T., & Dansinger, M. (2019). Cardiovascular Risk Factor Reduction in First Responders Resulting From an Individualized Lifestyle and Blood Test Program: A Randomized Controlled Trial. *Journal of occupational and environmental medicine*, 61(3), 183–189. <https://doi.org/10.1097/JOM.0000000000001490>
- Tuminello S, van Gerwen MAG, Genden E, Crane M, Lieberman-Cribbin W, Taioli E. Increased Incidence of Thyroid Cancer among World Trade Center First Responders: A Descriptive Epidemiological Assessment. *International Journal of Environmental Research and Public Health*. 2019; 16(7):1258. <https://doi.org/10.3390/ijerph16071258>
- Institute of Medicine (US) Committee on Curriculum Development in Environmental Medicine; Pope AM, Rall DP, editors. Environmental Medicine: Integrating a Missing Element into Medical Education. Washington (DC): National Academies Press (US); 1995. A, Taking an Exposure History. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK231990/>
- Schwerha, J. J. (2004). Occupational Medicine Forum. *Journal of Occupational and Environmental Medicine*, 46 (5), 510-513. doi: 10.1097/01.jom.0000126032.52965.e1.
- **Occupational exposure to suicide: A review of research on the experiences of mental health professionals and first responders**
Lyra RLd, McKenzie SK, Every-Palmer S, Jenkin G (2021) Occupational exposure to suicide: A review of research on the experiences of mental health professionals and first responders. PLOS ONE 16(4): e0251038. <https://doi.org/10.1371/journal.pone.0251038>
- Huang G, Lee TY, Banda KJ, Pien LC, Jen HJ, Chen R, Liu D, Hsiao SS, Chou KR. Prevalence of sleep disorders among first responders for medical emergencies: A meta-analysis. *J Glob Health*. 2022 Oct 20;12:04092. doi: 10.7189/jogh.12.04092. PMID: 36269052; PMCID: PMC9585923.
- Ballenger JF, Best SR, Metzler TJ, Wasserman DA, Mohr DC, Liberman A, Delucchi K, Weiss DS, Fagan JA, Waldrop AE, Marmar CR. Patterns and predictors of alcohol use in male and female urban police officers. *Am J Addict*. 2011 Jan-Feb;20(1):21-9. doi: 10.1111/j.1521-0391.2010.00092.x. Epub 2010 Nov 8. PMID: 21175917; PMCID: PMC3592498.

References

- van Dam D, Ehring T, Vedel E, Emmelkamp PM. Validation of the Primary Care Posttraumatic Stress Disorder screening questionnaire (PC-PTSD) in civilian substance use disorder patients. *J Subst Abuse Treat*. 2010 Sep;39(2):105-13. doi: 10.1016/j.jsat.2010.05.005. Epub 2010 Jul 3. PMID: 20598826.
- Kouvonen A, Kivimäki M, Oksanen T, Pentti J, De Vogli R, Virtanen M, Vahtera J. Obesity and occupational injury: a prospective cohort study of 69,515 public sector employees. *PLoS One*. 2013 Oct 16;8(10):e77178. doi: 10.1371/journal.pone.0077178. PMID: 24146966; PMCID: PMC3797744.
- Arble E, Arnetz BB. A Model of First-responder Coping: An Approach/Avoidance Bifurcation. *Stress Health*. 2017 Aug;33(3):223-232. doi: 10.1002/smi.2692. Epub 2016 Aug 8. PMID: 27500991; PMCID: PMC6525630.
- McMorrow C, Feairheller DL. Blood Pressure Responses in Firefighters: A Review. *Curr Hypertens Rev*. 2022;18(2):145-152. doi: 10.2174/1573402118666220103094201. PMID: 34979891.
- Korre M, Smith D, Kales SN. Obesity and health in the North American Fire Service: research points the way to positive culture change. *Occup Med (Lond)*. 2018 May 17;68(3):160-162. doi: 10.1093/occmed/kqy019. PMID: 29788507.
- Gonzalez DE, McAllister MJ, Waldman HS, Ferrando AA, Joyce J, Barringer ND, Dawes JJ, Kieffer AJ, Harvey T, Kerksick CM, Stout JR, Ziegenfuss TN, Zapp A, Tartar JL, Heilesen JL, VanDusseldorp TA, Kalman DS, Campbell BI, Antonio J, Kreider RB. International society of sports nutrition position stand: tactical athlete nutrition. *J Int Soc Sports Nutr*. 2022 Jun 23;19(1):267-315. doi: 10.1080/15502783.2022.2086017. PMID: 35813846; PMCID: PMC9261739.
- Arble E, Arnetz BB. A Model of First-responder Coping: An Approach/Avoidance Bifurcation. *Stress Health*. 2017 Aug;33(3):223-232. doi: 10.1002/smi.2692. Epub 2016 Aug 8. PMID: 27500991; PMCID: PMC6525630.
- O'Toole M, Mulhall C, Eppich W. Breaking down barriers to help-seeking: preparing first responders' families for psychological first aid. *Eur J Psychotraumatol*. 2022 May 11;13(1):2065430. doi: 10.1080/20008198.2022.2065430. PMID: 35572389; PMCID: PMC9103391.

Thank you!

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