



Topics > Fatigue

The lack of EMS sleep and wellness

EMS fatigue management initiatives should include education and training about fatigue, providing access to caffeine and encouraging on-shift napping if possible

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Editor's Note:

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Is [fatigue](#) an expected work hazard for EMS providers? Based on experience from interacting with paramedics who make runs to the emergency department, it seems as if sleep on shift remains an uncommon occurrence.

Many prehospital providers report getting little to no sleep in a 24-hour shift due to the high volume of calls in a busy urban EMS system and feel the consequences toward the end of the shift. Anecdotally, however, it seems as if they unanimously love the 24-hour shift structure and would only change the volume of runs they make in a shift. While subjective accounts are informative, we examined the literature to try to answer an important question: [how does the lack of sleep and fatigue of a long shift affect EMS workers?](#)

One of the most critical areas in which fatigue affects EMS workers is [medical errors](#). One study found that fatigued EMS workers had 2.2 times greater odds of medical errors or adverse events compared to their non-fatigued colleagues, where fatigue was determined by self-reported surveys [1]. This study also found that the number of shifts worked monthly was positively correlated to medical errors.



Fatigued EMS workers have a 1.9 greater odds of injury and 3.6 greater odds of safety-compromising behavior compared to their non-fatigued colleagues. (Photo/Flickr via [Jennifer Chernoff](#))

Although performance is a difficult marker to measure in these types of studies, one surrogate marker has been psychomotor vigilance testing (PVT), which is a measure of behavioral alertness. One multisite cohort study performed PVT on EMS workers at the beginning and end of a shift and compared it by shift duration (24-hour shifts with shifts greater than 24 hours), as well as by time of shift [2]. They found no difference in PVT performance by shift duration but did find that performance was worse on night shift compared to day shift.

They also found that performance increased as [time from a nap](#) to the test increased. For example, if prehospital personnel had napped in the hour before the test, they were more likely to do worse than if they had napped 3 hours before the test. The authors hypothesized this is likely due to sleep inertia, or grogginess upon waking.

Another equally important topic to consider is EMS worker safety. Fatigued EMS workers have a 1.9 greater odds of injury and 3.6 greater odds of safety-compromising behavior compared to their non-fatigued colleagues, but the number of shifts worked per month and longer shift hours (24 vs <12hrs) are not associated with higher odds of negative safety outcomes [1]. A longitudinal cohort study found that obese firefighters who didn't get enough sleep on shift were twice as likely to report having had an on-duty injury in the past 6-12 months than those who felt like they received enough sleep [3]. Interestingly, this was not significant in normal weight or even overweight firefighters.

Alongside worker safety, another area of importance that is often overlooked is EMS worker wellbeing. Occupational fatigue exhaustion recovery was found to be better for EMS workers who reported greater satisfaction with their schedule [4]. Interestingly, recovery was reported to be worst for EMS workers on 12-hour shifts and better for those who worked longer than 12-hour shifts, which the authors hypothesize could be related to a longer turnaround time between shifts for EMS workers who work longer hours.

[EMS worker wellbeing](#) should matter to everyone, since these workers are critical to the functioning of our health system. One study found burnout prevalence among U.S. EMS workers was as high as 38% and that the presence of burnout is associated with a 2-3 fold increase in [likelihood to leave a job or leave the EMS profession](#) [5].

The literature summarized above quantifies for us what we already qualitatively knew is a growing problem. While intervention trials and high-quality studies to examine improvements to this issue are sparse, there are potential areas of improvement to be noted in the literature.

[Evidence-based guidelines](#) suggest 5 items that can be used for fatigue risk management in EMS workers [6]:

1. Decreasing shifts to less than 24 hours in length
2. Monitoring and measuring fatigue
3. Providing education and training about fatigue
4. Encouraging napping
5. Providing access to caffeine

The shift length question is certainly a highly contested one. Do 24-hour shifts need to be phased out? The existing evidence seems to point towards yes, but what is the ideal shift length? A systematic literature review found that shifts less than 24 hours in length are more favorable in terms of patient and personnel safety, although found that there was no difference the same outcome when considering 8-hour shifts versus 12-hour shifts [7]. An observational study found the risk of occupational injury and illness was lower in shifts 8 hours or less compared to longer shifts; shifts that were 16-24 hours in length had 60% greater risk of injury compared to shifts 8-2 hours in length [8].

While it may seem counterintuitive that more training about fatigue would help with [fatigue management](#) instead of adding to the workload of an already tired EMS worker population, there is data to back it up. One randomized control trial tested the utility of [fatigue interventions](#) at end of shift and 120 days post shift [9]. Interventions were all done via text message and included recommendations in response to EMS workers self-rating their level of fatigue and quality of sleep. Recommendations were things like behavioral modifications to mitigate fatigue and weekly texts to encourage sleep. While the intervention group had no difference at 120 days from the control, they did have lower fatigue at the end of shift, indicating potential use in short-term fatigue management. Another study demonstrated that [fatigue training](#) in EMS workers was associated with improved patient and personal safety, lower ratings of acute fatigue, reduced stress and burnout, and improved sleep quality [10]. This training consisted of basic information on sleep, circadian rhythms, and sleep disorders, as well as the use of caffeine or nap strategies, optimization of sleep schedules or sleep environment, and practicing increased mindfulness.

Another fairly manageable solution to improve on shift fatigue is structured napping. While napping may not drastically change reaction time, it is associated with decreased sleepiness at the end of shift [11]. Even though performance can be decreased soon after waking up from a nap, the evidence for the benefits of napping outweighs any detriments sleep inertia may cause [2].

While napping may not be feasible for many busy EMS units, caffeine has been explored as a potential substitute. One literature review found that in non-EMS shift workers, caffeine improved reaction time and PVT at the end of shift but with the caveat of, as expected, reducing [sleep quality and duration](#) [12]. Shift fatigue continues to be a challenge for EMS shift workers but one potential solution may be sleep banking [13]. This strategy involves extending sleep prior to scheduled shifts and may improve performance and acute fatigue.

TAKE HOME MESSAGE ON EMS FATIGUE MANAGEMENT

The perceived benefits of shift work in emergency services have ensured it as a [staffing model](#) for decades to come in EMS and emergency medicine. The drawbacks, however, are prevalent and still not fully understood. Ensuring well-rested and capable EMS workers will continue to be a challenge as long as shift work is preferred.

More research is certainly needed and future robust studies looking at important topics such as shift length and on-shift interventions are essential.

In the meantime, the literature suggests that while fatigue and sleepiness are real issues in EMS workers, some things that may help are education and training about fatigue, providing access to caffeine, and encouraging on-shift napping if possible. While the shift length question remains contested, this is an informed discussion that needs to take place with EMS workers at the local level with the available understanding of the benefits and consequences of current staffing patterns.

[Read next: [How to protect sleep-deprived EMS personnel](#)]

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Posted by **rower8** Jan 17, 2020

There still need to be more peer reviewed studies in the area of sleep deprivation and fatigue in the EMS community. But even with the data pointing to better safety for patients, EMS personnel, and the public in general, I doubt that will overcome the love for the 24-hour shift by most departments. Best interest of the patient verses the best interest of the department, where on the continuum do you place the patient?

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