Pain Management By Age and Race

NEMSIS data helps identify disparities in who's getting prehospital pain control

By Antonio R. Fernandez, PhD, NRP, FAHA

This month we discuss prehospital pain management. Although pain is something we have the means to reduce in the field, many studies have concluded we don't do a great job managing it.

This is true even though research has identified that approximately one-fifth to one-quarter of transported patients experience some pain; studies of EMS providers have shown we understand the positive impact pain relief can have on patients; and leading professional associations in our field have identified that pain management should be prioritized. There is even research that suggests changes in EMS protocols to encourage pain management do not substantially improve it.

One of the issues with the research mentioned above is that it was not conducted on a national level. In other words, we know what happens in local and/or smaller-scale studies, but no large national analysis has been performed. This is one of the reasons this month's manuscript is so important.

The University of Utah's Hilary Hewes, MD, and her coauthors recently published "Prehospital Pain Management: Disparity by Age and Race." This is the first known study of prehospital pain management that utilizes national data. Specifically this study uses data from the National EMS Information System (NEMSIS). A NHTSA project to develop national EMS data, NEMSIS collects data from almost every state. The patient care information you enter locally into your ePCR typically will eventually get submitted by your agency to your state EMS data system and then on to NEMSIS.



One of the most impressive things about NEMSIS is that, to my knowledge, it is the only nationally standardized data set in healthcare or public safety. In other words, data collected in California is the same as data collected in New York. This enables "apples to apples" comparisons. During the study period 48 states and territories were submitting data to NEMSIS.

Now, it's important to understand that the patient care information you enter into your ePCR isn't necessarily collected to the NEMSIS standard. This information is typically mapped to the NEMSIS standard before it's submitted to your state EMS data system. It's also important to understand that your state may require more information be collected on each call than NEMSIS requires.

One of the reasons it's important for all EMS researchers, whether new or seasoned, to be aware of NEMSIS is that NEMSIS makes a research data set available to the public each year. For those who have a good research idea but lack the collected data to complete a study, this data set is a wonderful resource. NEMSIS provides a data dictionary and a dashboard on its website that everyone should check out.

Objectives and Findings

Hewes and her coauthors used the NEMSIS public-release research data set to perform their study. The study period ran from 2012–2014. They had four study objectives: 1) to utilize the NEMSIS database to determine the percentage of pediatric and adult patients evaluated by EMS personnel with potentially painful presenting complaints (fractures, burns, penetrating injuries) who received any type of pain medication in the prehospital setting; 2) to determine whether prehospital pain management varied by the age of the patient; 3) to determine what types of pain medications were administered in the prehospital setting; and 4) to assess whether there was a potential ethnic/racial disparity for pain management.

Before we talk about the results, it's important to understand one more thing to put the results into context: As we all know, there are times when multiple EMS agencies and potentially the fire department respond to a trauma call. Each of these agencies typically has to complete a patient care report. However, there is typically only one agency that transports the patient and provides the majority of patient care. The authors did not link different PCRs to the same patient or

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Prehospital Pain Management: Disparity By Age and Race

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emergency event. Therefore, the percentages of patients who received pain medication may be underestimated.

During the study period, there were a total of 69,564,130 EMS calls submitted to NEMSIS. Of those, 276,925 included a patient who was evaluated and transported with a primary impression of fracture, burn, and/or penetrating injury. Only 29.5% of these patients included a documentation of pain as a primary or secondary symptom.

When the authors excluded the pain assessment, only 15.6% of all calls included in this study received any pain medication (morphine, fentanyl, ibuprofen, acetaminophen, hydromorphine, or nitrous oxide). When pain medications were given, morphine and fentanyl were the most common, and ibuprofen and acetaminophen were almost never given. When the pain assessment was included, 19.9% of patients received pain medication.

The authors categorized children from 0–3, 4–10, 11–14, 15–18, and greater than 18 years of age. Under this scheme it appeared that the younger the child was, the less likely they were to receive pain medication. However, the authors then combined their pediatric subjects into two categories (less than 15, 15 and older), and the difference was no longer statistically significant ($p>0.05$). Interestingly, when pain was documented, black patients were the least likely to be administered pain medication (8.7%, 95% CI 8.1–9.3). White patients represented the highest percentage of patients with documented pain who had pain medication administered (22.4%, 95% CI 22–22.8).

Limitations

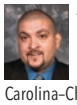
The authors did a good job describing their limitations. The first and most important was assuming that if a procedure, medication, or assessment wasn't documented, it wasn't done. The authors didn't have much choice in this; it wouldn't be possible for them to validate data for more than 200,000 records. However, this should emphasize how important it is to be thorough in your documentation. Your PCRs are being used to understand and improve our field. Without proper documentation, researchers could reach erroneous conclusions. Race was also poorly documented.

The authors also could only use the documentation of pain as a primary or secondary symptom to identify their study population. This is because although there is a NEMSIS data element to record a pain score, that element is not required to be submitted to the national data set. So even though you may have recorded a pain score that was submitted to your state, it might not have made it to NEMSIS.

It would be interesting to repeat this study using a state data set that requires more elements than NEMSIS. Finally, as stated above, if multiple agencies responded, this would lead to multiple PCRs. The authors did not link multiple PCRs to single patients, likely inflating the denominator and underestimating the percentage of patients who received pain medication.

Overall, this is a very interesting study and the first to use national data to address an important question. This is an important addition to the published literature examining prehospital pain management. Budding EMS researchers should consider using the NEMSIS pubic-release research data set to answer questions.

ABOUT THE AUTHOR



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