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Pain Treatment for Older Adults During Prehospital Emergency Care: Variations by Patient Gender and Pain Severity

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Abstract: **Older adults are less likely than younger adults to receive analgesic treatment during emergency department visits. Whether older adults are less likely to receive analgesics during protocolized prehospital care is unknown. We analyzed all ambulance transports in 2011 in the state of North Carolina and compared the administration of any analgesic or an opioid among older adults (aged 65 and older) versus adults aged 18 to 64. Complete data were available for 407,763 transports. Older men were less likely than younger men to receive an analgesic or an opioid regardless of pain severity. Among women with mild or moderate pain, older women were less likely than younger women to receive either form of pain treatment, but among women with more severe pain (pain score 8 or more), older women were more likely than younger women to receive pain treatment. Further, among women with mild or moderate pain, the oldest patients (aged 85 and older) were the least likely to receive any analgesic or an opioid, but among women with severe pain the oldest patients were the most likely to receive treatment. Further research is needed to assess the generalizability of this interaction between age, gender, and pain severity on pain treatment.**

Perspective: ***During prehospital care in North Carolina in 2011, older adults were generally less likely to receive pain treatment. However, older women with severe pain were more likely to receive treatment than younger women with severe pain. These results suggest an interaction between age, gender, and pain severity on pain treatment.***

Key words: *Pain, geriatrics, emergency treatment, prehospital.*

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Older patients with acute pain are less likely to receive pain medication than younger patients during emergency department (ED) care.[8,10,19,20,29] However, the epidemiology of acute pain treatment for older adults is incompletely understood, as are the causes for observed differences between older and younger adults.[7] A substantial portion of older ED patients are transported to the ED by ambulance,[22,30] which provides an early opportunity for pain treatment under different conditions. In contrast to care in the ED, prehospital care is usually only provided to 1 patient at a time and, in the United States, treatments are defined by protocols. The prehospital setting is not only different from the ED but also an important opportunity for pain treatment. Severe pain is common among patients transported by

ambulance, and the treatment of pain by emergency medical services (EMS) providers substantially reduces the time to initial treatment.[14]

Adults aged 65 and older account for an estimated 38% of prehospital transports in the United States, and this number is projected to markedly increase over the next 2 decades.[22,26] Prior studies of prehospital pain management have not observed lower rates of pain treatment for older adults. For patients receiving prehospital care in Paris in 2007, no association between patient age and the receipt of analgesics was observed.[6] One Australian study found that older adults were more likely to report a clinically important reduction in pain severity.[9] Another Australian study found that women were less likely to receive pain medication than men but did not find a difference in pain management between older and younger patients.[13]

The purpose of this descriptive study was to compare analgesia administration for older versus younger adults during ambulance transport across a large and diverse patient population with care provided by EMS providers guided by a pain management protocol. We hypothesized that because of the presence of a standardized treatment protocol that does not differentiate patients according to age, pain management during prehospital care would be similar for older and younger adults.

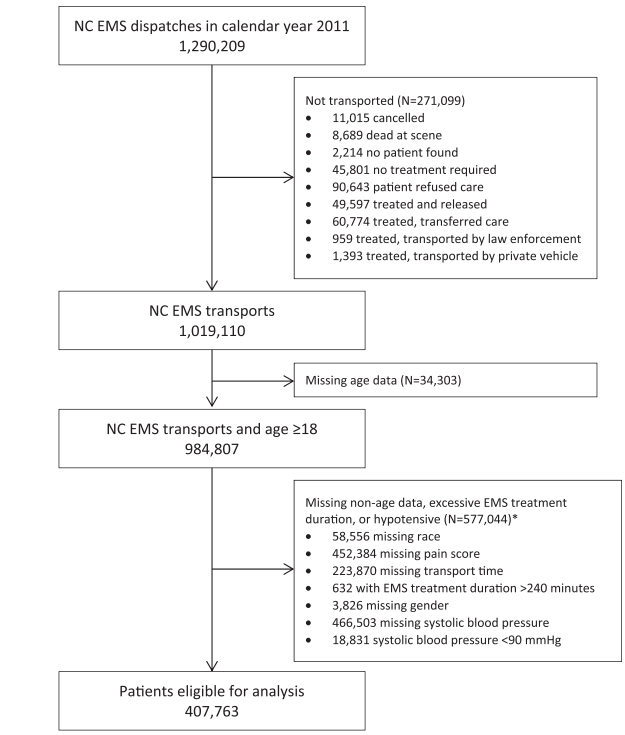

Figure 1. Flow diagram of patients eligible for analysis.

Methods

Study Population

We analyzed data collected by the Emergency Medical Services Performance Improvement Center (EMSPIC),[17] which captures prehospital care reports corresponding to each ambulance transport in the state of North Carolina. Care within the state is provided by 433 EMS agencies and an estimated 38,200 EMS personnel, but all systems use the same pain management protocol. This protocol recommends administration of oral ibuprofen, acetaminophen, or aspirin for adults with mild pain, and parenteral ketorolac or opioids for patients with moderate or severe pain regardless of age.[1] This study was determined to be exempt from review by the University of North Carolina at Chapel Hill institutional review board because the analysis uses deidentified data from an administrative database and the potential for deductive disclosure or another form of patient harm is extremely low.

We accessed data on all EMS transports for patients aged 18 years and older in North Carolina during 2011. These data were restricted for the purpose of analysis in the following ways (Fig 1). First, patients were included only if they were transported by EMS (ie, incident disposition of "treated, transported by EMS"). Patients treated on scene and not transported were excluded because in most cases these patients either decline care or are judged to be not sufficiently ill to require EMS transport. Pain medications are not typically administered to these patients. Second, patients were included only if complete data were available for patient age, race, gender, pain severity, and EMS treatment duration. Third, we identified several cases in which the EMS treatment duration was impossibly long (eg, several days). It is our understanding that these apparent errors were the result of the incorrect entry of dates for arrival to scene or arrival to hospital. To remove implausible values, we excluded patients with EMS treatment duration longer than 4 hours. Fourth, we excluded patients who had a systolic blood pressure less than 90 mm Hg at any time during their transport or for whom systolic blood pressure was unrecorded, because hypotension is listed as a contraindication to analgesic treatment in the state's pain management protocol.

Measures

All data were recorded by EMS personnel during or immediately after the period of patient care. These data were then captured by the North Carolina EMSPIC either using a web-based application or imported by EMS agencies using commercial vendor software.[17]

Patient age at the time of transport was calculated using patient reported date of birth. For the primary analysis, age was categorized as 18 to 64 (the reference group), 65 to 74, 75 to 84, and 85 years and older. The use of 3 categories to represent older adults was used for the primary analysis because our prior work demonstrated that analgesia treatment varied by age even among older adults.[20] Gender and race were recorded based on patient self-report. For our analysis, race was coded as white, black, or other. Pain severity was self-reported by patients and was recorded by prehospital providers on a 0 to 10 scale.[15] In order to