

**Title:** Refusals of Care for EMS Injury-related Incidents in Nebraska: Characteristics and Correlates

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**Introduction:** When patients refuse evaluation, care, or transport from EMS after an injury-related incident, a patient's health can be at risk. As many as 3% of patients that refuse care will call 9-1-1 within one week of their initial refusal.<sup>1</sup> The risk of liability also remains for the EMS crews and agency when deciding if a patient has the ability to refuse care based on their established protocols. Prior studies have analyzed all EMS incidents for patient refusals, but minimal research has been done specific for injury-related incidents.

**Objective:** The purpose of this study is to examine the characteristics and factors associated with patients that refuse EMS care for injury-related incidents within Nebraska.

**Method:** This retrospective study evaluated all Nebraska injury-related incidents requiring a 911 response that occurred in 2018. Injury-related incidents were identified by primary impression (eSituation.11), possible injury (eSituation.02), cause of injury (eInjury.01) or mechanism of injury (eInjury.02). Gender, age, urbanicity, anatomical location of injury, time of year, and time of day were aggregated and analyzed through descriptive statistics. Independent confounders were calculated using unadjusted and adjusted multi-variate logistic regression.

**Results:** During the study timeframe, 23,392 incidents were related to an injury, with a prevalence of 1,606 (7%) refusing medical evaluation, care, or transport. A majority of injury incidents were in an urban location (64%), 34% of incidents occurred in patients 71 or older and 55% of those injured were female. Top 3 causes for injuries were falls, trips or slips (39%), unknown (26%), and motor vehicle traffic accidents (22%). Top 3 causes for injury where care was refused included traffic incidents involving pedestrians (14% refused care), motor vehicle traffic accidents (11% refused care), and assaults or abuse (11% refused care).

There were increased odds of refusing care for patients between the ages of 16 and 30 years old (OR: 1.40, 95%CI 1.14-1.72) compared to  $\leq 15$  years old, if suspected injury location was undefined (OR: 3.15, 95%CI 2.65-3.74), head (OR: 1.90, 95%CI 1.62-2.24), extremities (OR: 1.67, 95%CI 1.44-1.94), or chest (OR: 1.75, 95%CI 1.27-2.42) compared to general acute pain, and if incident occurred between 12:00pm - 5:59pm (OR: 1.17, 95%CI 1.02-1.33) compared to 6:00pm – 11:59pm.

There were decreased odds of refusing care for incidents occurring in wilderness/rural areas (OR: 0.71, 95%CI = 0.62-0.81) compared to urban/suburban, individuals  $\geq 46$  years old (46-60 years OR: 0.80, 95%CI 0.56-0.89; 61-75 years OR: 0.71, 95%CI 0.56-0.89;  $\geq 76$  years OR: 0.40, 95%CI 0.31-0.50) compared to  $\leq 15$  years old), if the suspected injury was located in the pelvic region (OR: 0.17, 95%CI 0.09-0.32) compared to acute pain, if injury occurred during January/February (OR: 0.79, 95%CI 0.65-0.97) compared to November/December, and was between 6:00am and 11:59am (OR: 0.86, 95%CI 0.73-1.00) compared to 6:00pm – 11:59pm.

**Conclusion:** In this population, refusals of care was about 7%, which is in line with previous research.<sup>2</sup> Refusals of care were highest in motor vehicle accidents, either involving a pedestrian or traffic related. Refusals of care were also highest for “undefined injury location” most likely because patient was not evaluated, where pelvic region injuries were far less likely to refuse care mostly likely due to injury severity.<sup>3</sup> There was also a significant trend showing a decrease in refusals for care as age increased. It is unknown why January/February and time of day played significant roles in refusal of care and requires further analysis. Continued training on when a patient can refuse care (mental capacity), how to properly educate patients of the risks associated with refusing care, and detailed documentation of refusal is essential.

References:

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<b>Table 1. Odds of Refusal of Care by EMS for Injury-related Incidents</b>						
Variable	Variable Level	Total Injury Incidents* (N)	Refusal of Care (N)	Unadjusted Odds Ratio for Refusal of Care (95% CI)	Multi-variate N	Multi-variate ODDS Ratio
Gender	Male	10619	818(8%)	1.00	10160	1.00
	Female	12751	785(6%)	0.79(0.71-0.87)*	12267	0.96(0.86-1.07)
Age (years)	≤15	1506	137(9%)	1.00	1437	1.00
	16-30	4435	519(12%)	1.32(1.09-1.61)*	4261	1.40(1.14-1.72)*
	31-45	3156	297(9%)	1.04(0.84-1.28)	3025	1.14(0.92-1.43)
	46-60	3513	226(6%)	0.69(0.55-0.86)*	3382	0.80(0.64-1.01)*
	61-75	4212	229(5%)	0.58(0.46-0.72)*	4064	0.71(0.56-0.89)*
	≥76	6504	188(3%)	0.30(0.24-0.37)*	6258	0.40(0.31-0.50)
Urbanicity	Wilderness/Rural	6045	286(5%)	0.59(0.51-0.67)*	6017	0.71(0.62-0.81)*
	Suburban/Urban	16453	1285(8%)	1.00	16410	1.00
Anatomical Injury Location	Multiple Areas	139	4(3%)	0.60(0.22-1.64)	136	0.50(0.18-1.36)
	Undefined	2109	320(15%)	3.63(3.07-4.28)*	2033	3.15(2.65-3.74)*
	Head	4113	355(9%)	1.92(1.64-2.25)*	3962	1.90(1.62-2.24)*
	Neck/Back	2199	115(5%)	1.12(0.90-1.40)	2091	1.04(0.83-1.30)
	Extremities	5892	449(8%)	1.67(1.44-1.94)*	5647	1.67(1.43-1.95)*
	Chest	569	49(9%)	1.91(1.40-2.62)*	549	1.75(1.27-2.42)*
	Pelvic Region	1902	10(1%)	0.11(0.06-0.20)*	1826	0.17(0.09-0.32)*
	Acute Pain	6469	304(5%)	1.00	6182	1.00
Time of Year	Jan-Feb	3697	205(6%)	0.80(0.66-0.96)*	3549	0.79(0.65-0.97)*
	Mar-Apr	3415	223(7%)	0.95(0.79-1.14)	3271	0.94(0.77-1.13)
	May-Jun	4189	271(7%)	0.94(0.79-1.12)	4039	0.87(0.72-1.04)
	Jul-Aug	4319	324(8%)	1.10(0.93-1.30)	4145	1.02(0.85-1.21)
	Sep-Oct	3993	323(8%)	1.19(1.01-1.41)*	3804	1.16(0.97-1.38)
	Nov-Dec	3779	260(7%)	1.00	3619	1.00
Incident Time of Day	00:00-5:59am	2636	181(7%)	0.96(0.80-1.15)	2540	0.99(0.83-1.20)
	6:00am-11:59am	6212	331(5%)	0.74(0.63-0.85)*	5958	0.86(0.73-1.00)*
	12:00-5:59pm	8470	662(8%)	1.11(0.98-1.26)	8097	1.17(1.02-1.33)*
	6:00pm-11:59pm	6074	432(7%)	1.00	5832	1.00

\*Significant at < 0.05  
 \*Includes: Patient Treated & Transported (By EMS, Private Vehicle, or Law Enforcement), Patient Treated & Released (per protocol), Patient Refused Evaluation/Care, Patient Treated, Released (AMA)  
 Excludes: Dead at Scene, Patient Evaluated No treatment/Transport needed