

# Gender disparities in EMS management of female presentations of cardiac disease

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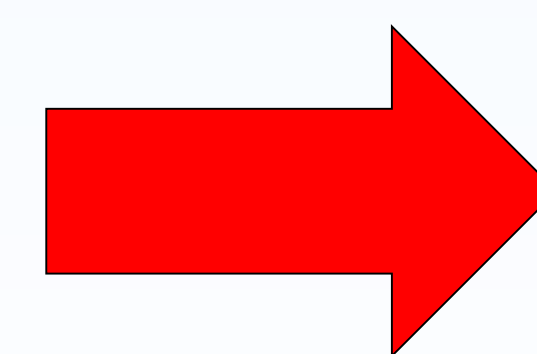
## Background

- Prior studies demonstrate differences in the Emergency Medicine Services (EMS) management of women with chest pain
- These studies have been limited by small populations and geographical distributions.
- Given the known sex-based differences in the identification, management and outcomes of AMI, we sought to further investigate sex-based differences in EMS response and intervention using a national database.

## Methods

- This study utilized the National Emergency Medical Services Information System 2016 publicly available data set, consisting of over 50 million EMS activations.
- We examined calls for the symptom of chest pain along with the various interventions completed by EMS providers

Symptom:  
Chest Pain



### EMS interventions

- EKG
- Aspirin
- Sublingual nitroglycerine
- Morphine
- Oxygen
- STEMI activation

## Results

- There were 1,214,757 cases of EMS primary impression (diagnosis) of chest pain.
- Cases of cardiac arrest and/or if CPR were excluded

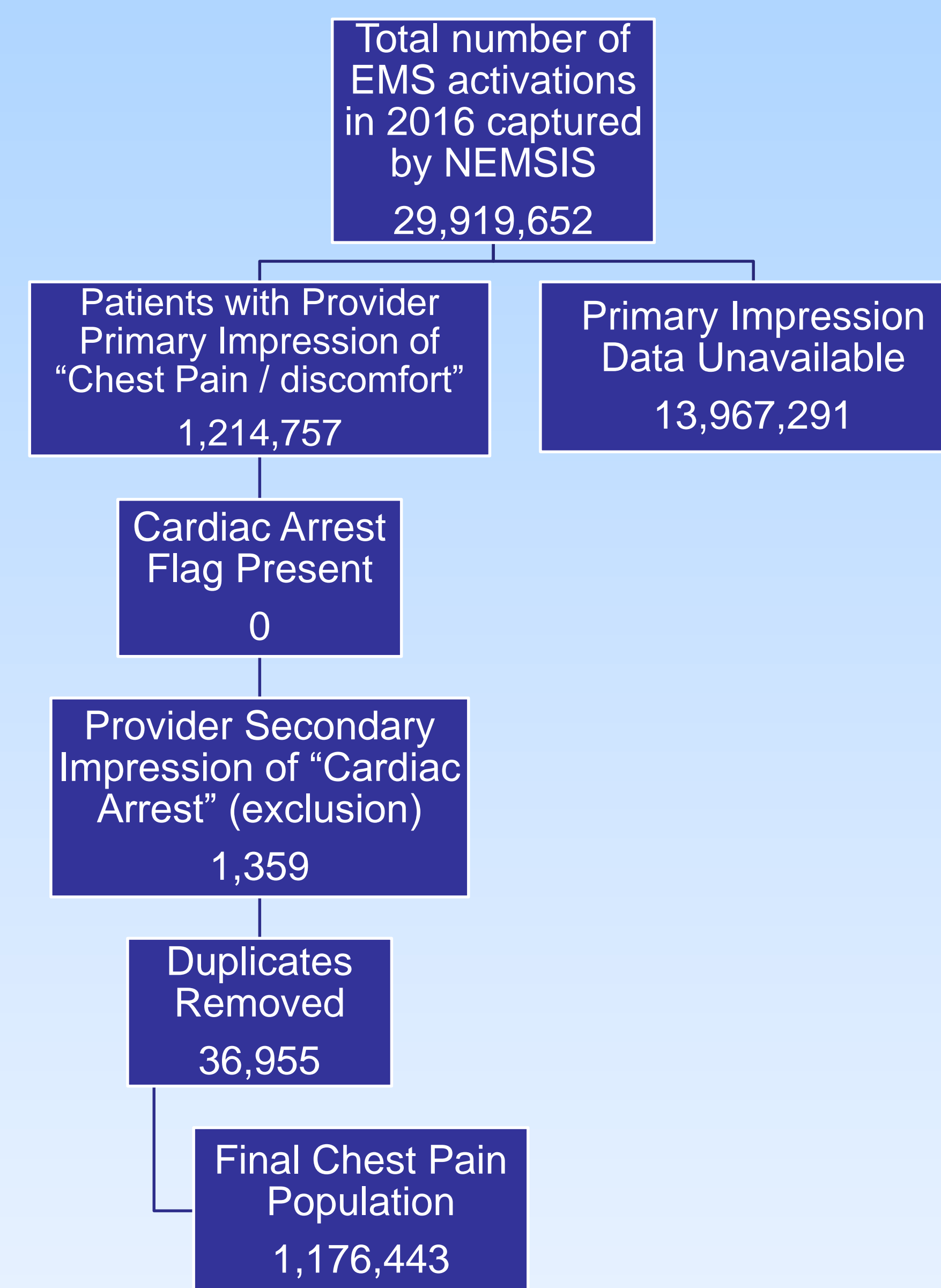


Figure 1. Flowsheet of selection of chest pain events

Age (years)	Total Patients
0-18	17,880
19-64	691,004
65+	461,338
Unavailable	6,221
<b>Sex</b>	
Male	587,466
Female	581,257
Other or Refused	7,720
<b>Race</b>	
White	200,994
Black or African American	621,501
Other	45,656
Not Recorded or Refused	308,292
<b>US Census Division</b>	
East North Central	161,864
East South Central	56,252
Middle Atlantic	164,148
Mountain	70,737
New England	49,581
Pacific	102,379
South Atlantic	437,054
Territories	1,219
West North Central	84,632
West South Central	48,577
<b>Urbanicity</b>	
Urban	915,513
Suburban	92,542
Rural	97,750
Wilderness	29,668
Missing	40,970

Table 1. Demographics of total chest pain events

- Men and women were equally likely to receive an ECG, aspirin and sub lingual nitro.
- Women were more likely to receive anti-emetics (20% of all cases) vs. men (15% of all cases) while men were significantly more likely to receive morphine than females (15% of men and 9% of women).
- Cardiac catheterization field activations were twice as likely for men (0.6%) as compared with women (0.3%).

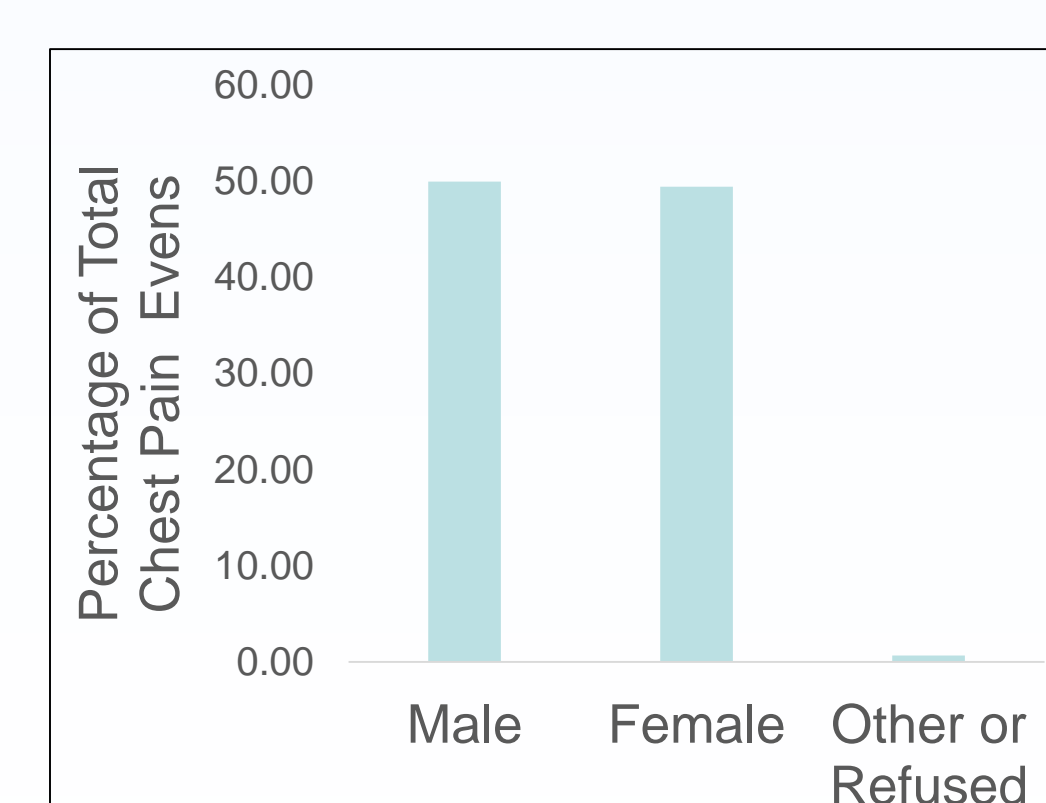


Figure 2. Percentage of events by gender

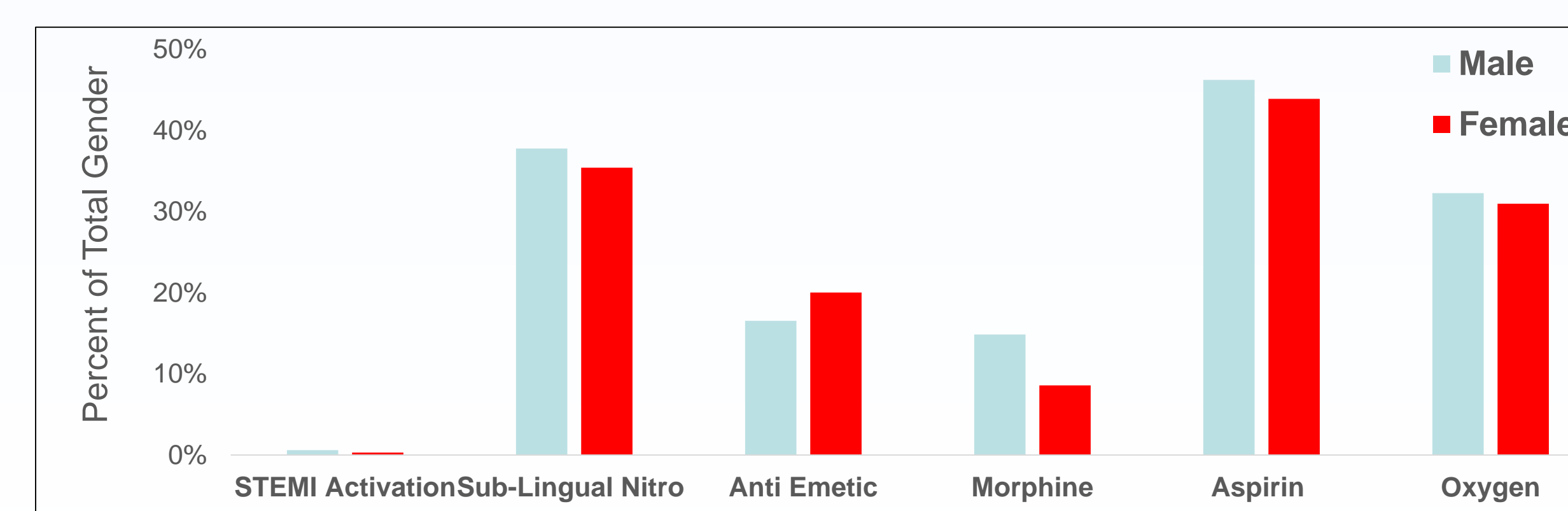


Figure 3. Percentage of interventions by gender

## Conclusions

- We demonstrate that women are as likely as men to have an EKG performed.
- While field activations of the catheterization lab were twice as common in men, the medical management of chest pain varied by sex.
- Women were more likely to receive antiemetic treatments while men were more likely to be treated with morphine.
- Chest pain in women may be experienced differently and, thus, elicits different therapeutic responses, but whether this care is appropriate, and whether there are missed opportunities to treat acute coronary syndrome is unknown.
- Our study reveals that differences in care extend beyond the reaches of the hospital; it is unknown whether these patterns of care contribute to delayed diagnosis, differential hospital treatment strategies and outcomes for acute coronary syndrome, though more studies are needed.

## Sources

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