



Prehospital management of suspected seizures: cross-sectional study in a regional ambulance service

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Introduction

Suspected seizures result in a large number of emergency calls to ambulance services: 3% of all calls to EMAS in 2011/12 were due to seizures which makes seizure the sixth highest volume single issue call to the service. Most of these patients are conveyed to emergency departments (ED) which accounts for most of the health costs.

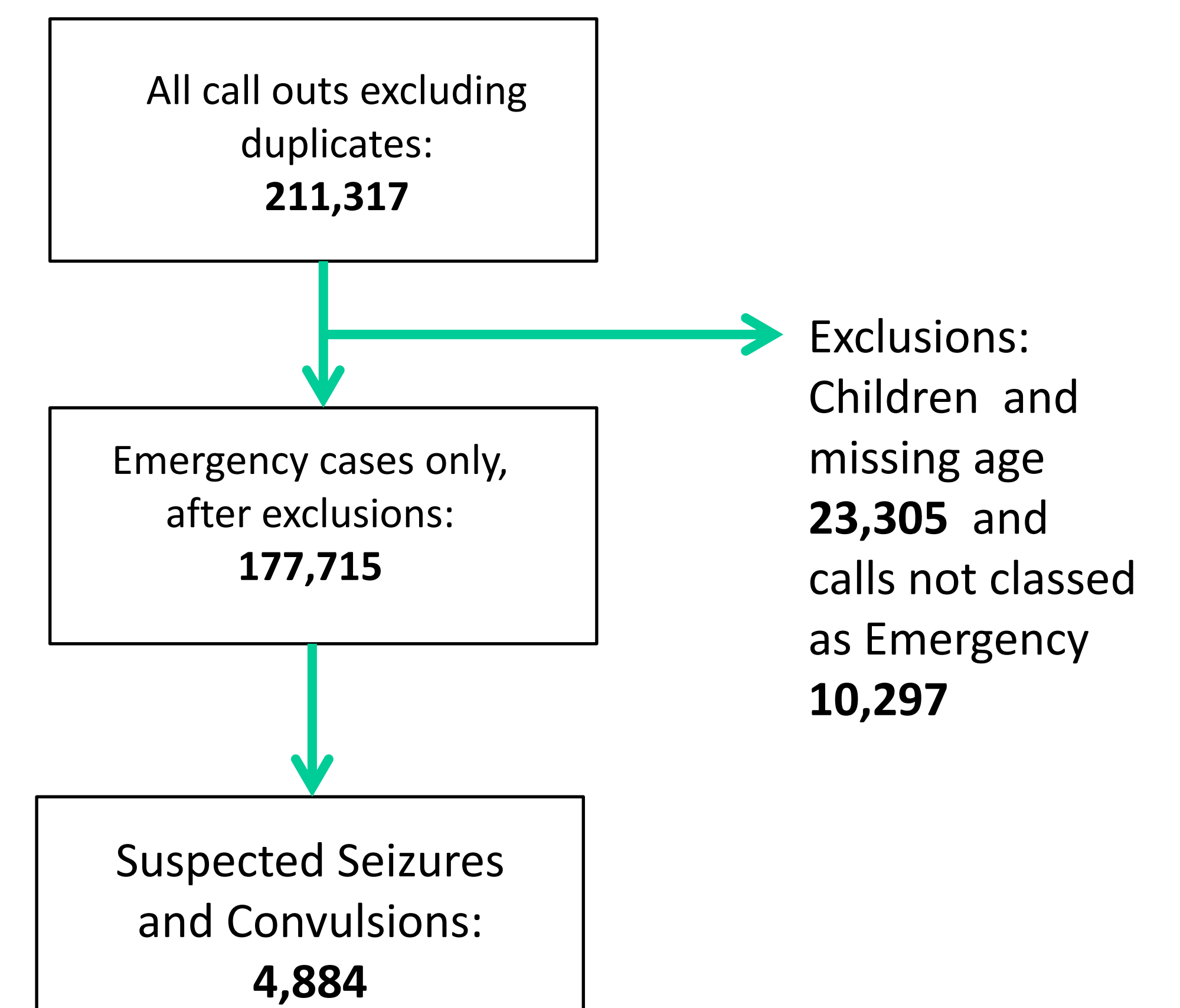
Aims and objectives

- To explore pre-hospital care for suspected seizures.
- To identify predictors for transport to hospital following a suspected seizure.

Method

We conducted a cross-sectional study of cases between 1 August 2011 and 31 July 2012 to which a resource (ambulance or rapid response vehicle) was dispatched and where the primary chief complaint or secondary chief complaint (or tertiary) was "convulsions / fitting". We used descriptive statistics to summarise ambulance service processes, response times, patient demographics, clinical details, physiological indices and treatments. We used regression analysis to identify predictors of transport to hospital.

Data extraction process



Results

Demographics

| | All other cases | | Seizures only | | χ^2 |
|-------------------|-----------------|-------|---------------|-------|----------|
| | N1=172831 | N1(%) | N2=4884 | N2(%) | |
| Sex | | | | | P<0.001 |
| Female | 88137 | 53.2% | 2096 | 44.9% | |
| Male | 77580 | 46.8% | 2571 | 55.1% | |
| Ethnicity | | | | | p=0.376 |
| Asian | 1547 | 1.7% | 46 | 1.6% | |
| Black | 654 | 0.7% | 13 | 0.5% | |
| Mixed | | | | | |
| Other | 771 | 0.8% | 29 | 1.0% | |
| White | 90289 | 96.8% | 2735 | 96.0% | |
| Age group (years) | | | | | P<0.001 |
| 16-33 | 29253 | 16.9% | 1725 | 35.3% | |
| 34-49 | 25733 | 14.9% | 1483 | 30.4% | |
| 50-64 | 26487 | 15.3% | 850 | 17.4% | |
| over65 | 91358 | 52.9% | 826 | 16.9% | |
| IMD | | | | | P<0.001 |
| 1 | 18840 | 37.7% | 724 | 45.3% | |
| 2 | 10479 | 20.9% | 317 | 19.8% | |
| 3 | 7981 | 16.0% | 228 | 14.2% | |
| 4 | 7653 | 15.3% | 218 | 13.6% | |
| 5 | 5073 | 10.1% | 113 | 7.1% | |

Results

Regression

| Treated and Transported to hospital | Coeff. | p-value | [95% Confidence Interval] |
|--------------------------------------|-------------|-------------|---------------------------|
| Sex | 0.04 | 0.07 | 0.00 0.08 |
| Age group | | | |
| 34-49 | 0.05 | 0.07 | 0.00 0.10 |
| 50-64 | 0.07 | 0.02 | 0.01 0.14 |
| over65 | 0.05 | 0.14 | -0.02 0.12 |
| Normal vs Abnormal (higher or lower) | | | |
| blood glucose | 0.04 | 0.41 | -0.06 0.15 |
| respiratory rate | 0.08 | 0.01 | 0.02 0.14 |
| temperature | 0.10 | 0.00 | 0.05 0.14 |
| systolic BP | 0.01 | 0.79 | -0.05 0.07 |
| heart rate | 0.11 | 0.00 | 0.07 0.16 |
| o ₂ saturation | 0.00 | 0.89 | -0.06 0.05 |
| AVPU | | | |
| V | 0.07 | 0.02 | 0.01 0.12 |
| P | 0.08 | 0.13 | -0.02 0.17 |
| U | 0.07 | 0.23 | -0.04 0.18 |
| supplementary oxygen (Y/N) | 0.04 | 0.04 | 0.00 0.08 |
| diazepam (Y/N) | 0.22 | 0.00 | 0.12 0.32 |
| GCS (15 / <15) | 0.01 | 0.01 | 0.00 0.02 |
| ECG (Y/N) | 0.03 | 0.68 | -0.15 0.10 |
| time on scene (<1/2 hr is reference) | | | |
| 1/2 hr to <=1 hr | 0.09 | 0.02 | 0.02 0.17 |
| > 1 hr to < 1.5 hr | 0.20 | 0.00 | 0.14 0.26 |
| > 1.5 hr | 0.12 | 0.00 | 0.04 0.19 |
| News score (3 is reference) | | | |
| 0 | 0.26 | 0.00 | 0.13 0.39 |
| 1 | -0.29 | 0.20 | -0.73 0.15 |
| 2 | -0.04 | 0.88 | -0.63 0.54 |

Findings

For patients presenting with seizures to ambulance services we found that 53% of calls were from male patients, and 65% of calls were from those aged under 50 years. Patients were more likely to come from deprived areas.

Regression model results

The regression model suggests that patients with suspected seizures are more likely to be transported if they are aged under 65 years, have respiratory rate (<12 or >20 breaths per minute), temperature (<36.1 °C or >38.0 °C), heart rate (<51 bpm or >90 bpm), needing supplementary oxygen, administered diazepam or GCS less than 15.

Limitations

Use of electronic clinical records varied within EMAS and this was a potential source of bias in the data.

Further work

There is a need for more research in prehospital care for suspected seizures.

Acknowledgements

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