

# Predictors of emergency department attendance following NHS 111 calls for children and young people: analysis of linked data

**Authors:** Cicely Robinson,<sup>1</sup> Arne Wolters,<sup>1</sup> Adam Steventon,<sup>1</sup> Dougal Hargreaves,<sup>2</sup> Rebecca Pope<sup>1</sup> and Ian Maconochie<sup>3</sup>

## Aims

NHS 111 is a telephone-based advice service that employs non-clinical call-handling staff to triage calls using computerised clinical decision support software. The safety of the service is contested, particularly for children and younger people, and there have been concerns that its introduction has increased emergency department utilisation. We examined predictors of emergency department attendance among out-of-hours NHS 111 callers.

## Methods

We studied out-of-hours calls made to NHS 111 for people aged under 15 years in three areas of north-west London between July 2013 and February 2015 (n=11,279), using linked NHS 111, GP and secondary care data. We assessed agreement between the advice by NHS 111 given regarding emergency care and subsequent attendances using Cohen's kappa.

Logistic regression tested the association between emergency department attendances and the advice given, patient characteristics, and features of the telephone call and wider healthcare system. We also examined predictors of emergency inpatient admissions.

## Results

The vast majority (87.3%) of NHS 111 calls happened outside of hours. NHS 111 advised 18.5% of callers to attend emergency departments, and 63.8% of these attended within 10 hours. Overall concordance between the advice regarding emergency care and subsequent attendances was moderate (kappa 0.51). Two-thirds of callers were transferred by NHS 111 to out-of-hours general practice care. Callers who spoke to a GP as part of the NHS 111 call episode were less likely to attend emergency departments than other callers (adjusted odds ratio 0.54, 95%

confidence interval (CI) 0.47–0.62) but were no less likely to be admitted (adjusted odds ratio 0.95, 95% CI 0.65–1.38).

## Conclusions

Our finding that patients are around half as likely to attend emergency departments if they speak with an out-of-hours GP requires further scrutiny to address confounding. But, if valid, this study suggests that other areas of England might reduce emergency department utilisation by integrating NHS 111 more closely with out-of-hours GP services. ■

## Conflict of interest statement

N/A.

**Authors:** <sup>1</sup>The Health Foundation, London, UK; <sup>2</sup>UCL Institute for Child Health, London, UK; <sup>3</sup>Royal College of Paediatrics and Child Health, London, UK