

**Paediatric hospitalisation related to medications administration errors of non-opioid analgesics, antipyretics and antirheumatics in England and Wales: a longitudinal ecological study**

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**Abstract: Objective:** This study aimed to explore paediatric hospitalisation related to medication administration errors (MAEs) of non-opioid analgesics, antipyretics and antirheumatics in England and Wales.

**Design:** An ecological study.

**Setting:** A population-based study on hospitalised patients in England and Wales. Hospital admission data were extracted from the Hospital Episode Statistics database in England and the Patient Episode Database for Wales for the period between April 1999 and April 2020. Admissions cause was confirmed using the diagnostic codes T39.0-T39.9.

**Participants:** Paediatric patients aged 15 years and below who were hospitalised at all

National Health Service (NHS) trusts and any independent sector funded by NHS trusts. **Primary outcome measure:** Hospitalisation rates related to MAEs of non-opioid analgesics, antipyretics and antirheumatics.

**Results:** The yearly number of admissions for MAEs associated with non-opioid analgesics, antipyretics and antirheumatics experienced a notable growth of 21.7% over the span of two decades, rising from 4574 cases in 1999 to 5568 cases in 2020. The observed increase

demonstrates a significant upward trend in hospital admissions rate, with a 12.3% growth from 46.16 per 100 000 individuals in 1999 to 51.83 per 100 000 individuals in 2020 (95% CIs 44.83 to 47.50 and 50.47 to 53.19, respectively, trend test,  $p < 0.05$ ). The therapeutic categories that exhibited the highest frequency of MAEs were '4-aminophenol derivatives' and 'other nonsteroidal anti-inflammatory drugs', accounting for 79.3% and 16.0% of cases, respectively. It is worth noting that there was a significant increase of 28.9% in hospitalisations linked to MAEs specifically associated with '4-aminophenol derivatives.'

**Conclusion:** The research revealed a notable rise in the overall yearly number of hospital admissions associated with MAEs within the paediatric population. This study emphasises the necessity for additional research aimed at mitigating the potential hazards associated with the ingestion of these medications, particularly within susceptible demographics, such as young children