Increase in emergency admissions to hospital for children aged under 15 in England, 1999–2010: national database analysis

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Impetus for research

- Despite the overall health of children improving, the number of children being admitted to hospital as emergencies is rising in the English National Health Service (NHS)
  - Unplanned admissions strain finite healthcare resources and place children at risk of hospital-acquired infections, medical errors, drug reactions and emotional trauma

- Why are admissions increasing?
  - Several major *structural reforms* to the NHS in the past decade
    - 2000: Four-hour wait target introduced in A&E
    - 2004: New contract for general practice
  - Changes in hospital sector (e.g. short-stay units)
  - Changing patterns of health service use
Research aim

- If there had been a *lowering* of the threshold for hospital admission as a result of changes in the UK healthcare system, we should observe an *escalation* in rate of emergency admissions for **ambulatory-care sensitive conditions**

- Ambulatory or primary care sensitive conditions are conditions that are usually managed at *home* or in the *community*
  - Used as measure for access and quality of primary care in numerous countries (e.g. Canada, US and Australia)

- Ambulatory-care sensitive conditions have yet to be evaluated for children in England
Methodology

- Population-based study of emergency hospital admission rates for children aged under 15 using Hospital Episode Statistics and population estimates for England from 1999 to 2010
  - Length of stay: <1 day, 1-2 days and >2 days
  - Age groups: <1, 1-4, 5-9 and 10-14 years

- Outcome measure: Trends in rates of emergency admission to hospital

- Selected eight childhood conditions and ICD-10 codes
  - **Acute infections**: URTI, LRTI, UTI, gastroenteritis and dehydration
  - **Chronic conditions**: asthma, diabetes and epilepsy
  - **Other vaccine-preventable conditions** (e.g. measles)
Figure 1: Number of emergency admissions of children aged less than 15 years in England each year 1999-2010
Figure 2: Percentage change since 1999, expressed as cumulative change from 1999, in rates of admissions of different duration by age group.
Figure 4: Percentage change since 1999, expressed as cumulative change from 1999, in rates of admissions of different duration
Key findings

- Continued rise in number of emergency admissions of children, especially children <5 years
  - If rate continues to increase at 3% per year in children <5 years, population projections suggest that 731,000 children will be admitted as emergencies in 2020 which is 230,000 more children than are currently admitted.

- Initial rise in admission rates co- incidental with gradual enforcement of 4-hour A&E wait target between 2000-2003.

- Escalating increase after 2003 suggests a systematic failure of the NHS, both in primary care and in hospital, in the assessment of children with acute illness that could be managed in the community.
**Why are rates increasing?**

<table>
<thead>
<tr>
<th>Increase in number of children being <strong>taken to primary care</strong> for assessment.</th>
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<tr>
<td>Decrease in <strong>thresholds in primary care for referral</strong> of children for hospital assessment.</td>
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<td>Increase in the number of <strong>parents being advised</strong> by NHS Direct to go to hospital.</td>
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<tr>
<td>Increase in the number of <strong>parents taking their child straight</strong> to hospital.</td>
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<td>Decrease in willingness of parents and carers of children to <strong>tolerate uncertainty</strong>.</td>
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<td>Increase in decisions to admit rather than further observe in order to reach the <strong>four hour A&amp;E wait target</strong>.</td>
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<td>Decrease in <strong>exposure to (and training for) triage</strong> of children with potentially serious illness during general practitioner training.</td>
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<td>Decrease in hospital clinicians ability to <strong>triage effectively</strong> or to accept risk.</td>
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<td>Introduction of <strong>rapid diagnostic technologies</strong> without clear understanding of their diagnostic value in situations where disease prevalence is low.</td>
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<td>Decrease in the length of stay of children admitted because of more <strong>rapid and effective treatment in short-stay units</strong> for acute conditions such as asthma and mild dehydration.</td>
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Impact: 1) Dissemination

- **BMJ Journals Press Release, commissioned editorial and editor’s choice in Arch Dis Child**
- Significant media attention
Impact: 2) Health policy

- Prompted official response from the President of the Royal College of Paediatrics and Child Health (RCPCH)
  - Submitted as written evidence to the Parliamentary Health Committee on the urgent need to review emergency care (July 2013)

3. Gill and colleagues argue that although the reasons behind this substantial rise are multifactorial, they suggest that it indicates “a systematic failure of the NHS in assessing children with acute illness that could be managed in the community.” Whilst they decline to attribute causation to any particular part of the service, they suggest that improvements could be made in both primary care (by general practice, out-of-hours care and NHS Direct) and in hospital (by emergency departments and paediatricians) in the assessment of children with acute illness that could be better managed in the community.

- Highlighted urgent need to invest in research into the “causes of this growth” and into “innovative models...to deal with this increased demand”
Impact: 3) Academia

- Cited 18 times
  - National Children’s Bureau
  - Lancet series on Health in Europe
- Viewed >6200 times
- Twitter journal club
- Stimulated spin-off work in Scotland to evaluate whether trends are similar (Sept 2013)
Impact: 4) Service delivery

- Provoked a broader discourse on the delivery of urgent care to children, stimulating several local projects
  - Wessex wide project to reduce unplanned admissions (April 2014)
‘Post-hoc’ reflections

1. Cautiously interpret results from large administrative databases

1. Importance of involving (front-line) clinicians throughout research

2. All interventions have potentially unintended effects

1. We need to know where we are before we know where we need to go next
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- CIHR Institute of Health Services and Policy Research (CIHR-IHSPR)
References


Figure 3: Percentage change since 1999, expressed as cumulative change from 1999, in rates of admissions of children for the acute infections normally managed in primary care.