

TRENDS IN PAEDIATRIC HOSPITAL ADMISSION AND PRESCRIBING FOR ASTHMA IN IRELAND OVER A TEN YEAR STUDY PERIOD.

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Background:

- Ireland has the 4th highest recorded rate of asthma in the world and its prevalence worldwide is rising.¹
- However, hospital admissions for asthma have decreased in many developed countries.
- It has been hypothesised that this downward trend in hospitalisations may be due to better prescribing and better primary care.²

¹ Asher *et al* (2006) Worldwide time trends in the prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and eczema in childhood: ISAAC Phases One and Three repeat multi-country cross-sectional surveys. *Lancet*, **368**: 733–434.

² Korhonen *et al*, (2002). Hospitalization trends for paediatric asthma in eastern Finland: a 10-yr survey. *Eur Respir J.*, **19**: 1035–1039

Background:

- No published studies in Ireland on examining trends in hospital admission in children with asthma and the possible association between prescribing patterns for asthma medications.

Aim of the study:

- To investigate ten year hospital admissions and prescribing trends for children with asthma in Ireland.

Method:

- **Data extracted from Health Atlas database**
 - **Morbidity data** based on HIPE data. All hospital discharges for patients aged <15 years with principal diagnosis of asthma (ICD-9 Codes 493) from 2000-2004 and (ICD-10 Codes J45-J46) from 2005-2009.
 - **Prescribing data** based on Primary Care Reimbursement System (PCRS). Asthma-related drugs were identified using ATC Codes R03

Statistical analyses:

- Data analysed using JMP, SAS and StatsDirect.
- Rates were age- standardized to the EU standard population (direct method).
- Poisson regression was used and significance set at $p < 0.05$.
- Further trend analysis was carried out in StatsDirect.

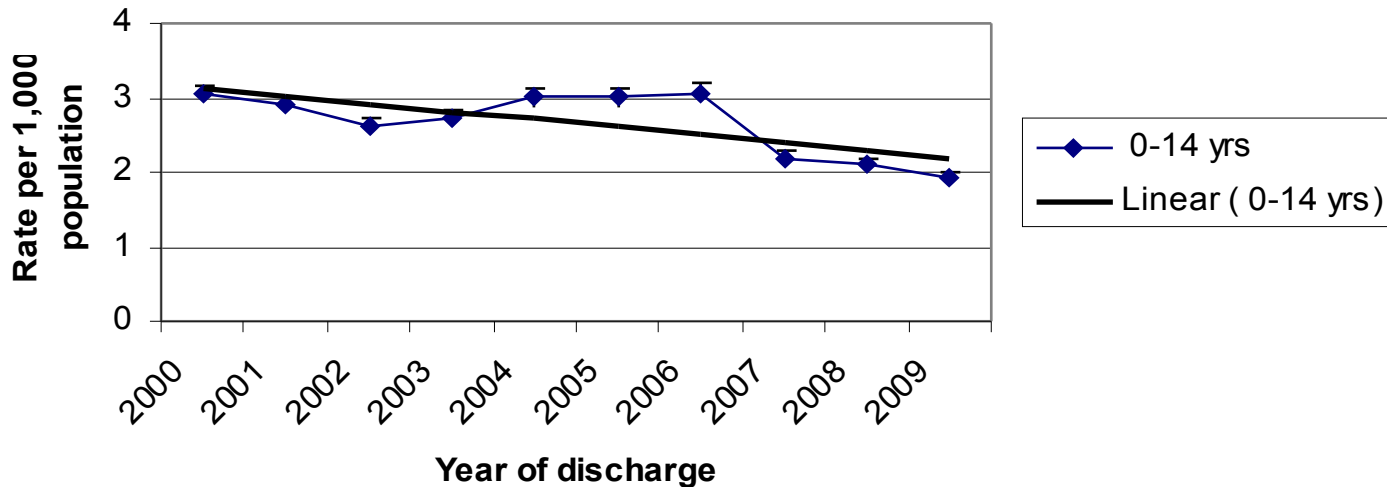
Results- No. discharges/patients <15 yrs with principal diagnosis asthma:

Year	No. of discharges	No. of Patients
2000	2,534	2,241
2001	2,411	2,129
2002	2,171	1,900
2003	2,280	2,010
2004	2,536	2,186
2005	2,567	2,226
2006	2,654	2,338
2007	1,935	1,656
2008	1,910	1,664
2009	1,799	1,565
Total	22,797	19,915

*12% are repeat admissions

Results:

Figure 1. Age standardised hospital discharge rate 1,000 population for those aged 0-14 year with a principal diagnosis of asthma.

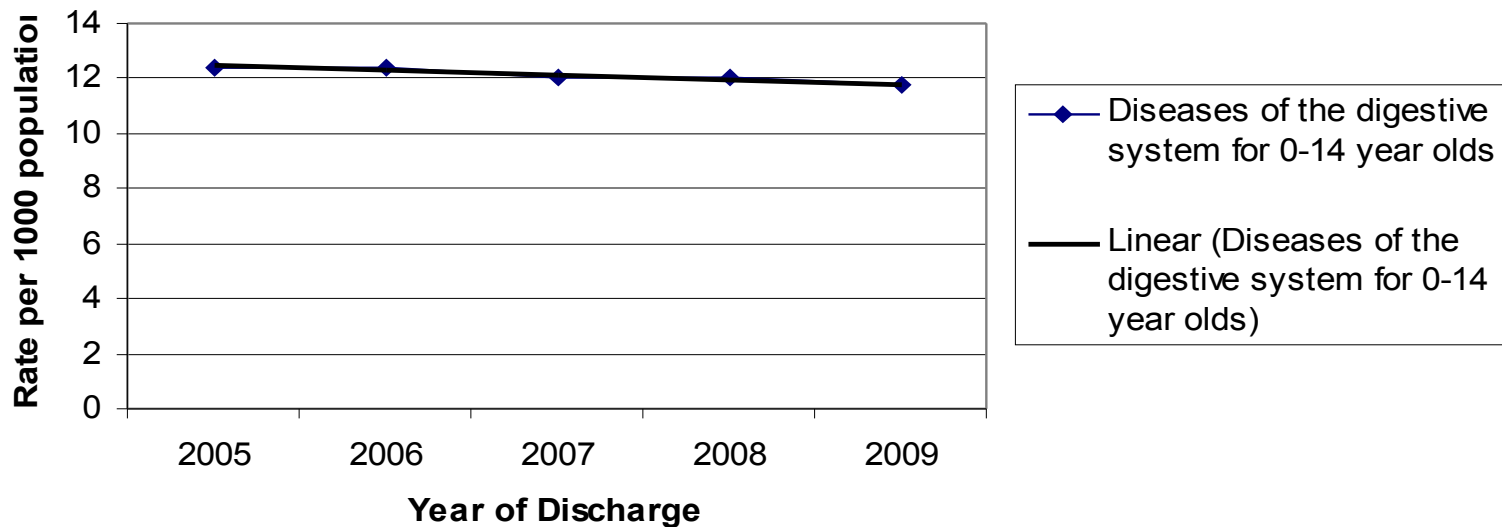


JEAN DO YOU KNOW OF ANY REASON WHY SIGNIFICAN REDUCTION IN HOSP. DISCHARGES IN 2007??

Test for trend: $p=0.03$

Results:

Figure 2. Age standardised discharge rate per 1,000 population with principal diagnosis of diseases of the digestive system (ICD-10 K00-K93) for 0-14 year olds.

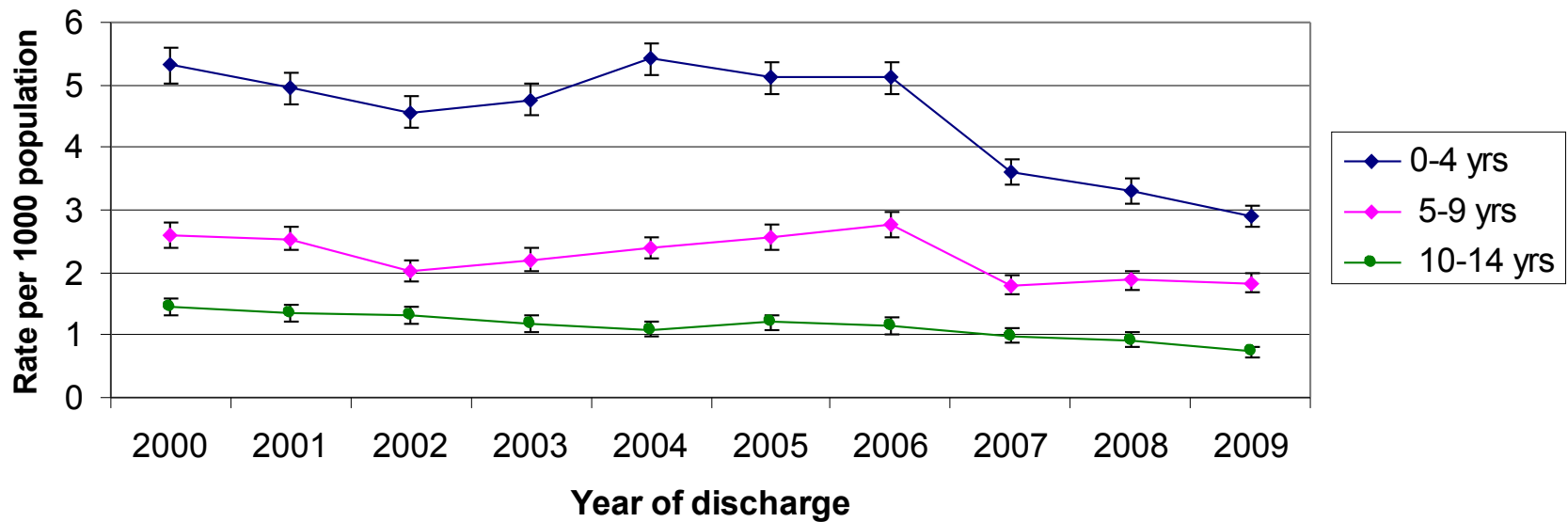


JEAN: THIS IS IN HERE TO SHOW THAT THE REDN. IN HOSP ADMS IN 2007 NOT SEEN IN OTHER DISEASES SO LIKELY TO BE REAL!

Test for trend: $p > 0.08$

Results:

Figure 3. Age-specific rates for those those with a principal diagnosis of asthma on hospital discharge.



Significant linear trend for age-groups 0-4 years and 10-14 years.

Results-Demographic profile:

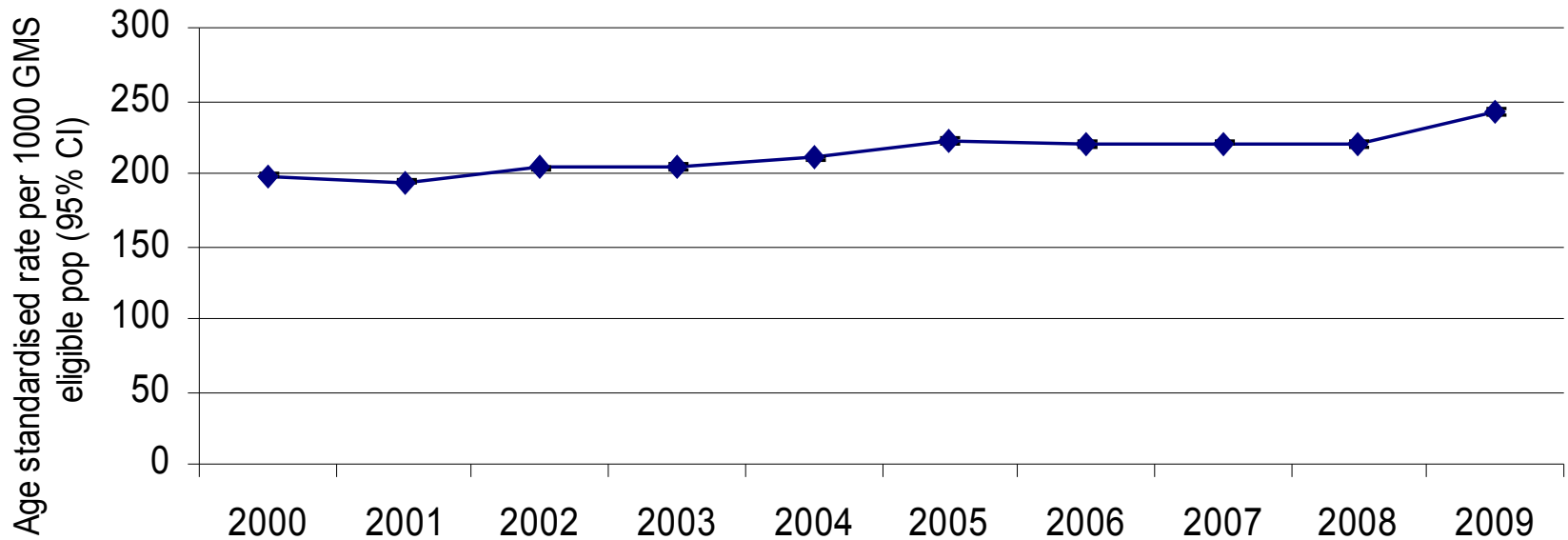
- Male to Female Ratio 1.82:1
- Most common age group – 0-4 years
- 22,705 (99.5%) discharged home
- 8,531 (37.4%) discharges medical card holders
- Median LOS 2 days (range 1-47)
- Significant reduction in Median LOS from 2006 onwards (2 days vs. 1 day, $p < 0.001$)
- 46,363 bed days used over ten year study period.
- 155 (0.7%) discharges involved stay in ICU – 304 ICU bed days.

Results-Prescribing data:

- In 2000, 50,447 children received asthma medications which had increased to 73,184 children by 2009.
- Males and the youngest age were most likely to receive asthma medication.

Results-Prescribing

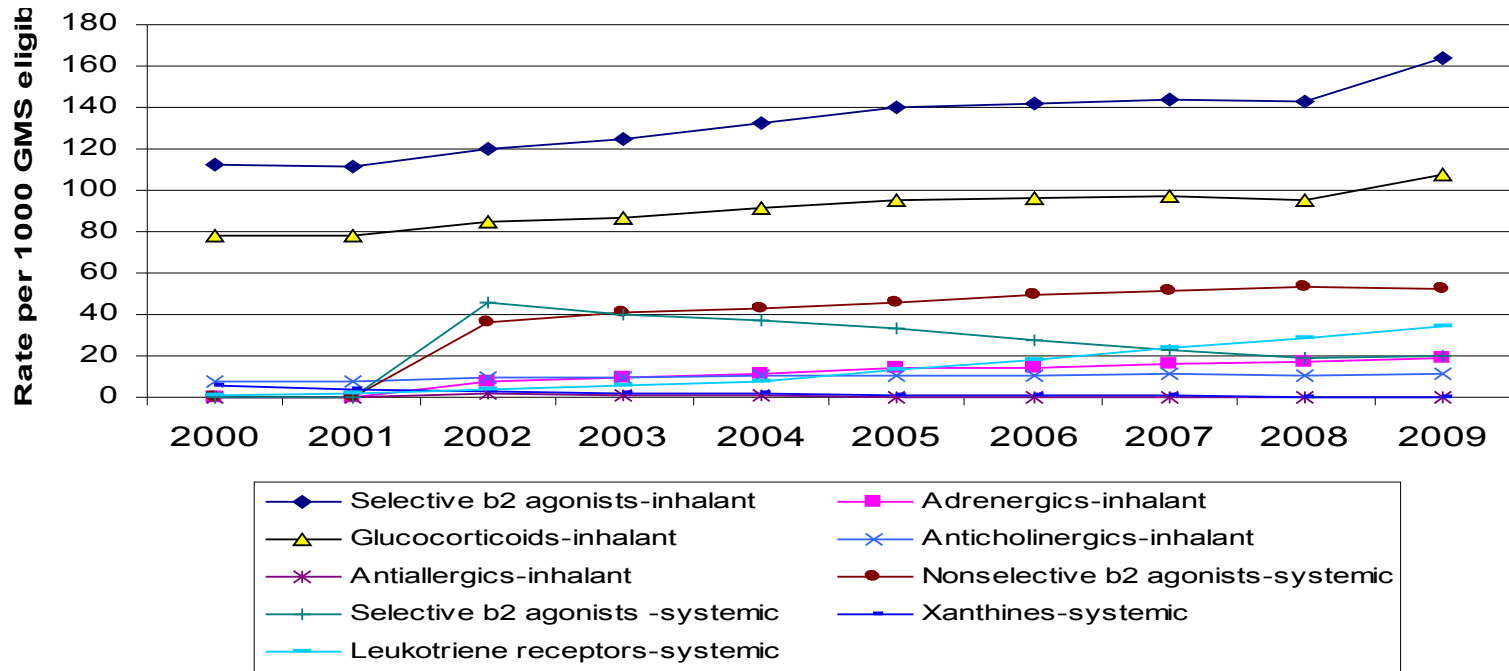
Figure 3. Age-standardised rate for asthma prescribing in children (0-15 years)
2000-2009



*significant upward linear trend, $p < 0.001$

**NOTE FOR JEAN: This is all RO3 prescribing for children
- is this what you would like to see - is this evidence of
good prescribing???**

Figure 4. Prescribing of asthma medications to children (0-15yrs) for years 2000-2009 by type of drug.



Strengths and Limitations:

- First study of its kind in Ireland to look at prescribing patterns and hospital discharges.
- Study covers a long time period – essential to minimize random variation.
- Although there was a change in ICD code during study period it has been suggested that ICD-9 and ICD-10 codes for asthma are strongly correlated –so decrease not likely to be a coding issue.

Strengths and Limitations:

- Morbidity data from HIPE based on those <15 years for ease of calculation of age standardised rates.
- Prescribing data from PCRS based on data obtained from the General Medical Services (GMS) scheme different age groups.
- Eligibility for the PCRS scheme is means-tested for those under 70 yrs of age.
- Cannot be considered representative of the entire population - socially disadvantaged and elderly over-represented.
- Captures approx. 28% of all prescribing in this age-group

Strengths and Limitations:

- Data from PCRS on demographic details of patient, information of drugs prescribed but **no** diagnostic data.
- No data on A& E attendances the reduction in hospital admissions may be due to better care in A&E.
- We are currently working with A&E consultants.

Summary:

- The number and age standardised rate for hospital discharges for asthma has decreased significantly over the 10 year study period- similar to findings in Finland.
- There has also been a significant increase in the number and rate of prescribing of asthma drugs (**JEAN WHICH DRUG IS INDICATIVE OF GOOD PRESCRIBING?**)
- .
- This study suggests that **increased or can I say better???** (**IS THIS TRUE**) prescribing is associated with decreased risk of hospitalisation for children with asthma.
- Further studies need to be carried out to determine if there has been a concomitant decrease in A&E admissions for paediatric asthma over the study time-period.

Acknowledgements:

- All co-authors in particular Dr. Kathleen Bennett who provided us with the PCRS data and Dr. Howard Johnson for providing the Health Atlas Data.