

# Asthma in Ireland

- Ireland has the fourth highest prevalence of asthma in the world<sup>1,2</sup>
- 7.1% of 18+ population have asthma<sup>3</sup>
- 18.9% of 13 – 15 year olds have asthma<sup>4</sup>
- 38.5% of 13 – 15 year olds reported wheezing<sup>4</sup>
- More than 1 person a week dies from asthma<sup>5</sup>
- 29% of asthma patients miss school or work<sup>6</sup>
  - Adults miss 12 days a year on average
  - Children miss 10 days a year on average

The Asthma Demonstration Project in Primary Care was carried out by the Asthma Society of Ireland in 2009 / 2010 and found that<sup>7</sup>:

- 8% had been admitted to hospital
- 14% attended A&E in the last year and
- 27% had been nebulised in the previous year
- 45% of asthma patients had at least once course of oral steroids in the previous year
  
- There was an average of 4,753 asthma admissions per year from 2005 – 2010<sup>8</sup>
- A&E admissions are estimated at four times the admission rate, approx 19,000 per annum
- The average length of stay with an asthma admission was 3.13 days<sup>8</sup>
  - Patients under 15 average length of stay was 1.9 days
  - Patients over 65 average length of stay was 6.2 days

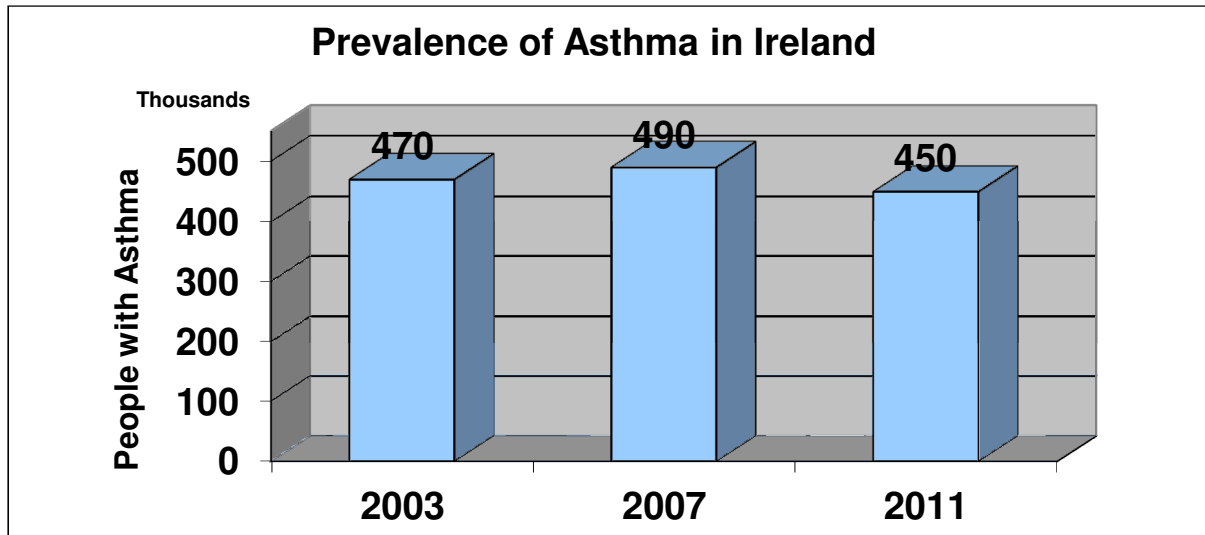
Asthma is one of the most common chronic diseases in the world. It is estimated that around 300 million people in the world currently have asthma. Considerably higher estimates can be obtained with less conservative criteria for the diagnosis of clinical asthma<sup>2</sup>.

Asthma has become more common in both children and adults around the world in recent decades. The increase in the prevalence of asthma has been associated with an increase in atopic sensitisation, and is paralleled by similar increases in other allergic disorders such as eczema and rhinitis<sup>2</sup>.

There has been a very considerable increase in asthma prevalence in developed countries over the last two decades. While asthma tends to run in families, the reason for the increase is not solely genetic. It is more likely a combination of environmental and genetic risk factors - either due to a great change in the external environment over this period (allergic substances, pollution, and smoking) or a change in our bodies' response to the external environment. Ireland remains at the top of list of countries with the highest prevalence of asthma behind Australia, New Zealand and the UK<sup>2</sup>. (Adapted from the GINA Global Burden Report 2003)

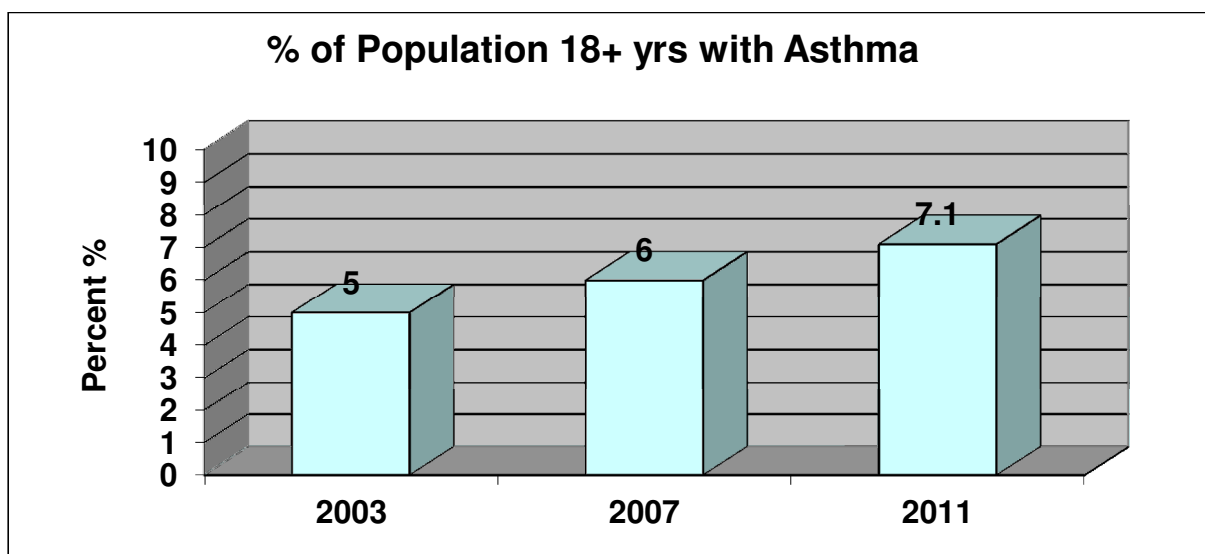
## Prevalence:

The GINA Global Burden of Asthma Report in 2004 found that the highest asthma prevalences were in developed countries with Ireland fourth behind the United Kingdom (> 15%), New Zealand (15.1%), Australia (14.7%), the **Republic of Ireland (14.6%)**, Canada (14.1%), and the United States (10.9%)<sup>1</sup>.



The Quarterly National Household Survey (QNHS) on Health with the Central Statistics Office (CSO) published in 2002 showed that asthma was the second most prevalent single condition reported in proportional terms with approximately 5% of the 18+ aged population indicating that they have at one point or another suffered from the condition, with an estimated 470,000 people in Ireland with asthma<sup>9</sup>.

The prevalence of asthma rose to approx 490,000 people in 2007 with 6% of the 18+ aged population with the condition<sup>10</sup> and in the recent years we have seen the number plateau at an estimated 450,000. The 2011 QNHS on Health showed 7.1% of the population over 18 has doctor diagnosed asthma<sup>3</sup>.



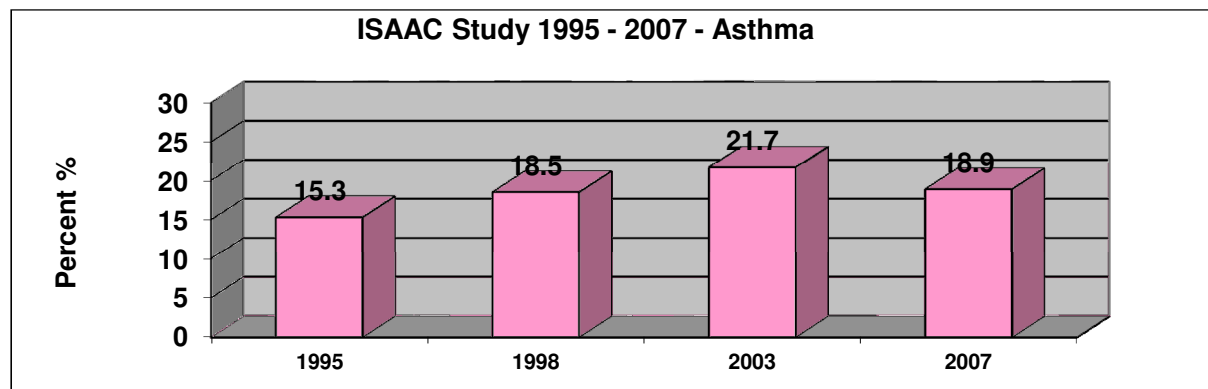
As can be expected with an ageing population, we have seen a rise in the adult population with asthma but, we have also begun to see a slow decline in the number of children with asthma over the period of 2003 – 2007. The ISAAC should be repeated in 2012 – 2013 to see if this decline is continuing.

**The International Study of Asthma and Allergies in Childhood (ISAAC)** is a unique worldwide epidemiological research programme established in 1991 to investigate asthma, rhinitis and eczema in children due to considerable concern that these conditions were increasing in western and developing countries. It involved over 100 countries and 2 million children between the ages of 6 – 7 and 13 – 15.

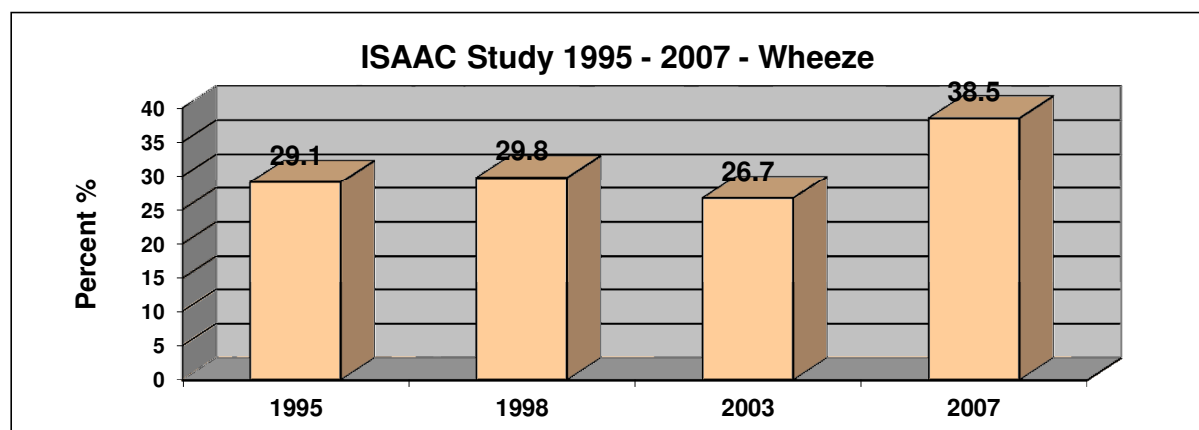
In this study in Ireland only 13-15 year olds were included: 3,147 in 1995, 2,656 in 1998, 3,080 in 2002 – 2003, and 2,979 in 2007. 30 representative and randomly selected schools from throughout Ireland took part in the 4 surveys to ensure statistical quality of the study.

As we can see from the tables below; more than one in five (21.6%) of 13-15 year olds had asthma in 2003. That was a rise of over 40% from 1995<sup>11</sup>. This study also reflects the plateau of asthma in Ireland with 18.9% of this age group with the condition in 2007<sup>4</sup>.

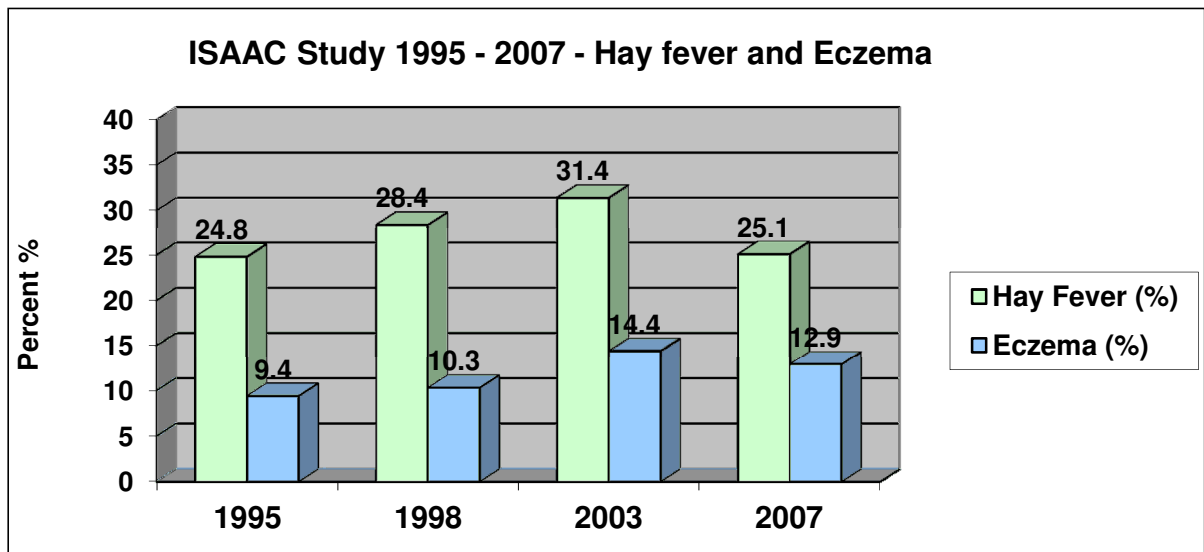
Although we have seen the plateau of asthma in this age group there has been a sharp increase in the number of 13-15 year olds reporting wheeze symptoms over the previous 12 months.



38.5% of 13 – 15 year olds had wheeze symptoms in the previous 12 months<sup>4</sup>.



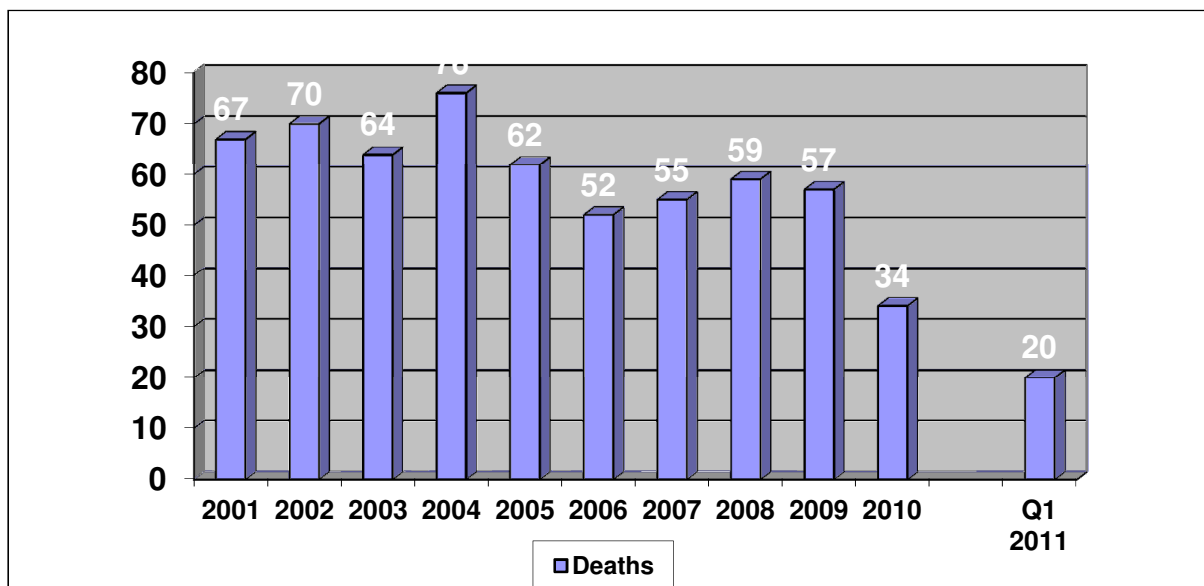
Change in hay fever prevalence was not statically significant but still afflicts a quarter of 13 – 15 year olds. Eczema has risen during the ISAAC study period to 12.9% which is an increase in prevalence of 37%<sup>4</sup>.



### Asthma Mortality

Asthma mortality in Ireland remains a serious problem, there is consistently over 1 death per week each year for the last decade. 2010 was an anomaly with only 34 deaths, but, there have been 20 reported deaths in Quarter 1 of 2011. We await the release of the latest figures from the CSO to see if deaths remain high in 2011. With the correct management up to 90% of these deaths are avoidable, with the majority of exacerbations leading to death being preventable<sup>12,13</sup>.

CSO Vital Statistics 2001 – Q1 2011<sup>5</sup>



## Breakdown of deaths by age group 2001 – Q1 2011<sup>5</sup>

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Q1 2011
< 1	0	0	0	0	0	0	0	0	0	0	0
1 - 4	1	0	0	0	0	0	0	0	0	0	0
5 - 14	0	0	1	1	1	1	1	2	1	0	0
15 - 24	3	3	2	3	0	1	1	1	3	0	0
25 - 34	1	1	6	1	2	2	2	2	1	3	0
35 - 44	4	5	3	4	3	1	1	1	1	0	0
45 - 54	5	6	5	9	4	5	2	6	3	1	0
55 - 64	10	5	10	7	4	4	6	5	5	4	2
65 - 74	18	17	12	15	8	11	10	9	6	7	2
75 - 84	17	22	13	24	25	16	19	13	15	8	6
85 +	8	11	12	12	15	11	13	17	22	11	10
<b>Total</b>	<b>67</b>	<b>70</b>	<b>64</b>	<b>76</b>	<b>62</b>	<b>52</b>	<b>55</b>	<b>59</b>	<b>57</b>	<b>34</b>	<b>20</b>

There have been 616 reported asthma deaths in the last decade<sup>5</sup>. It is recognised that these figures significantly underestimate Asthma mortality. The accuracy of the Asthma mortality is specifically difficult to report in certain age groups, for example the > 65 year patients, as deaths may be registered to other diseases such as COPD, chronic bronchitis or emphysema in the elderly<sup>11</sup>.

### **Asthma Morbidity**

Asthma is a chronic lung disease characterized by recurrent breathing problems and symptoms such as breathlessness, wheezing, chest tightness, and coughing. The morbidity of the disease presents in various degrees of severity and no two patients are alike. Asthma is not age, gender or socially biased. It can affect individuals from young infancy or develop later in life and can be genetic or triggered by allergens in the environment or occupation. Asthma symptoms can range from being mild and intermittent, to more severe and persistent which can be debilitating, leading to a permanent health burden, even in patients with mild asthma, on the patient, their family and society, often associated with a poor quality of life, increased risk of hospitalisations with asthma exacerbations and in rare cases death from asthma.

Although there have been some break throughs in asthma research there is still no profound understanding of the disease and it can neither be cured nor prevented, but research to date has clearly indicted that it is a condition that can be well managed in the majority of patients with current therapies and pharmaceutical drugs.

Optimal asthma control enables patients to lead healthy, normal, unrestricted lives with no exacerbations or hospital visits which in the long term will reduce costs, improve quality of life and reduce sick days at work and school. Assessing asthma control is based on asthma symptoms, sleep disturbance, use of rescue medication, limitations of daily activity, patient and physician assessment and lung function. The table shows the levels of Asthma Control from GINA - Global Strategy for Asthma Management and Prevention<sup>14</sup>.

<b>Assessment of current clinical control (preferably over 4 weeks)</b>			
<b>Characteristic</b>	<b>Controlled (all of the following)</b>	<b>Partly Controlled (any measure present in any week)</b>	<b>Uncontrolled</b>
<b>Daytime Symptoms</b>	None (twice or less/week)	More than twice/week	<b>Three or more features of Partly controlled asthma present in any week</b>
<b>Limitation to activities</b>	None	Any	
<b>Nocturnal symptoms /awakening</b>	None	Any	
<b>Need for reliever / rescue treatment</b>	None (twice or less/week)	More than twice/week	
<b>Lung function (PEV or FEV)</b>	Normal	<80% predicted or personal best (if known)	
<b>Exacerbations</b>	none	One or more/year	One in any week

Despite these advances in therapeutic options and management, more than three quarters of patients with asthma are sub optimally controlled<sup>23</sup>. There have been a number of studies in the last decade that demonstrated how poor asthma control is for Irish patients; some of the findings of the studies are below:

The **Asthma Insights and Reality in Ireland survey (AIRI) in 2005** focused on patient knowledge, attitude and behaviour related to their asthma. The principal objective was to evaluate from the patient's perspective the management of asthma and to assess whether the goals outlined in GINA guidelines were being realised<sup>6</sup>:

- 27% had an emergency visit to A&E or their GP
- 7% had been hospitalised during the previous year
- 29% missed work or school
- Children missed 10 days of school on average
- Adults missed 12 days of work on average
- Over 50% of asthma patients used rescue medication on a daily basis
  - 69% of these used their reliever up to 3 times a day
- 46% had daytime symptoms at least once a week

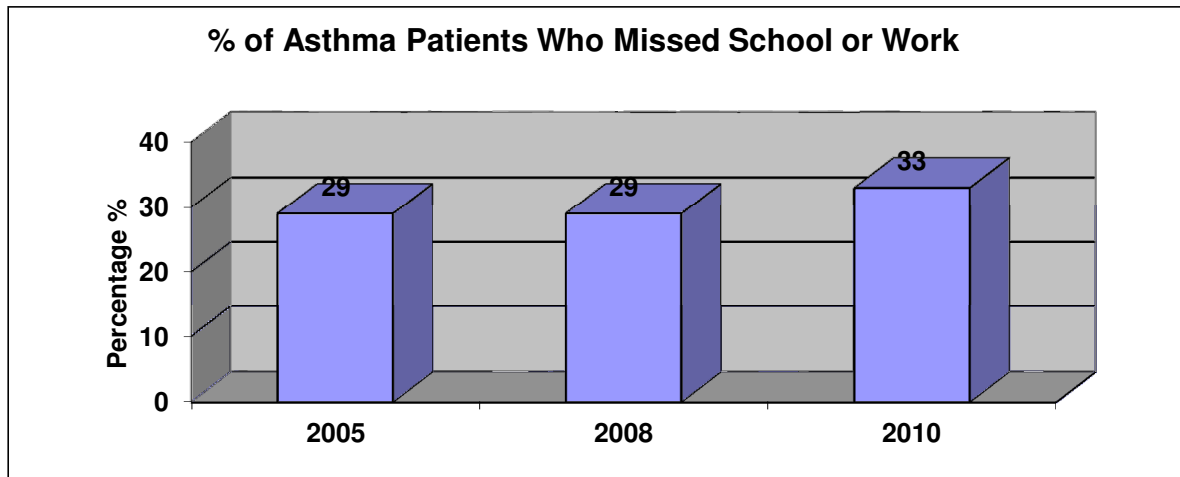
The **Helping Asthma in Real Patients (HARP) study in 2008**<sup>15</sup> found that patients are twice as likely to have uncontrolled asthma than controlled:

- Over 60% of patients using their reliever everyday
- 25% had at least one course of oral steroids in the previous year
- More than 20% missed at least one day of work or school in the previous year

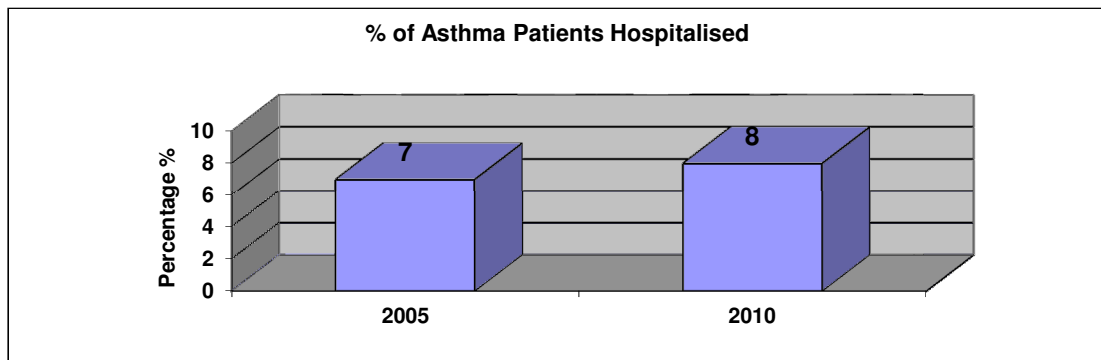
Asthma morbidity has a large impact on the economic productivity in the 15-64 year age group which comprises the effective national labour force. The INHALE Report states in 2008 there were 40,161 days lost due to asthma, creating a burden on the Department of Social Welfare, Employers and families<sup>16, 17</sup>.

The **Asthma Demonstration Project in Primary Care** carried out by the **Asthma Society of Ireland** found in the previous 12 months that<sup>7</sup>:

- 45% had at least one course of oral steroids
- 27% had been nebulised
- 33% had missed school or work
- 14% had been to A&E
- 8% had been hospitalised
- 6% had a written asthma plan
- 34% had “ever” inhaler technique education



Consistently almost one third of asthma patients miss school or work every year. Hospital admissions also remain a constant reality for a number of asthma patients.



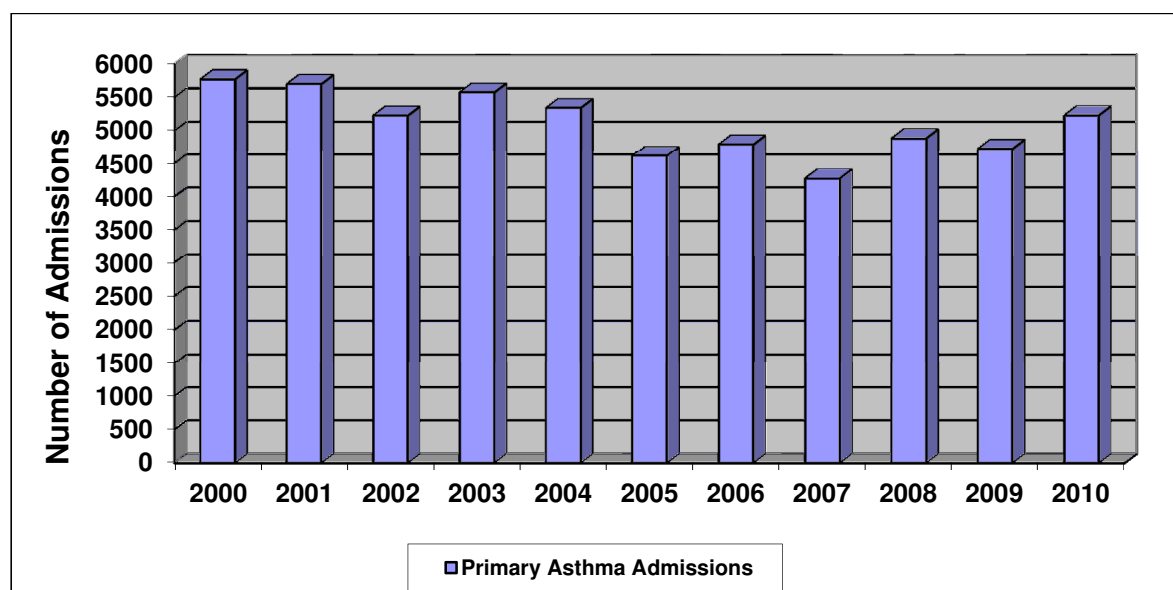
## Burden of on the Health Service – HIPE 2000 – 2004 V.S. 2005 – 2010

Data collected by the Hospital In-Patient Enquiry Scheme (HIPE) from over 60 acute public hospitals from 2000 to 2005 relating to patients discharged with a principal or secondary diagnosis of Asthma were analysed<sup>19</sup>. This data revealed the extent of acute hospital activity related to Asthma. This high level of activity presents a very real problem to Health Service. In 2003 Asthma care cost the Health Service €463m<sup>18</sup>. The 2008 INHALE report assigned a figure of €200m for morbidity costs alone<sup>17</sup>.

Figures from the Hospital In-Patient Scheme 2005 – 2010<sup>20</sup> show:

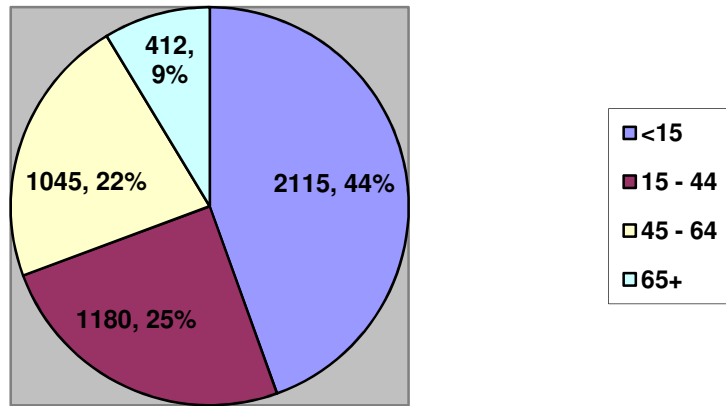
- 4,753 (average) admissions per year with principal diagnosis of asthma
- On average, there were 14,738 bed days / year used to treat principal diagnoses of asthma between 2005 and 2009
- Average length of stay was 3.13 days/admission; and this doubles for those over 65
- Annual A&E visits are four times this figure, at 19,000
- About 44% of these admissions and visits are by children less than 15 years of age.

From 2000-2004 in the HIPE registered centres there were on average 5,521 admissions each year with a primary diagnosis of Asthma<sup>8, 19</sup>.



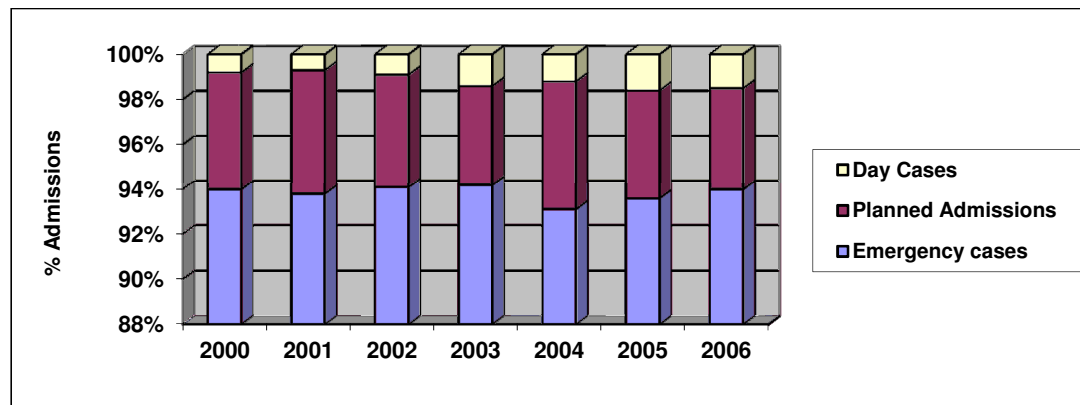
From 2005 – 2010 there were an average of 4,753 admissions a reduction from the 2000 - 2004 average. But in 2010 we saw admissions spike to 5,230, the first time admissions has been over 5,000 in 5 years. We must wait to see if this trend continues in 2011. This reduction in admissions and reduced average length of stay over the period resulted in a fall in bed days from 23,000 (2000-2004) to 14,738 on average per annum (2005 – 2009)<sup>8, 19, 20</sup>.

### % of Admissions by Age Group

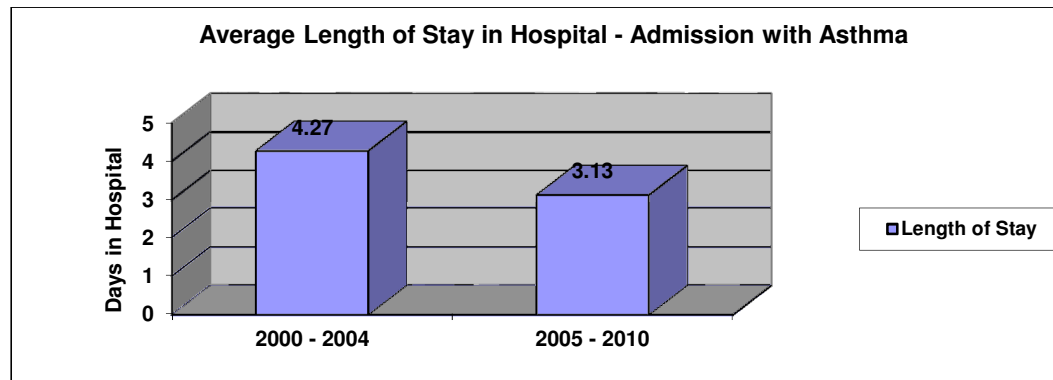


The pie chart shows the % of admissions for a primary diagnosis of Asthma by Age Group. Patients aged <15 years represented 44% of all asthma admissions (primary diagnosis) in HIPE-registered hospitals in 2005 - 2010. 15 – 44 age group represented nearly 25% and the over 65s the final 9% of admissions<sup>8</sup>. We can see from the Admission Vs Length of Stay table below that although there is a larger amount of admissions in the younger population, their length of stay is significantly shorter.

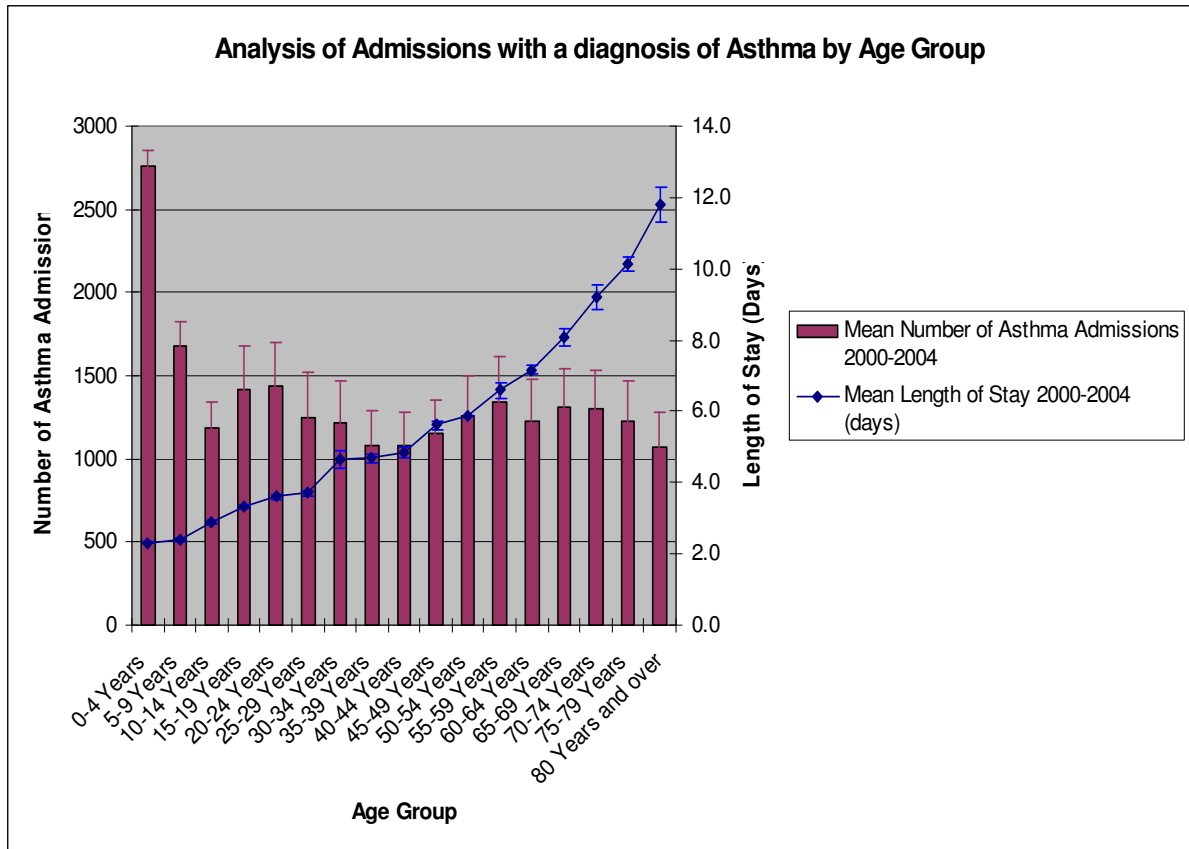
Over 95% of these primary diagnosis cases were admitted through the A&E department<sup>8, 19, 20</sup>.



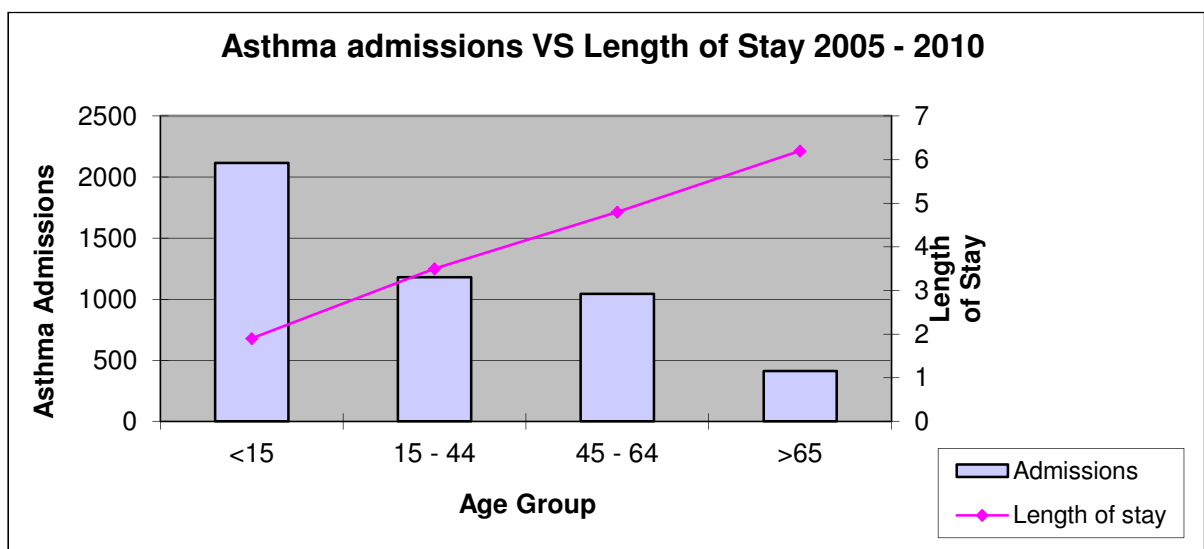
The average length of stay has fallen from the 2000 – 2004 period of 4.27 days to 3.13 days in 2005 – 2010<sup>8, 19, 20</sup>.



2000 – 2004 there were on average 22,000 A&E visits which fell to 19,000 A&E visits per year in the 2005 – 2010 period<sup>8, 19, 20</sup>.

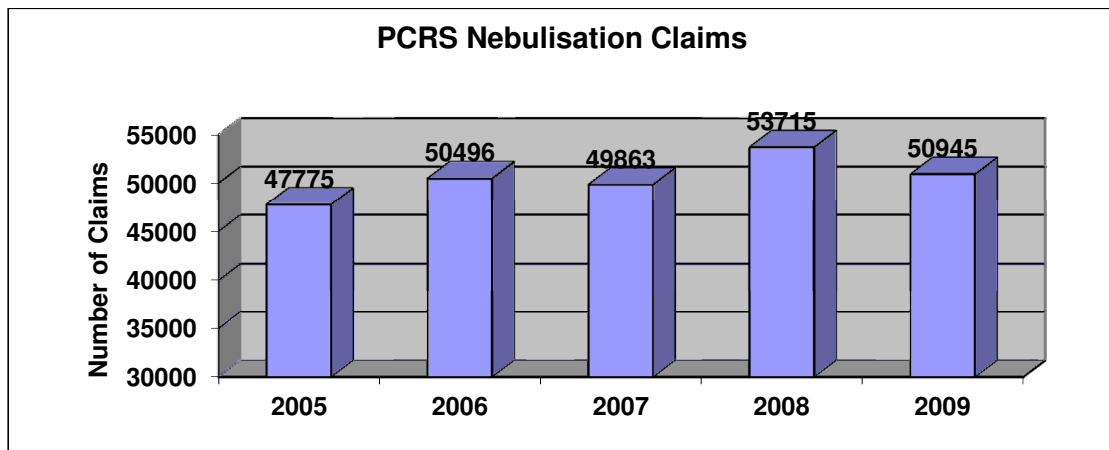


The figure above is an analysis of admissions with a diagnosis of Asthma by age group for the years 2000-2004. This figure shows the average number of admissions by age group and also the average length of stay following admission for each age group. The graph shows the inverse relationship between age of patient and length of stay<sup>8, 19</sup>.



The graph above is an analysis of admissions with a primary diagnosis of asthma by age group for the years 2005 - 2010. This graph shows the average number of admissions by age group and also the average length of stay following admission for each age group. The graph shows the inverse relationship between age of patient and length of stay. During the period there was an average of 2,115 admissions in the under 15 age group and with average length of stay being 1.9 days. This compares to the average of 412 admissions in the over 65s but the average length of stay was 6.2 days<sup>21</sup>. The older the person with an admission of asthma the more health services they require. This is comparable with the period 2000 – 2004 above<sup>8,19</sup>.

The Primary Care Reimbursement Service (PCRS) 2005 - 2009 gives one substantive figure relevant to respiratory medicine, namely that on average 50,559 emergency nebulizer treatments were provided yearly for acute asthma attacks at an average yearly cost of €2,174,000<sup>21</sup>. Any acute episode or exacerbation should prompt an immediate review of asthma management, and any acute episode or exacerbation in the previous year indicates poor and uncontrolled asthma.



Also from the PCRS Financial and Statistical analyses, inhaled salbutamol was consistently in the top 10 GMS prescribed medicines each year, in 2005 it was the 4<sup>th</sup> most frequently and since, has been consistently been the 7<sup>th</sup> or 8<sup>th</sup> most frequently prescribed<sup>21</sup>. In 2009 there 855,724 inhaled salbutamol prescriptions which accounted for 1.69% of all prescriptions in the GMS Scheme<sup>21</sup>.

## References:

1. Masoli, M, Fabian, D, Holt, S, et al Global Initiative for Asthma (GINA) program: the global burden of asthma: executive summary of the GINA Dissemination Committee report. *Allergy* 2004;59,469-478
2. GINA Global Burden Report 2003
3. Central Statistics Office (2002): Quarterly National Household Survey – Health, Third Quarter, 2001.
4. Central Statistics Office (2008): Quarterly National Household Survey – Health, Third Quarter, 2007
5. Central Statistics Office (2011): Quarterly National Household Survey – Health, Third Quarter, 2010.
6. PJ Manning, P Goodman, A O’Sullivan, L Clancy. Rising Prevalence of Asthma but Declining Wheeze in Teenagers (1995-2003): ISAAC Protocol. *Ir Med J.* 2007 Nov-Dec;100(10):614-5
7. ISAAC Protocol unpublished data
8. Manning P et al. IMJ 2002. AIRI Study
9. Fighting for Breath – A European patient prospective on Sever Asthma – [http://www.efanet.org/activities/documents/Fighting\\_For\\_Breath1.pdf](http://www.efanet.org/activities/documents/Fighting_For_Breath1.pdf)
10. CSO website Vital Statistics, <http://www.cso.ie/en/releasesandpublications/birthsdeathsandmarriages/>
11. GINA Guidelines, Global Strategy for Asthma Management and Prevention Updated 2010
12. P Manning, P Grealy, E Shanahan. Asthma Control and Management: A Patient’s Perspective. IMJ 2005 Vol 98 No.10
13. Helping Asthma in Real Patients, HARP Study, Preliminary Results July 2008
14. Asthma Society of Ireland Advisory Group, Poster presented at the Irish Thoracic Society Meeting November 2010, Attitudes to Implementation of GINA Asthma Guidelines Facilitated Programme at Primary Care Level in the ROI
15. Brennan N, O’Connor T. Ireland needs healthier airways and lungs – the evidence (INHALE) June 2003
16. Brennan N, O’Connor T, INHALE Report 2008 2<sup>nd</sup> Edition
17. Asthma costs the healthcare system a staggering €463m per annum. May 2003 Volume 96 - No 5 IMJ-2003 Volume 96
18. Hospital In-patient Enquiry. HIPE, 2000 - 2006
19. Hospital In-patient Enquiry. HIPE, 2005 - 2009
20. Hospital In-Patient Enquiry. HIPE, 2005
21. ESRI, Activity in Acute Public Hospitals in Ireland Annual Report 2000 – 2010
22. PCRS Financial and Statistical Analyses, [http://www.hse.ie/eng/staff/PCRS/PCRS\\_Publications/](http://www.hse.ie/eng/staff/PCRS/PCRS_Publications/)
23. Bellamy D et al. Poor perception and expectations of asthma control: International Control of Asthma Symptoms (ICAS) Survey. *Prim Care Res J* 2005, 14:252-258