

# Chronic Disease Management

## Asthma in British Columbia – An Administrative Data View

### The ideal

Medicine has advanced to the point that asthma can be controlled. If we used what we know to the best effect there would be no deaths from asthma, no hospital admissions or emergency room visits, no time lost from work or school, little impairment of exercise ability, and little sleep disturbance resulting from asthma.

### The aim

We aim to examine care provided, and its results, to assess how closely it meets ideal care and to identify where improvements might be needed. Over the past several years asthma guidelines have been produced and disseminated, and many groups have been working to improve care. We need to understand which efforts are leading to improvement in care and outcomes.

### What do we need to know?

Analysis of the care provided, and the outcomes of the care, require knowledge of:

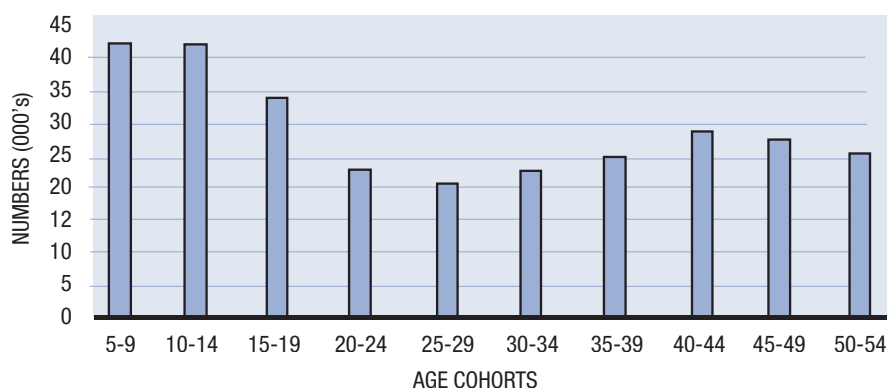
- Who has asthma?
- What care should they receive?
- What care are they receiving?
- What are the results?

Administrative data can provide some answers to these questions, and surveys or other methods can fill in the gaps.

### Who has asthma?

Our current probabilistic register reveals that almost 300,000 residents of the province between the ages of 5 and 54 had been identified as having asthma during 2002/03. This compares well with the National Population Health Survey which suggests that 8.4 per cent of Canadians over the age of 12 have been diagnosed as having asthma. There are difficulties with diagnosis in those under the age of 5 years, and significant overlap with chronic obstructive lung disease in those 55 and older, so both these groups were excluded from the register. More re-search is in progress to distinguish between asthma and chronic obstructive lung disease so that the register can be extended to older age groups.

**Numbers of Patients  
from Asthma Register, 2002/03**



For the Asthma Patient Register we used a case definition of:

- One hospital discharge coded ICD-9 493 (or ICD-10 J45 or J46) since April 1992; or
- Two medical fee-for-service claims coded ICD-9 493 within a moving 12 month period since April 1992; or
- Two prescriptions within 365 days from a list of 277 drugs likely to be used to treat asthma, since April 1996.
- Patients known to have died before the beginning of each register year are removed from the register for that year.

Most patients on the register were identified by hospital or fee-for-service data, but about 86,000 were identified by prescription data alone. Our data shows that patients with asthma see doctors fairly often, so the implication is that the visits are coded for reasons other than asthma.

### What care should they receive?

Asthma is a highly variable disease and management should match the patient's needs. Even the mildest cases can have severe exacerbations.

Appropriate care includes:

- A confirmed diagnosis;
- An action plan for every patient, and regular review of the plan;
- Elimination of contributing factors in the environment, such as smoke;
- Minimum dose of medication to maintain acceptable control.

### What care are they receiving?

A review of paid claims for patients on the asthma register during 2002/03 showed that most of them saw a general practitioner during the year. The average number of visits for all age groups was enough to satisfy those needed for recommended twice yearly reviews.

Some patients measure and record their own peak expiratory flow (PEF) or forced expiratory volume (FEV), but these activities are not recorded in administrative data. PEF or FEV as physician office measurements were performed on fewer than 2% of all age cohorts, though more extensive laboratory based lung function tests were provided to a higher proportion. These figures are far lower than might be expected as needed to measure adequate control of asthma.

### Services for Asthma Register Patients 2002/03

Age	GP visit	GP visits/ Patient	*Specialist visit	*Specialist visits/ Patient	Allergy tests	‡Lung function tests
5-9	88%	4.89	29%	3.68	4.5%	3.4%
10-14	84%	3.92	20%	3.50	3.2%	4.9%
15-19	85%	4.70	13%	3.69	2.3%	4.4%
20-24	84%	6.25	12%	3.90	2.3%	4.0%
25-29	88%	7.06	17%	4.34	3.1%	5.4%
30-34	90%	7.64	20%	4.44	3.4%	6.3%
35-39	90%	7.84	21%	4.23	3.5%	7.0%
40-44	91%	8.15	22%	4.44	3.3%	7.2%
45-49	92%	8.49	25%	4.70	3.2%	8.2%
50-54	93%	8.91	29%	4.97	3.0%	9.2%

Notes: \*Specialist visit within two years. ‡Lung function tests performed in emergency rooms are not counted.

## Medications

Reviewing the register for 2002/03, about two thirds of patients received at least one asthma medication prescription in each of the years 2000/01, 2001/02 or 2002/03, but only 20% received at least one asthma medication

prescription in each of the three years. Of those using medications, the majority filled only one or two prescriptions during 2002/03. Assuming that their asthma is controlled, this is compatible with minimum medication use.

### Asthma Register Patients Taking Various Groups of Medication 2002/03

Number of prescriptions during 2002/03	Any bronchodilator	Short acting inhaled bronchodilator	Long acting inhaled	Inhaled steroid	Oral bronchodilator	Oral steroid
1 or 2 Rx	66,679	65,504	2,475	43,450	3,664	14,080
> 2 Rx	27,907	25,076	1,738	12,818	819	2,727

## What results?

### Deaths

A total of 496 patients on the register died during 2002/03 from any cause. Most of these deaths were for causes other than asthma. For the past several years BC Vital Stats has reported deaths that are potentially avoidable through appropriate medical interventions. The deaths from asthma in this category has crept up slowly from about 4 per year to 7 in 2002.

### Hospitalizations and Re-admissions

In 2002/03, 911 patients were discharged from acute care hospitals with a most responsible diagnosis of asthma, some of them several times.

The number of patients readmitted to hospital, and the number admitted several times, is falling. This is a measure of success of the initiatives taken so far, although there is likely to still be room for improvement.

### Hospital Utilization for Asthma Register Patients 1999/2000 – 2002/2003

Fiscal Year	Patients on Register	No. of Patients Hospitalized	No. of Hospitalizations	Total Days	Average Length of Stay
1999/00	235,842	1,459	1,804	6,001	3.3
2000/01	259,830	1,354	1,660	5,215	3.1
2001/02	279,098	1,003	1,226	3,664	3.0
2002/03	294,259	911	1,044	3,171	3.0

## Frequency of Hospital Admissions for Asthma During the Year

Fiscal year	Number of Admissions					
	1	2	3	4	5	6+
1999/00	1,225	179	36	8	5	6
2000/01	1,137	166	31	10	7	3
2001/02	848	111	27	12	3	2
2002/03	809	84	10	4	3	1

### Other measures

Administrative data is not available to estimate time lost from work or school, the degree of exercise impairment, or the amount of sleep disturbance from asthma. However it should be collected during the regular review of patient action plans. Research shows that many patients with asthma tolerate mild symptoms as “normal” for them and do not realize that their symptoms could be better controlled, nor that they are at risk of severe exacerbations.

### Directions for further research

- What are the reasons for the improving trend in hospitalization data, and can we build on that success?
- What processes do we need to be able to identify the factors leading to potentially preventable deaths and take steps to reduce them?
- Which patients have factors that are associated with hospitalization and deaths? How might care improvements be focused on them?
- Is it possible to use the physician office measurement of time lost from work/ school, exercise impairment and sleep disturbance as indicators as need for improved care?
- Further research is required to distinguish between asthma and chronic obstructive lung disease in patients 55 years or older.



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