The Community Pediatric Asthma Service—Together We're Better: Asthma care in the Calgary zone

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INTRODUCTION

The Community Pediatric Asthma Service in Calgary, Alberta, focuses on improving asthma self-management skills for patients and families through one-on-one education sessions in the Calgary Zone. We also aim to increase physician confidence to diagnose and manage asthma by sharing medically accurate, consistent information in innovative ways.

The Public Health Agency of Canada estimates the national prevalence of asthma to be 15.3% for the 1–19-year-old age group [1] and, according to the most recent federal census, the total population of Calgary was 1,276,650, with 296,210 in the 1–19-year-old age group [2]. Given these statistics, that equates to more than 44,000 children in the Calgary Zone (Zone) estimated to have asthma. A recent report from the Canadian Lung Association states that approximately 45% of Canadians do not have their asthma under “good” or “somewhat good” control [3]. In 2006–2007, asthma was the number two reason for an emergency visit to Alberta Children's Hospital (ACH) [4]. In 2017–2018, ACH reported asthma had dropped to the eighth most responsible diagnosis in the emergency department (see Table 1) [5]. The Zone includes a large area of 39,300 km² with a population of 1,612,917 (2015–2016) [6]. Communities included in this area include Banff and Lake Louise to the West, Didsbury to the North, Claresholm to the South, and Strathmore to the East [7, 8].

This commentary will discuss how the Community Pediatric Asthma Service was developed and eventually funded, how our program operates, as well as the successes we have achieved in the treatment of pediatric asthma in this Zone of Alberta Health Services (AHS).

BACKGROUND

In 2001–2004, Alberta Health funded ~40 three-year initiatives across the province under the “Health Innovation Fund” (HIF), including the Child Asthma Network (iCAN) Project. This project aimed to improve access to medically accurate, (regionally) consistent, paediatric asthma information for patients and families to increase family capacity to self-manage their child's asthma. In addition, the project aimed to foster consistent asthma care amongst family physicians and provide them with up-to-date asthma resources.

Every HIF required independent evaluation. One of the key findings of the *Final Evaluation Report* was the reduction in emergency and hospital utilization: “There was a 65.1% reduction in emergency visits and a 61.9% reduction in hospital days over an 18-month period among the first 112 patients seen by the iCAN educator” [9]. The Belfield Evaluation formed the basis for a business case that resulted in permanent funding for a community focused asthma education service in June 2005, which is today's Community Pediatric Asthma Service.

OUR SERVICE TODAY

Referrals from primary care physicians, emergency departments, and urgent care centres across the Calgary Zone are received by our community clerks (1.0 full-time equivalent) at our space in the South Calgary Health Centre. If a physician is interested in making regular referrals to our service, we ask them to review our service model and expectations on our website (see “Physician Orientation” under the Tools tab in the Health Providers section of www.ucalgary.ca/icancontrolasthma) [10].

Our clerks schedule education appointments for ~50 clinics in family physician/pediatrician offices and community-based clinics in 10 AHS facilities: ACH, 2 adult hospitals, and community health centres in Calgary (3) and in the surrounding communities of Airdrie (1), Cochrane (1), Okotoks (1), and High River (1). All educators cover the Zone on a monthly rotation. We try to minimize travel and maximize patient time by scheduling full-day clinics where we can. A full-day clinic is five patient appointments. Every asthma education appointment is scheduled for 60 minutes and includes spirometry (6 years or older), self-management skills, and a collaborative, written asthma action plan.

In 2016–2017, our five educators (3.0 full-time equivalent) saw ~2000 patients for an individual, face-to-face education appointment. Approximately ~13% are invited to follow-up for further assessment and education. Approximately 10% of our patients are older than 18 years because community physician partners insisted we see all of their asthma patients if we came to their offices. A number of the adult asthma referrals we see are diagnosed as Chronic Obstructive Pulmonary Disease.

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TABLE 1

Alberta Children's Hospital top 75% emergency department diagnoses 2016–2017 [5]

Diagnosis	Total visits (%*)	Average length of stay (h)
Acute upper respiratory infections of multiple and unspecified sites	4220 (5.5)	2.4
Viral infection of unspecified site	3739 (4.9)	2.6
Other gastroenteritis and colitis of infections and unspecified origin	3267 (4.2)	3.0
Abdominal and pelvic pain	3033 (3.9)	3.9
Fever of other and unknown origin	2890 (3.8)	3.4
Acute obstructive laryngitis (croup) and epiglottitis	2866 (3.7)	2.6
Open wound of head	2182 (2.8)	2.3
Asthma	1914 (2.5)	4.9
Nausea and vomiting	1689 (2.2)	3.2

*Percentage of all visits to the emergency department.

A SINGLE REFERRAL FORM FOR PEDIATRIC ASTHMA IN THE ZONE

Five years ago, we introduced a joint referral form for all AHS pediatric asthma services in the Zone to help providers determine which service would best serve their patient's needs and reduce the same referral going to multiple providers. This single referral form helps direct mild-to-moderate asthma referrals to our Service, moderate to severe referrals to the Asthma Specialty Clinic (Clinic) and the Pulmonary Function Testing Lab (Lab) at ACH, by providing the referring physician criteria for each service.

Referrals are redirected between our services at triage, if deemed more appropriate. We also receive referrals for patients discharged from the Clinic for follow-up in the community to support their return to primary care. Redirecting mild to moderate asthma referrals to our Service and moderate to severe asthma to the Clinic helps each clinic manage their waiting list. Patients still "wait" for their appointment, but they don't languish on a list waiting to be scheduled [9].

EDUCATION APPOINTMENTS AND COMMUNICATION

Prior to their education appointment, patients receive an information package containing basic asthma information and resources with a history questionnaire that we ask them to complete prior to their appointment if possible. Patients leave every education appointment with an updated Asthma Action Plan (see Appendix A) [10]. For young children who cannot yet read or those for whom English is not their first language, we use our own "Little Asthma Action Plan," which is an asthma action plan that uses more pictures than words.

At the end of every appointment (usually on the same day), the referring physician receives a fax update that includes a common Asthma Education Summary, a copy of spirometry with preliminary assessment, and a copy of the personalized Asthma Action Plan. A specific time-frame for follow-up with the primary care provider is recommended and patients are invited back for a follow-up appointment with our Service if necessary or desired.

CRITICAL VALUES REPORTING

If we find critical values on spirometry, the primary care physician, designated respirologist, or respirologist on call is contacted to ensure patient safety and next steps are documented. When warranted, serious asthma cases are expedited by the Certified Respiratory Educator (CRE) and sent to the Clinic and occasionally are referred directly to the nearest urgent care or emergency department.

WEBSITE

In 2002, we launched a pediatric asthma website that we continue to build and support today at www.ualgary.ca/icancontrolasthma. All of the tools and resources we have developed are available for download and our most popular patient information is available in 13 languages,

and we may add more in the future. Our webmaster provides monthly visit reports, and recent visitors to our site are linked to the US, Spain, China, and the United Kingdom. The most visited pages include device instructions metered dose inhaler (MDI) with spacer and mouthpiece and MDI with spacer and mask), the Canadian Asthma Guidelines and the Alberta Asthma Action Plan. Top downloads include our *Little Asthma Action Plan*, MDI with mask instructions, the *Alberta Asthma Action Plan*, *Does My Child Have Asthma?* document and our *Control Asthma Now: Living with Asthma* brochure. Our most popular translated documents are Spanish, Punjabi, Arabic, French, and Hindi.

THE TEAM

Our CRE team are all experienced RRTs with 70 years of combined experience as asthma educators, three are Certified Tobacco Educators (CTE) and two have their Canadian Association of Cardio-Pulmonary Technologists (CACPT) certification. We devote 2 days a month to team meetings focused on administration, continuing medical education, web development, and special projects to facilitate local, Zone, provincial, and national networking. Collectively, our educators teach the Saskatchewan Lung Association's RespTrec and SpiroTrec educator training programs, coordinate and lead annual motivational interviewing training for University of Calgary first-year medical students, lead the provincial implementation of the Alberta Pediatric Asthma Pathway (Canada's first pediatric asthma pathway), and are regular, invited guest speakers for educational events and conferences such as the Canadian National Respiratory Conference.

For years our team has organized and hosted a tri-annual Joint Asthma Meeting ("JAM Session") on pediatric asthma at ACH for Clinic staff, hospital RRTs, and pharmacists. We also host a joint meeting with the adult focused Calgary COPD and Asthma Program (CCAP) annually. In May 2018, we hosted an all-day Calgary Zone Asthma, COPD, and Tobacco Education Day with 100 participants—most of them front-line care providers. Our next Zone education event will be held on April 30, 2019.

In 2012, the Alberta Medical Association awarded the Medal of Honor to our Service Coordinator for contributions to pediatric asthma care in Alberta.

TOGETHER WE'RE BETTER

While we acknowledge that our Service alone is not responsible for the drop in asthma seen in ACH Emergency in the last 10 years, we know that the combined efforts of our partners in the Clinic and the presence of our program in the community to educate and support family physicians and their patients with asthma best practices has had a positive impact on the diagnosis and treatment of pediatric asthma in the Calgary Zone.

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APPENDIX A: Asthma Action Plan

Your Name: _____ **Date:** _____

Your Goals: _____

Circle your triggers

smoke

colds

animals

pollens

mold

dust

strong smells

weather changes

strong emotions

Other _____ Exercise _____

Asthma under control?

Yes
 Normal life, regular activities

No
 Cough, wheeze, short of breath, tight chest, colds, allergies

Not at all
 Very short of breath, trouble speaking, blue/grey lips/fingernails

1. Daytime symptoms		None	More than 3 times/week	Continuous & getting worse
2. Nighttime symptoms		None	Some nights	Continuous & getting worse
3. Reliever		None	More than 3 times/week	Relief for less than 3-4 hours
4. Physical activity		Normal	Limited	Very limited
5. Can go to school or work		Yes	Maybe	No

What to do:

Preventer/Controller: Use EVERY DAY to control airway swelling & other symptoms. Rinse mouth after each use.

Reliever/Rescue: Quickly relieves symptoms by temporarily relaxing muscles around airways.

Stay controlled & avoid your triggers

Take _____ (amount) ☐ AM ☐ PM

Take _____ (amount) ☐ AM ☐ PM

Take _____ (amount) ☐ AM ☐ PM

Take _____ (amount) ☐ AM ☐ PM

Take _____ (# of puffs) as needed

Before exercise? ☐ Yes ☐ No

Take Action

Take _____ (amount) ☐ AM ☐ PM

Take _____ (amount) ☐ AM ☐ PM

Take _____ (amount) ☐ AM ☐ PM

Take _____ (amount) ☐ AM ☐ PM

Take _____ (# of puffs) as needed

If no improvement in ____ days, call your doctor.

Call for help

EMERGENCY 911

Take your asthma medicines at the highest dose recommended until help arrives.

(This may include prednisone)

Clinician's Signature: _____

Contact Number: **Health Link AB 1-866-408-LINK(5465)**

www.educationforasthma.com

www.canahome.org

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APPENDIX A *continued*Keeping Asthma in Control with **Your Action Plan**

With **Your Asthma** in control, you should be able to live an active, normal life and do things you like to do – including playing sports and not missing school or work.

Learn all about your asthma from Respiratory Educators, credible websites and education programs.

When you learn about managing your asthma and using **Your Action Plan** from your doctor, Respiratory Educator, or pharmacist, you can control your asthma.

Uncontrolled asthma can cause damage to your lungs and sometimes, even death.

Simple ways to take care of **Your Asthma**

- 1 The list under 'Asthma under control?' will help you decide if your asthma is in control or if you need to make changes to your medicine and triggers. The faster you take action on the attack by adjusting your medicine, the better the chances to improve your asthma quickly.
- 2 The 'What to do' list should tell you exactly what to do as agreed upon by you and your doctor or health provider.
- 3 There is space to write the numbers of important health providers.
Note: Speak with your health provider quickly if:
 - ▲ You are not sure what to do
 - ▲ You have adjusted your medicine as you were told to do and there is no change
 - ▲ You are in the red zone
 - ▲ You have greenish mucous (this could mean you have a possible bacterial infection)

Getting Ready for **Your Appointments**

To successfully manage your asthma, review Your Action Plan and medication technique **every 6 months**. You can get the most out of your time with your doctor or Respiratory Educator by planning before you go.

Things you can do to prepare for your appointments include bringing:

- ☒ A record of your recent symptoms, medication use, activity level and/or peak flow meter readings.
- ☒ Your Action Plan so that you and your doctor can develop, modify, or review the plan.
- ☒ Your inhaler(s) to review your technique.

☒ A list of any questions you may have:

Your Asthma Control

Your Asthma is **not under best control** if you answer "Yes" to one or more of these questions. Follow your action plan or talk to your doctor.

1 Do you cough, wheeze, or have a tight chest because of Your Asthma?	☐ Yes	☐ No
2 Do coughing, wheezing, or chest tightness wake you at night?	☐ Yes	☐ No
3 Do you stop exercising because of Your Asthma?	☐ Yes	☐ No
4 Do you ever miss work or school because of Your Asthma?	☐ Yes	☐ No
5 Do you use your reliever/rescue medicine more than 2-3 times a week?	☐ Yes	☐ No

To learn more about living life to the fullest with asthma, visit:

Lung Association
www.lung.ca

Asthma Society of Canada
www.asthma.ca

Children's site
www.ucalgary.ca/icancontrolasthma

Teen's site
www.teenasthma.ca

APPENDIX B: Little Asthma Action Plan

Little Asthma Action Plan for: _____ Date: _____

Goal: _____

Controller (Every day)

of Puffs
 / /
 medicine / dose / colour

of Puffs
 / /
 medicine / dose / colour

Reliever (When you need it)

of Puffs
 / /
 medicine / dose / colour

Controller (# of days _____)

of Puffs
 / /
 medicine / dose / colour

of Puffs
 / /
 medicine / dose / colour

Reliever (Can use every 4 hours)

of Puffs
 / /
 medicine / dose / colour

See a doctor if you are not better in 2-3 days

See a Doctor soon if:

- your asthma symptoms are not getting better, even with more medicine
- you need your reliever medicine more often

Go to Emergency if:

- reliever medicine does not last at least 3 hours
- skin at the base of the neck, between ribs or below the breast bone pulls in with breathing
- children have no energy to play or move around
- babies refuse to eat or drink

Call 911 if:

- very serious symptoms – breathing very fast, gasping for breath, having difficulty speaking, blue-grey lips or fingernails
- give reliever medicine every few minutes until help arrives
- comfort your child by trying to stay calm until help arrives

Questions or concerns? In Alberta, call **811** Health Link

Health Advice 24/7

for the 24/7 health information and advice line

APPENDIX B *continued*

My Asthma Calendar

Month: _____ Name: _____

Goal: _____

Use this calendar to record: **Your asthma symptoms** **When you take your medicine(s)**

		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Week 1
Week 2
Week 3
Week 4

Remember to bring all your asthma medicine and devices to every asthma appointment, even if you are not taking them right now.
For more information visit www.ucalgary.ca/icancontrolasthma

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