In 2010-2011, there were over 50,000 visits to Ontario emergency departments for asthma.\(^1\) Although this represents a small proportion of total Ontario ED visits (approximately 1% of over 5.58 million visits in total in 2010-11\(^2\)), asthma exacerbations cause significant morbidity, can be life-threatening and in some tragic cases, may lead to death. One such death of a teen in January 2000 sparked a coroner’s inquest\(^3\) which prompted the development of an integrated asthma strategy known as the Ontario Asthma Plan of Action (APA). The aim of the APA is “to reduce mortality, morbidity and health care costs for children and adults with asthma through integrated initiatives focused on health promotion and prevention, management and treatment and research and surveillance.”\(^4\)

The Emergency Department Asthma Care Pathway (EDACP) project is one of the APA initiatives, and began in 2004 under the direction of the Ontario Hospital Association. The Ontario Lung Association assumed a leadership role for this initiative in 2007. The EDACP is an evidence-based clinical pathway developed to address identified variation and gaps in acute asthma care in Ontario hospitals.\(^5\) Use of clinical pathways may: promote adherence to clinical guidelines resulting in reduced practice variation; improve documentation of communication with patients; and, facilitate interprofessional practice.\(^6\)

The Adult EDACP, for individuals 16 years and older, was developed first and made available to Ontario hospitals beginning in 2008. Based on the implementation of the Adult EDACP, and lessons learned, development of a similar paediatric pathway for ages 1 to 17 years began in late 2009.

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\(^1\) Canadian Institutes for Health Information, 2012. Emergency Department (ED) Visits: Volumes and Median Length of Stay by Triage Level, Visit Disposition, and Main Problem 2010-2011.

\(^2\)Canadian Institutes for Health Information, 2012. NACRS Emergency Department Visits, by Sex, Age Group and Province,* 2010–2011


An interdisciplinary Expert Content Working Group (ECWG) reviewed Canadian Thoracic Society (CTS) and international asthma guidelines, other relevant published literature, and examples of previously developed pathways with the goal of creating a comprehensive care pathway. Key priorities identified to guide deliberations included: assessment of exacerbation severity; evidence-based treatment; patient education prior to discharge; comprehensive discharge instructions; and, follow-up arrangements.

The original Adult EDACP included pre-printed physician’s orders, medication guidelines, a patient education checklist, and comprehensive discharge instructions. A pocket reference guide and ED poster were also created. Objective measures such as forced expired volume in 1 second (FEV₁) or peak expiratory flow (PEF) were recommended to assess asthma severity and the effect of treatment.

A pilot study⁷ was undertaken in 2006 and demonstrated that pathway use increased referrals for follow-up care and improved patient recollection of teaching done in the ED without a substantial increase in length of stay. Pathway use was also associated with increased documentation of objective measures such as peak expiratory flow (PEF) and increased use of systemic corticosteroids in the ED and on discharge.

Following endorsement by key stakeholder organizations, the Adult EDACP was disseminated to all Ontario hospitals offering adult acute care services. A series of one-day workshops was held between November 2008 and June 2011, in each of the Local Health Integration Networks (LHIN). Each facility within the LHIN was invited to send up to three site champions to the workshop during which instruction about the Adult EDACP and strategies for implementation were provided. Site champions were encouraged to present the EDACP to their respective facility for consideration of implementation.

**Update to Adult EDACP - 2013**

In 2011, it was recognized that the Adult EDACP would require revision to ensure congruency with the most recent Canadian Thoracic Society guidelines and other literature, and to incorporate suggestions for improvement noted by health professionals currently using the EDACP. Beginning in early 2012, an ad hoc Revision Committee was struck which included content experts from all disciplines as well as health professionals in facilities using the Adult EDACP. New evidence was reviewed and incorporated into a revised Adult EDACP as appropriate. Additional review of the revised drafts was sought from experts in critical care, pharmacy, and professional practice.

Medication guidelines were simplified and organized into Standard Treatment, Non Standard Treatment, and Discharge Medications. The table of comparative doses of inhaled corticosteroids (ICS) from the CTS guidelines is now included as a reference to guide dosing for ICS upon discharge.

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Physician’s orders were simplified and formatted to incorporate the guidelines set forth by the Institute for Safe Medication Practice (ISMP). Examples of the changes made include: using tall-man lettering to distinguish confusing medication names, e.g. predniSONE, methylIPREDNISolone; using leading zeros before medication doses, e.g. 0.2 mg; not using trailing zeros that might result in an error, e.g. 1.0 mg which might be mistaken for “10” instead of “1”. Two independent one-page order sets were developed – one for mild, moderate, or severe asthma, and one for potentially fatal asthma. Orders felt to be essential are indicated with pre-checked boxes.

To address treatment delays noted during the implementation of the Adult EDACP, a medical directive was developed to authorize administration of bronchodilators and systemic corticosteroids prior to physician assessment.

Discharge instructions were redesigned to facilitate use as a prescription when the original copy is given to the patient, saving time for the busy ED physician or nurse practitioner. As with the original Adult EDACP, patients are provided with a list of quick asthma facts along with written advice to seek follow-up care and the signs that indicate they should return to the ED for worsening asthma.

**Paediatric EDACP Development**

Following a similar process to that of the Adult pathway, development of the Paediatric EDACP began in late 2009. The Expert Content Working Group chose the Paediatric Respiratory Assessment Measure (PRAM) score to determine asthma severity. The PRAM score is based on 5 clinical signs: suprasternal retractions, scalene muscle retractions, air entry, wheezing, and oxygen saturation. Four independent physician’s orders were developed, one for each of the four asthma severity levels as determined by the PRAM: mild, moderate, severe, and impending respiratory failure (informed by clinical presentation rather than specific PRAM). Like its Adult counterpart, the Paediatric EDACP also includes medication guidelines, a medical directive, a patient education checklist, and discharge instructions with an integrated prescription.

Pilot implementation of the Paediatric EDACP began in November 2012 at Cambridge Memorial Hospital and is wrapping up this spring. Following revisions and endorsement by key stakeholders, it is anticipated that the Paediatric EDACP will be available in early 2014.

**How to Use the Updated (2013) Adult EDACP**

The first step is to determine if the patient meets the inclusion criteria for the EDACP which are set out on the instruction sheet. A patient is eligible for the EDACP if they are 16 years or older and have one of the following: history of asthma; or previous episode of wheezing requiring treatment; or asthma and pregnancy; or COPD with asthma. Patients would be excluded from the EDACP if they have COPD.

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9 ibid
without asthma, are presenting with congestive heart failure (CHF) or are only visiting the ED to refill a prescription.

If your hospital has approved the use of the EDACP medical directive, it would be initiated once it has been determined that the patient meets the criteria – some hospitals may authorize the medical directive to begin at triage. If not using the medical directive, the physician or nurse practitioner chooses an order set based on asthma severity. Asthma severity is ideally assessed with objective measures such as spirometry (FEV₁) or peak flow (PEF) whenever possible, in conjunction with the clinical presentation. It is recommended that lung function is measured at baseline, after treatment, and before the patient is either admitted or discharged; spirometry is the preferred method unless equipment and trained personnel are unavailable.

The medication guidelines and pre-printed physician’s orders guide treatment, but the clinician must always use his or her professional judgment in determining the course of treatment most appropriate for the individual patient. More information with respect to management of the acute asthma episode can be found in the pocket reference guide and medication guidelines, e.g. non-standard medications, including those for rapid sequence intubation.

The education checklist is a tool to assist any health professional in giving simple asthma education that may help to avoid a repeat ED visit for asthma. It provides basic instructions to the health professional as a reminder, and provides a documentation record where any health professional – physician, nurse, respiratory therapist, or pharmacist – can indicate when any education has been delivered. The checklist is not meant to promote intensive education such as would be provided at an asthma education centre, but rather to promote simple instruction such as inhaler technique that can be done while other care is being provided.

Many times, health professionals are providing nuggets of information that they do not consider to be “education”; however, even simple statements like “this medication helps to relax the muscles around your airways” when giving the patient salbutamol is, indeed, education. Use the 30 seconds you should be waiting between puffs of the same inhaler to tell your patient how swelling and mucus in the airways can make the airways more sensitive and likely to tighten, and why they need to take their controller medication regularly.

The discharge instructions have been designed to provide all the information required for a valid prescription, including licence number, name and signature of the physician or nurse practitioner. The original should be given to the patient if it is to serve as the prescription. As the discharge instructions contain important information about asthma and warning signs of worsening asthma, the patient should be given a second reference copy of the discharge instructions.

In conclusion, if you are looking for a simple, standardized approach to acute asthma care based on best practices, consider implementing the Emergency Department Asthma Care Pathway.

The Adult EDACP has been endorsed by the following key provincial and national stakeholder organizations:
Hospitals are permitted to format the tools to suit their site’s typical format for order sets, including adding logos. Details about accessing the EDACP and conditions for use can be found at www.on.lung.ca/edacp. To order pocket reference guides, email: edacp@on.lung.ca or call toll-free (888) 344-LUNG (5864), extension 270.

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