VERMONT
DEPARTMENT OF HEALTH

Asthma among Vermont's Children

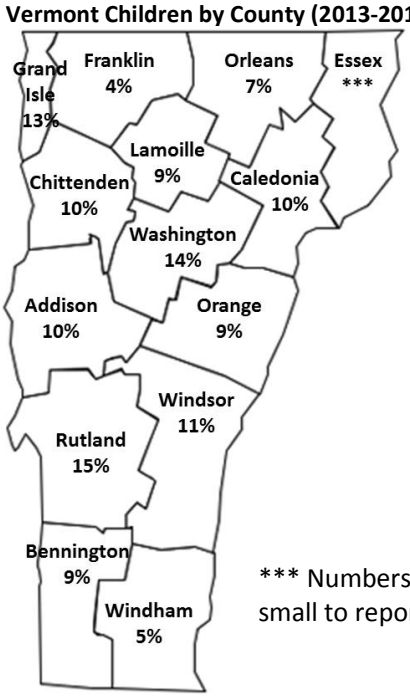
Background

Among children, asthma is one of the leading chronic conditions, the third-ranking cause of hospitalization in the United States, and a main cause of missed school days.[1] With proper diagnosis, treatment, and self-management skills, asthma can be controlled and quality of life improved resulting in less disrupted sleep, better daytime focus, increased time in the classroom, fewer missed school days, fewer flare-ups and asthma symptoms, and fuller participation in physical activities. This brief presents data on asthma prevalence, risk factors, asthma management, and clinical care among Vermont children with current asthma along with resources to enhance asthma management.

Asthma Prevalence

The current asthma prevalence among Vermont children was 8% in 2014.[2] This equates to one in twelve children or roughly 9,100 Vermont youth who have asthma. The current asthma prevalence among Vermont children ranged from 5-15% across Vermont counties, though no county was significantly different from the statewide child prevalence (Fig. 1).[2] Asthma prevalence tended to increase with child age; asthma prevalence among children aged 0-4 years old was 5% and was significantly less than that for those 10-14 years old (13%) and 15-17 years old (12%).[2] Difficulty in diagnosing asthma at an early age may contribute to the lower prevalence among younger children. The asthma prevalence was similar between Vermont boys and girls (10% and 9%, respectively), while the nationwide asthma rates are higher for boys (11%) compared to girls (8%).[2]

Fig. 1 Current Asthma Prevalence in Vermont Children by County (2013-2014)



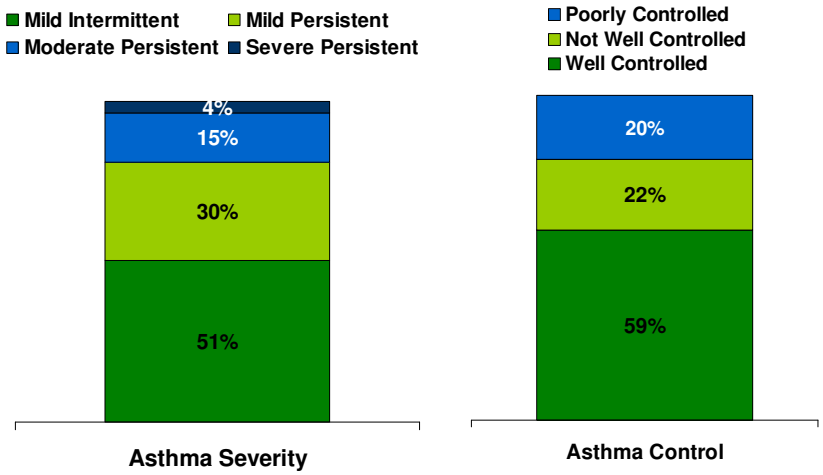
*** Numbers too small to report

Asthma Severity and Control

Approximately 70% of Vermont children with current asthma were limited in their daily activities, 10% experienced sleep disruption, and nearly half (46%) were absent from school during the past year due to their asthma.[3] Sixty percent of Vermont children with asthma experienced an asthma exacerbation during the past year and 21% experienced 3 or more exacerbations within the past 3 months. For 64% of these children the duration of their last exacerbation was minutes to hours, while the remaining 36% reported their last event lasted days to weeks.

Approximately half of Vermont youth with current asthma had mild and intermittent asthma, 30% had mild persistent asthma, 15% had moderate persistent asthma, and had 4% severe persistent asthma (Fig 2).[3] More than 40% of Vermont's children with asthma, had poorly or not well controlled indicating an increased number of days with asthma symptoms, increased number of nighttime awakenings, or frequent use of a rescue inhaler for asthma symptoms (Fig 2).

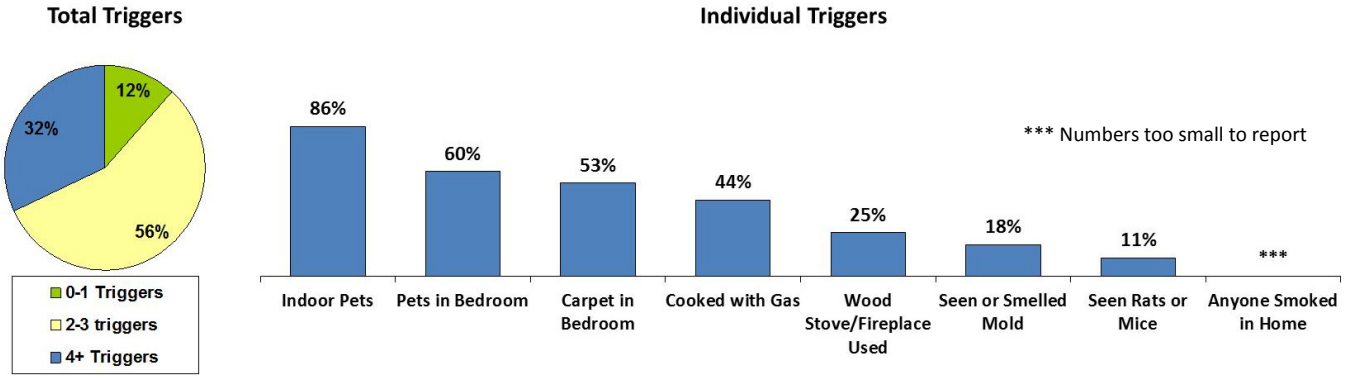
Fig. 2 Asthma Severity and Control among VT Children, 2009-2010



Exposure to Indoor Environmental Triggers

One third of Vermont children with current asthma were exposed to four or more common environmental triggers in their home and more than half were exposed to 2-3 triggers (Fig. 3).[3] The most common trigger among Vermont children was having an indoor pet; 86% of children with current asthma live with an indoor pet. The majority of Vermont children with asthma also had pets (60%) and carpet (53%) in their bedroom. More than one third of Vermont children with asthma lived in homes where gas was used for cooking and 25% lived where a wood stove or fireplace was used. Less prevalent indoor environmental triggers among Vermont children included exposure to mold, rodents, or secondhand smoke. Students can also be exposed to common triggers at their schools including dander from classroom pets, cleaning supplies with harsh chemicals, and fumes from idling vehicles. Reducing exposure to asthma triggers can improve asthma control and reduce the burden of asthma.

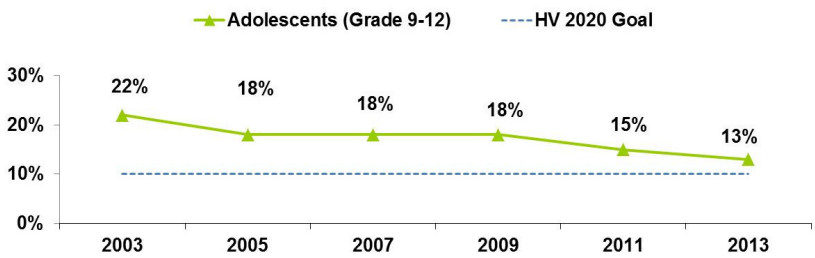
Fig. 3 Exposure to Environmental Triggers among Vermont Children with Current Asthma, Child ACBS, 2010



Smoking

Tobacco smoke is a powerful asthma trigger. When tobacco smoke is inhaled, irritating substances settle in the lining of the airways and can set off asthma episodes. According to the Youth Risk Behavioral Survey, 13% of VT adolescents in grades 9-12 smoked cigarettes in the last 30 days and 4% report smoking every day in 2013.[4] Cigarette smoking among Vermont youth has significantly decreased over the last 10 years (Fig. 4). Half of students (54%) were asked if they smoked by a health professional in the past 12 months. Forty-four percent of youth who smoked in the last 30 days tried to quit in the past 12 months.[4] In addition, one in four students (24%) used marijuana one or more times in the past 30 days.[4] Children are also vulnerable to exposure to secondhand smoke. Four out of 10 students report being in the same room with someone who was smoking cigarettes during the past 7 days and 31% were in a car with someone who was smoking.[4]

Fig. 4 Vermont Adolescents who Smoked in Last 30 Days



802 QUITS

For smoking cessation resources visit 802Quits. http://802quits.org/

Medication Use

In the last three months, 45% of youths with current asthma did not use either a rescue or controller inhaler, while 12% of youths used a controller inhaler only, 14% used only a rescue inhaler, and 28% of youths used both a controller and rescue inhaler.[3] Most youth with current asthma have been shown how to use an inhaler by their physician (95%) and have had their doctor watch them use their inhaler (87%).[3] Seventy-four percent of youth use a spacer with controller inhalers and 67% use a spacer with rescue inhalers.[3]

Clinical Care

The majority of Vermont children with asthma had a routine-care visit for their asthma during the past year; 40% had one visit and 35% had more than one visit.[3] Thirty-five percent of children with asthma had one or more urgent care visits for their asthma in the past year and 13% had one or more emergency visits for asthma during the last year.[3]

When assessing asthma management skills, the majority of youths with asthma have been taught what to do during an asthma attack (96%) and how to recognize early symptoms of an asthma exacerbation (86%); however, very few youth or their caregivers have attended an asthma management class (6%) in which additional skills such as assessment of asthma control, trigger reduction and management of asthma medications are taught.[3] Parents or caregivers report that nearly half (48%) of youths with current asthma received an asthma action/management plan from their health care provider and 33% had been advised to modify things in their home to reduce exposure to asthma triggers.[3] Approximately three out of four children with asthma have received the flu vaccine in the previous year (Fig. 5). This rate has increased over recent years. The flu vaccine is recommended for all with asthma.

Fig. 5 Flu Vaccine in the Past Year Among Youth with Current Asthma

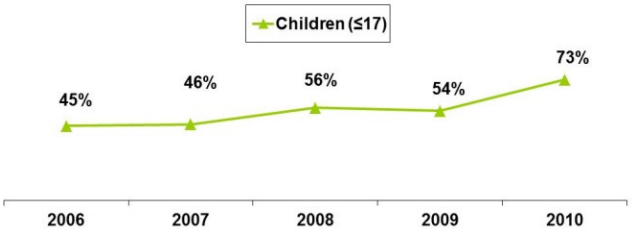
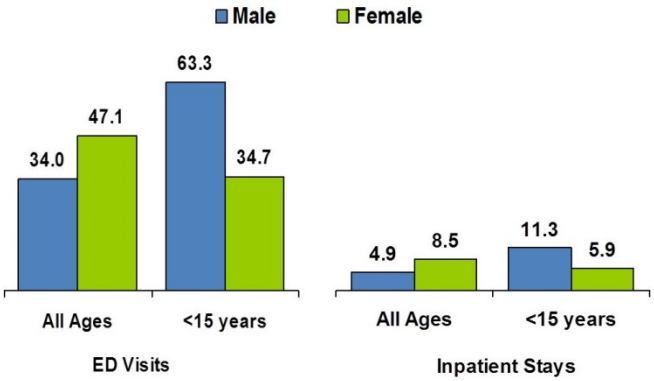


Fig. 6 Hospital Care for Primary Asthma Diagnosis, 2009 (rate per 10,000)

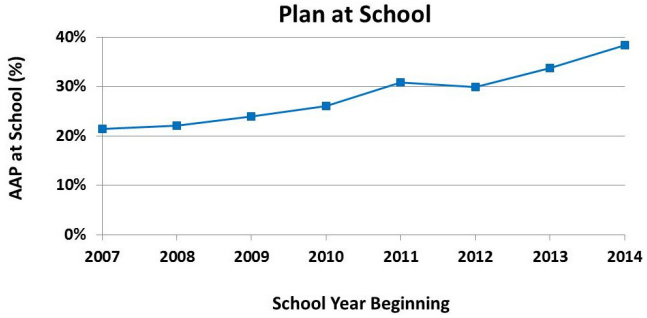


The overall rate of *ED visits* for asthma among Vermont youth less than 15 years old was 49.3 per 10,000 children and 68.4 per 10,000 for those less than 5 years old.[5] The overall rate of *inpatient hospitalizations* for asthma among Vermont youth less than 15 years old was 8.7 per 10,000 children and 19.1 for children less than 5 years old.[5] Vermont boys had a higher rate of ED visits and inpatient stays for asthma as compared to Vermont girls and men of all ages (Fig. 6).[5]

Asthma Management in Schools

According to the 2014 School Profiles Report, 98% of Vermont schools use school records to track students with asthma and 79% of schools provide referrals to health care providers for students that receive daily or emergency management for asthma.[6] Policy guidelines are that each student with asthma should have a copy of their asthma action/management plan on file at their school or daycare. The School Nurse Report indicates that in 2014, 38% of Vermont students had an asthma action plan on file at their school (Fig. 7).[7]

Fig. 7 Students with Asthma who have Asthma Action Plan at School



According to the 2012-2013 Envision Report that assessed factors influencing indoor air quality in Vermont schools, 80% of schools had policies guiding the use of least toxic cleaning supplies and 62% of schools did not allow warm-blooded animals in school buildings.[8] In 2008, Vermont enacted the Vermont School Bus Idling Rule which limits the idling of school buses on school grounds[9] and in 2013, the idling of all motor vehicles was prohibited statewide by Act 57.[10]

Discussion

Asthma is a significant burden among Vermont's children that leads to missed school days, decreased quality of life, and increased use of healthcare resources. Progress has been made over the last ten years with rates of youth smoking having decreased and rates of flu immunization and use of asthma action plans within schools having increased. However, there is need for continued improvements to reach the goals set for Healthy Vermonters 2020 in reducing the burden of asthma among Vermont children. With increased awareness of common environmental asthma triggers, steps can be taken to minimize exposure to triggers in the school and home settings. The Envision Program at the Vermont Department of Health can assist schools in providing a self-guided building inspection checklist and in creating and implementing environmental health management plans. Together, school nurses, educators, and health professionals can reinforce asthma management messaging and promote policies that foster a safe environment and improved asthma management for those children with asthma.

Resources to Improve Asthma Control for Children

① Open Airways for Schools: http://www.lung.org/lung-health-and-diseases/lung-disease-lookup/asthma/asthma-education-advocacy/open-airways-for-schools/

② Managing Asthma in Schools: Guidance and Policies for Vermont's School Nurses: http://www.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=16010&lid=3

③ School Nurse Evidence-Based Clinical Guidelines: Asthma: https://www.nasn.org/asthmaguidelines

④ Learn how to reduce asthma triggers in your environment https:// apps.health.state.mn.us/asthmahealthyhomes/

⑤ Video of proper inhaler use: http://www.cdc.gov/asthma/inhaler_video/default.htm

⑥ Envision Program at the Vermont Department of Health: Promoting Healthy School Environments http://www.healthvermont.gov/health-environment/healthy-schools/envision-program

For additional resources regarding asthma education for children, reducing asthma triggers within the school environment, and asthma action plans, please contact:

Vermont Asthma Program at the Vermont Department of Health
Phone: *802-951-0156* or **Email**: *vdhco@vermont.gov*
Website: http://healthvermont.gov/prevent/asthma/index.aspx

Data Sources and References

[1] *United States Environmental Protection Agency. Asthma Facts. March;* [2] Behavioral Risk Factor Surveillance System, 2013-2014
[3] Asthma Call Back Survey, Child 2010; [4] The 2013 Vermont Youth Risk Behavior Survey- High School: http://healthvermont.gov/research/yrbs/2013/documents/2013_yrbs_highschool.pdf ;
[5] The Vermont Uniform Hospital Discharge Dataset, 2009; [6] 2014 Vermont School Profiles Report; [7] 2014-2015 The Vermont School Nurse Survey; [8] 2012-2013 Envision Report; [9] Anti idling statute Act 57: http://www.leg.state.vt.us/docs/2014/Acts/ACT057.pdf : http://legislature.vermont.gov/statutes/section/23/013/01110; [10] Bus idling: (Ref: 23 V.S.A. §1282(f)), http://idlefreevt.org/school-bus-idling-rule.html

For More Information on Asthma Data

Asthma Surveillance: http://healthvermont.gov/research/asthma/asthma_surv.aspx

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