

National Environmental Leadership Award in Asthma Management
Sample Communities in Action Application

Area 1. Comprehensive Asthma Management Program

The Community Asthma Program (CAP) is a comprehensive, results-driven program that aims to improve the quality of life for persons living with asthma in our community. While there are other programs in the country similar to CAP's, what is especially great about our program are the inclusiveness of the community-oriented coalition; unique partnerships that allow CAP to provide essential services; advocacy on behalf of asthma issues; and continual assessment of our program to drive the improvement that will sustain us into the future.

a. Management Structure and Operating Principles

In 2000, CAP began as an outreach project of the County Hospital. The County Hospital had noticed a large number of students were admitted to the emergency department (ED) to treat asthma attacks occurring during the school day. The asthma educator at the hospital teamed up with the health educator at the County Health Department, a school nurse, a parent, and a local physician to host quarterly meetings to discuss how to increase communication about students' asthma between primary care physicians (PCPs) and the school. With this initial momentum and a grant from the County Health Department, these leaders formed CAP as a community-based nonprofit organization housed in the County Hospital.

The asthma educator, Alison Ericson, R.N., became CAP's first program director and a tireless champion for the program. Today, CAP has six additional staff members who conduct home assessments and home-based education; host and maintain an educational Web site and online asthma registry; perform case management functions; coordinate training to schools and providers; and chair and staff coalition meetings. CAP also acts as the fiscal agent for the coalition, administering grants from outside sources.

CAP oversees a coalition comprising over 30 leading health, education, public policy, employer, and other community partners. CAP also includes people with asthma in its membership. In addition, anyone in the community interested in asthma is welcome to attend coalition meetings.

Three key coalition partners provide clinical services in our service area: County Children's Hospital, University Health Center, and Countywide Health Plan. The County Public Schools System is also a key partner.

Every school has a designated nurse or staff person responsible for providing school-based asthma services, which includes case finding; nursing care procedures and delegated procedures; emergency care; coordination of services; and student asthma education and counseling. School nurses work with PCPs to ensure that all students have an asthma action plan, a copy of which the school retains.

Distinguishing Program Feature: Community Empowerment. To encourage development of leaders in the coalition who will take or support actions to create asthma-friendly environments, CAP holds "primer" sessions during the 30 minutes preceding every meeting. People with various areas of expertise share their knowledge with others in the coalition. Through CAP's

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coordination and education efforts, many coalition members have been empowered to take actions that have reduced the burden of asthma in the County.

CAP also offers a 3-hour training for community members involved in the coalition to enable them to deliver presentations to other community groups (e.g., church or other faith organization, neighborhood community center, employer). This approach allows people in the community to become advocates and increases the reach of the coalition. Local community centers have been particularly effective partners as they are popular gathering places for many community residents.

Distinguishing Program Feature: Advocacy. CAP has formed a policy subcommittee that serves on the state asthma coalition. This keeps CAP up-to-date about state initiatives and enables CAP to influence state policies on air quality. Currently, the state legislature is considering requiring the Departments of Public Health and Environmental Protection to develop standards for minimum air quality in schools. CAP's policy subcommittee is working actively with the state asthma coalition to promote the passage of such legislation.

b. Integrated Health Care Services

Our three key clinical partners described above deliver the majority of asthma services and education to people living with asthma in our county. We work with our partners to promote care protocols, consistent with the NIH EPR-3 Guidelines, throughout the continuum of care.

The County Children's Hospital provides comprehensive clinical care and case management for children and coordinates with CAP and other partners to provide home visits and social services. The University Health Center provides similar services and has a special outreach program to treat indigent and homeless people needing asthma services. Countywide Health Plan enrolls members identified with asthma into its *Beating Asthma* program. In addition to its main health center, Countywide operates eight community clinics, scattered throughout the inner-city and rural parts of the County, to make it easier for these members to access services. Each clinic is staffed with a full-time asthma educator who works with the primary care physicians to ensure that every family receives appropriate asthma education at every encounter.

Providers for these three partners all follow similar protocols for diagnosing and stratifying patients with asthma. CAP has prepared tools to help PCPs diagnose asthma and stratify its severity. Asthma assessments are part of every pediatric clinical visit. PCPs work with patients to develop individual asthma action plans, copies of which are provided to the patient, and parents and school nurses for pediatric patients. Countywide Health Plan has instituted financial incentives to encourage its providers to prepare action plans. This has resulted in an 80 percent increase in the number of PCPs preparing asthma action plan over a baseline measurement in 2002.

CAP provides case management services for our three key partners. Nurse case managers at CAP regularly review the status of patients' asthma control and work with PCPs to revise action plans accordingly.

Growing from our initial effort to train school nurses, the school system now has a standard curriculum that it provides to new school nurses. A nurse who is a certified asthma educator delivers initial and refresher EPR-3-based training annually. We found that a common issue contributing to school-day trips to the emergency room was not having access to an inhaler at school. CAP worked with the school system to encourage them to adopt a policy that allows self-administration of medication. School nurses now work with the parents or guardians, primary care physician (PCP), and school administrators to work out an accommodation that ensures the member has appropriate asthma care. Countywide Health Plan allows the PCP to approve two nebulizers, for example, to accommodate custody arrangements.

Another school-related program that CAP championed was the Coach's Whistle Program. Designed by the State Department of Health and adopted by schools across the state, the program provides a 30 minute online educational video on what coaches, referees, physical education teachers, and other athletic professionals who work with active children should know about asthma. This is now a requirement for new coaches and physical education teachers hired by the County and the University. To date, 70 percent of existing coaches and physical education teachers have completed the program.

Education is also built into every encounter with asthma patients from the initial diagnosis, through well visits, to ED visits and hospitalization. Countywide Health Plan trains community health workers to provide asthma education in its community clinics. University Health System and county Children's Hospital use nurses to educate patients. Educational materials are available in a variety of languages and in low literacy formats. Each partner has a schedule for sending materials depending on the severity of the asthma case, the season of the year, and other factors.

To coordinate information across the coalition, CAP championed the use of electronic medical records (EMRs), which our key partners have adopted. Access to the records is through a secure Web site that CAP developed and maintains. The site complies with HIPAA regulations. CAP, PCPs and specialists, registered pharmacists, and school nurses have access to the site. Our case managers monitor their patients' records and coordinate with clinical care providers to ensure optimization of treatment. Analysis of the data allows us to see trends in health outcomes and quality of life indicators.

The Web site also has a section to share information with the coalition and the community. The community and coalition section of the Web site provides educational information for people with asthma and their caregivers, schools and daycare centers, and employers. It also contains information on upcoming coalition meetings, community events, and other useful materials.

CAP has used outside grant funding to develop and present two programs to improve the delivery of asthma services. Three times a year, CAP provides training for PCPs. This training aims to increase knowledge of diagnosing asthma and using pulmonary function testing (spirometry), asthma management and medications, patient communication and education, legal issues, and documentation and coding. So far, 50 percent of the PCPs in the County have completed the program. During the training, PCPs are provided a copy of templates for adult and pediatric asthma action plans which they can tailor for their patients.

A respiratory therapist in the ED of University Health Center volunteers to present a CAP-developed brown bag seminar twice a year. The seminar provides guidance on how to talk to persons living with asthma and families about managing asthma, develop an asthma action plan, and reduce exposure to asthma triggers.

Distinguishing Program Feature: Physician Incentives. We are able to analyze physician performance (through patient statistics) and inform them and their payers. University Health System awards financial bonuses to their providers who meet defined quality metrics.

Distinguishing Program Feature: Partnerships. As mentioned before, CAP is actively working with insurance companies to develop uniform coding for physicians to use in order to be reimbursed for asthma education visits. We view this as a unique and proactive step in facilitating an efficient working relationship with insurance companies as well as making the whole process a lot easier for all parties involved by lessening the potential for billing conflicts later on. CAP also believes in innovative partnerships with non-health care related organizations. For example, CAP has reached out to local police departments, asking them to help ensure that the no smoking and bus idling buffer zones around schools are enforced.

c. Tailored Environmental Interventions

From the beginning of our program, environmental management has been viewed as an essential part of comprehensive asthma management. One of the parents felt very strongly about addressing environmental triggers and spoke out about it at the first coalition meeting. Since that time, CAP training programs and activities have encouraged all of our clinical partners to educate persons living with asthma on ways to control exposures to environmental asthma triggers, and other community partners to take action to create asthma-friendly environments in their facilities. Since indoor allergens and irritants can play a significant role in triggering asthma attacks, it is important to address triggers in all the environments where a person with asthma spends a lot of time. Therefore, every encounter with a person living with asthma includes an asthma education component. Nurse educators at University Health System use a dollhouse to educate people about asthma triggers.

CAP promotes environmental interventions for persons living with asthma, tailored to triggers they are sensitive and exposed to, the level of control of their asthma, and other relevant factors. For example, the physicians and staff that attend the seminars described above are trained to ensure that every patient receives information on common environmental triggers, guidance on trigger avoidance, and an assessment for sensitivity to environmental triggers. The care team puts these measures into the online information system.

In addition to an overall emphasis on environmental management of asthma in our training, CAP also provides comprehensive home assessments for pediatric cases of severe asthma (identified in the online system or referred to CAP by school nurses or clinical partners). This represents about 8 percent of our asthma population. CAP staff members manage a contract with the County Environmental Health Department for home visit specialists. These specialists were already visiting homes to conduct lead poisoning inspections, so CAP trained them to provide home assessments using EPA's Asthma Home Environment Checklist. The home visitors identify potential environmental asthma triggers, educate persons living with asthma about

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mitigations that are easy or low in cost, and review medication and self-management instructions and procedures in the asthma action plan. They also distribute information on reduced-cost pillow and mattress covers, provide referrals for smoking cessation programs, and legal assistance for people who need assistance in getting landlords to address triggers. They provide information on pest control services and referrals for psychosocial services as needed.

CAP's home visitors make an initial assessment and three follow-up visits over a six month period. Home visitors enter information on home assessments into the online information system so that case managers and members of asthma teams are aware of environmental management measures their patients have taken. After completing the six month course of home visits, CAP case managers actively monitor patient utilization for a year. Any patient who has an ED visit or is hospitalized within a year after the home visits is re-enrolled in the home visit program. These patients are also scheduled for visits with their PCPs to review their asthma status and treatment plans.

CAP's work and influence have been instrumental in the institution of several other environmental management initiatives:

-- **EPA's *Indoor Air Quality Tools for Schools* Program:** CAP worked with local PTAs and the County school board to get the school district to implement EPA's *Indoor Air Quality Tools for Schools* Program in a number of pilot schools. The school district was further motivated to expand the program to all schools in the district after receiving the *Indoor Air Quality Tools for Schools* National Great Start and National Leadership Awards. CAP is trying to expand this program to daycare centers.

-- **Air Quality Flag Program:** The Air Quality Flag Program is an educational program based on the Air Quality Index and daily air quality forecasts. Flags are flown at schools, YMCAs, recreational facilities, health departments, fire departments, and in other public places to let the community know what each day's air forecast will be, helping inform those with asthma about possible environmental triggers. Thanks to CAP's awareness raising, currently all schools in the County are involved in the program.

-- **Smoke-free Initiatives:** CAP has teamed up with the local better business bureau to encourage local businesses, including restaurants, bars, and coffee shops, to have smoke-free premises. CAP provides a listing of smoke-free businesses on the Web site.

Area 2. Evaluating the Program – Getting Results

Since inception of the program, CAP has emphasized tracking quantitative data against baseline measurements to examine program outcomes. CAP partners with County College to aid in the statistical analysis and compilation of these outcomes. We track outcomes through our online information system for the entire asthma population enrolled in partner programs. The system tracks a wide range of indices including hospital visits, medication usage, home visits, environmental trigger management, and school attendance. Provider training is also tracked and correlated with program outcomes. The flexibility of the Web-based system allows for information to be shared easily among members of the care teams and other appropriate

community stakeholders. CAP prepares an annual report that describes our programs and health outcomes. This report has proven to be an effective means of publicizing our successes.

Data sets compiled over the past few years show that the overall number of ED visits and hospital admissions related to asthma decreased when compared to the baseline. CAP's total asthma population is just under 100,000. In 2007, ED visits per 1,000 recipients of CAP's programs were reduced to 58, down significantly from 88 visits per 1,000 recipients from just three years before, in 2004. Hospital admissions decreased as well, down from 57 in 2004 to 40 in 2007. CAP uses information on school attendance input by school nurses in order to track school attendance. CAP also administers an annual survey to measure quality of life results (e.g., symptom-free days) and get feedback on patient satisfaction.

In addition to environmental management, our education efforts include instruction on the proper way to use asthma medication. Through comprehensive medication management techniques and other measures, physicians and school nurses saw a dramatic increase in the proper usage and management of medications. One of our most successful outcomes is an almost 90 percent increase in proper usage of peak-flow meters (measured from the first home visit to the sixth), a roughly 25 percent increase in the proper usage of nebulizers, and more than a 35 percent increase in parents understanding how to properly administer asthma medication to their children. These outcomes mean that children are having many more asthma free days both at home and in the classroom.

Evaluation of data also revealed a general decrease in exposure to environmental asthma triggers. As expected, greater reductions in triggers are correlated with more frequent in-home visits from environmental health specialists. Some of the most statistically significant outcomes include a 94 percent increase in allergen-impermeable bedding, an 80 percent increase in usage of easy-to-clean flooring (no carpeting), and roughly a 70 percent decrease in the prevalence of bugs, rodents, and other pests (these numbers are measured from the first home visit to the last). These findings are encouraging as they indicate an increase in the quality of life in these homes where intervention was needed.

Perhaps most interesting is the data showing decreases in asthma attacks in schools. In the first month after school nurses were educated by coalition volunteers, nurses saw an almost 25 percent decrease in visits because of asthma. More impressive were the effects of the coalition's efforts on school's daily attendance rates. After the *Indoor Air Quality Tools for Schools* Program was implemented in the county's schools, teachers reported a dramatic daily increase in average attendance rates. The increase in attendance and productivity of students at school has received the attention of local media outlets and has fostered greater cooperation between school officials and parents.

In order to aid in the continued success of the coalition's efforts, information on home assessments, emergency department visits, and school data is tracked and entered into the online information system, where the data can be made available to other counties, their schools, and the state asthma coalition.

Area 3. Sustaining the Program

Funding for the CAP comes from a variety of sources. When CAP was formed in 2000, staff members applied for and received an initial \$500,000 grant from the County Health Department to help launch the program. The County Hospital aided CAP as well, by offering a \$10,000 grant, earmarked for training and hiring of staff members. In 2005, the County Health Department awarded CAP another \$500,000 grant, due to our initial success and efficient and effective use of resources. Additional funding comes from donations from local businesses and private citizens. Because CAP's activities provide a cost savings to health plans, CAP is reimbursed for home visits. Uninsured patients are covered by grants. CAP provides case management on a fee-for-service basis. In addition, CAP is working with insurance plans to develop uniform coding to ensure that physicians and asthma educators are reimbursed for asthma education and to help ensure continued sustainability.

Tracking costs associated with running these programs, as well as outcomes are part of CAP's online information system. Both monetary and non-monetary outcomes (those outcomes that are unable to be tracked through quantitative measurements) are listed below.

Based on the reductions in both ED and hospital admission rates, CAP is able to demonstrate cost savings of just over \$350,000 for the three years of data tracking. Comparing ED and hospitalization rates for patients receiving home visits and those not receiving home visits (controlling for asthma severity) suggests a 25 percent differential. By having CAP address key environmental factors upstream, health care providers can save themselves substantial financial resources downstream. Net savings for a health care provider whose patients receive asthma education, have asthma action plans, and receive home visits range from \$2,200 to \$2,400 per child, per year. CAP hopes to negotiate a higher reimbursement rate from health care plans and providers to allow us to expand the number of patients receiving home assessments.

One of CAP's founding principles is the idea that having the whole community involved helps produce the best results. As the economic case for comprehensive asthma management becomes clearer, stronger community relationships between both residents and business have resulted. Sharing health and cost results of CAP's programs has been instrumental in attracting partners. CAP has forged effective working relationships with the school nurses' association, community centers, County College, and the local chapter of the American Lung Association. Residents, who have had positive experiences with CAP's services, provide word-of-mouth marketing in the community. The program efforts to increase the reimbursement rate for providers will allow us to further expand our services to outlying parts of the county.

These positive outcomes also help to increase partnerships. Part of the success of CAP stems from people in the community who have specific areas of health expertise and who generously volunteer their time. This helps add to general community cohesion and stronger working relationships between community members and CAP staff.

Cost savings are seen beyond the specific asthma community as well. For example, coaches taking part in the 30-minute Coach's Whistle Program have reported fewer asthma-related incidents on their teams, increasing the playing time of student-athletes with asthma and giving the team a greater competitive advantage. The estimated cost savings to health care providers

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from decreased ED visits due to sports induced asthma events is estimated to be roughly \$5,000 per 100 high-school aged students per year. Coaches also report increased morale and camaraderie on the teams and CAP expects that increase to trickle into the classroom as well.

CAP will use these results both internally and externally. We believe there is continued room for improvement and expansion of the tailored environmental interventions, and we hope to use the return on investment information internally to constantly assess our actual performance against baselines and our program goals. Externally, we hope to disseminate this information to recruit new sources of revenue from health care plans and providers.

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