



Practical aspects of integrating allergy and pulmonology management into a rhinology practice: the Vanderbilt ASAP experience

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Purpose of review

In the aftermath of reforms in healthcare laws, there is a focused conversation concerning healthcare delivery with an increasing emphasis on quality, cost containment, improved outcomes and access. Concurrently, providers are experiencing pressure as patient volume escalates yet while funding levels fail to keep pace. Addressing these issues is imperative to the medical practices. In this review, the integration of an allergy and rhinology practice into a center focused on managing chronic airway disease is detailed in the examination of an existing practice.

Recent findings

In 2010, healthcare spending in the United States was nearly US\$ 2.6 trillion, 17.9% of the nation's gross domestic product and 10 times 1980 levels. Insurance premiums have increased 113% since 2001 and continue to outpace income gains. Seventy-five percent of spending is attributed to chronic diseases such as stroke, cancer, heart disease, diabetes, Parkinson's disease and Alzheimer's. Airway disease (rhinitis, sinusitis, asthma, chronic obstructive pulmonary disease) is one of the largest chronic disease states. In fact, more patients suffer from airway disease than the aforementioned diseases in total. Any effort to affect costs must include a chronic disease strategy. This review will focus on the nature of the integrated program and its relation to the nature of airway diseases; a detailed description of how it works and why it is different from traditional models.

Summary

This integrated model of healthcare will improve the quality of care provided to airway disease patients as well as help contain overall healthcare cost.

Keywords

airway disease, integrated model, quality of care

INTRODUCTION

The close relationship between the nose and the lung has been recognized for over a century and their interaction has been closely studied for the past 25 years. Prevalence rates of allergic rhinosinusitis closely follow those of asthma and the proposed pathophysiologic mechanisms that explain the relationship. Thus, we incorporate these within the descriptor, airway disease. Taken as a whole, airway disease far surpasses other common chronic diseases in its prevalence. Twenty-five percent of the US population or an estimated 78 million people suffer from one or more chronic airway diseases (Fig. 1). These patients' healthcare needs result in costs of US\$ 61.3 billion annually [1]. Chronic rhinosinusitis affects 39 million people with direct costs of US\$ 8 billion [2]. In addition, treatment

of sinusitis results in at least 30 million courses of antibiotics given per year [3]. Allergic rhinitis is the fifth leading cause of chronic disease in the United States affecting 50 million patients with a direct cost of US\$ 12.3 billion [4*]. Rates of asthma have grown dramatically in recent years, now affecting 25 million people in the United States with direct costs of US\$ 10 billion including two million emergency room visits and half a million admissions to

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KEY POINTS

- Controlling spending on chronic diseases is key to controlling healthcare costs and airway disease represents one of the largest chronic disease states.
- The traditional healthcare delivery model must transform to meet the needs of the chronically ill, adapting itself to the nature of the diseases.
- The Vanderbilt Allergy Sinus Asthma Program (VASAP), later replicated in other markets by BreatheAmerica (Nashville, Tennessee, USA), created a comprehensive provider-based airway disease management program to address chronic airway disease.
- The integration and coordination of ear, nose and throat/rhinology and allergy practices is an integral component of the VASAP/BreatheAmerica program.
- Patients, government and private payers and employers who utilize the VASAP/BreatheAmerica program can expect to see improved outcomes resulting in an overall reduction in healthcare spending.

hospitals each year [5,6^{***}]. Clearly, airway diseases are a tremendous burden for patients and our healthcare system, although one we believe can be impacted by providers to the benefit of patients, private and public payers and employers.

Recognizing the relationships between the various airway diseases and the cross triggering dynamic of allergic reactions to asthma flare ups,

allergic reactions to chronic rhinosinusitis and sinus infections to asthma flare ups is key to good diagnosis, treatment and management for these patients, although the portal into the delivery system is fragmented and convoluted. Patients must choose between different avenues of treatment, including primary care physicians, allergists, ear, nose and throat (ENT) specialists, pulmonologists, urgent care centers, and self-treatment. Although each of these providers has an important role, traditionally they have segmented themselves into silos with very little cross management of the diseases. Essentially, the system has not organized itself to fit the nature of the diseases.

The traditional healthcare delivery model is focused on providing services in response to current acute episodes, symptoms and flare-ups, a model that falls short of meeting the needs of people with chronic conditions. Some effort is given to managing patient conditions; however, reimbursement methods incent this traditional delivery model through fee for service payments and at rates providing near zero margins dissuading physicians from spending more time or allotting more resources to patients.

Effectively dealing with chronic conditions requires an in depth underlying cause diagnosis, a plan for continuing care and long-term clinical management, follow up and monitoring. How healthcare services are delivered to patients must be transformed to do this well. Such a model must

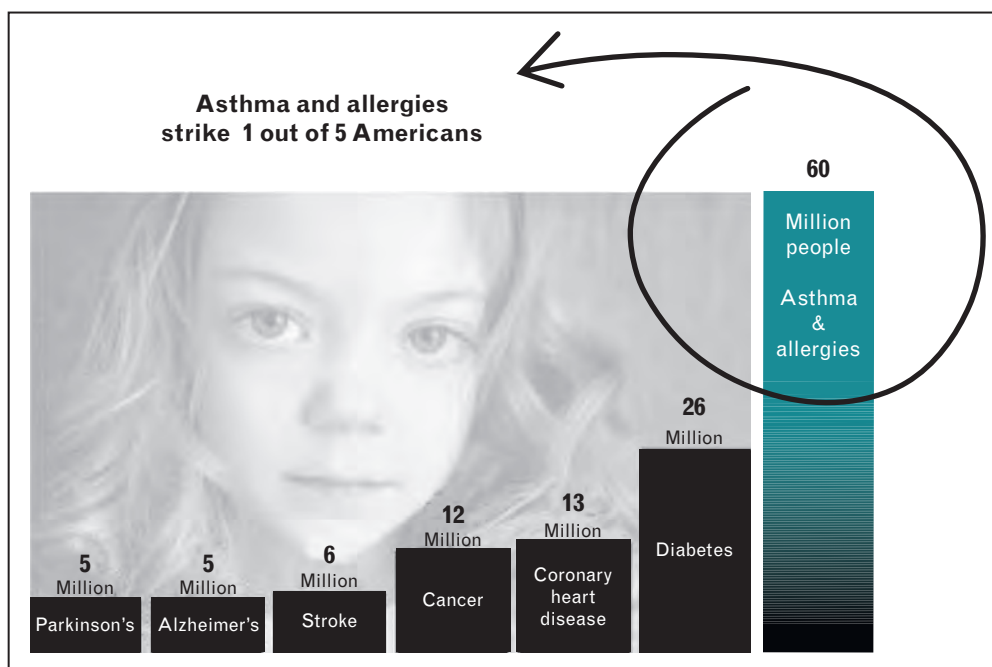


FIGURE 1. The prevalence of chronic disease in the United States in millions. Airway disease far outranks other chronic disease states. Copyright from 2012 The Asthma and Allergy Foundation of America, www.aafa.org.

efficiently incorporate cost effective diagnostic and treatment services that restore the individual to their highest possible function within a framework of sound clinical protocols and under operational protocols that allow for the time necessary to provide this level of care without excessive overhead costs. Providers must coordinate care across various healthcare settings and among varying provider specialties.

THE DEVELOPMENT OF THE VANDERBILT ASTHMA SINUS AND ALLERGY PROGRAM

In 1997, Vanderbilt University Medical Center's Rhinology and Allergy practices came together in an attempt to integrate the management of airway disease. From that effort, the Vanderbilt Allergy Sinus Asthma Program (VASAP) was developed. Our program is based on 15 years of development in an academic, medical university setting allowing us to vet our protocols and procedures, which are based on published practice parameters, with other thought leaders including the Vanderbilt, national and international communities. VASAP adopted a 'one airway, one disease' clinical approach, combining together all the diagnostic and treatment services, staffing, protocols and medical specialties necessary to diagnose and treat the most common and most complex causes of respiratory disease

(Fig. 2). Additionally, VASAP implemented an operational structure allowing the physicians and clinical staff time required to diagnose and treat patients while managing cost overhead efficiently.

VASAP is led by an allergist who emphasizes a team approach among various clinical staff and ENT and pulmonary specialties. Although every new patient is seen by the allergist, physician extenders are used to provide a high level of patient interaction. Clinically indicated testing can be performed onsite including sinus computed tomography, spirometry, nasal endoscopy and methacholine challenge as well as skin testing. In the majority of cases a patient will get a comprehensive root cause diagnosis on the first visit. Patients receive an individualized treatment plan and extensive education by a dedicated patient education department on their disease state.

As indicated, ENT and pulmonary referrals are arranged in VASAP that will have endoscopic and pulmonary treatment capabilities for participating specialists (Fig. 3). In the beginning, an onsite otolaryngologist was used for same day endoscopies. However, over the years, protocols were developed in order to make the surgeons' time in the clinic as productive as possible. These protocols allowed the allergist to function as the gatekeeper for the surgeon. Only after failure of aggressive medical treatment was the patient referred for surgical

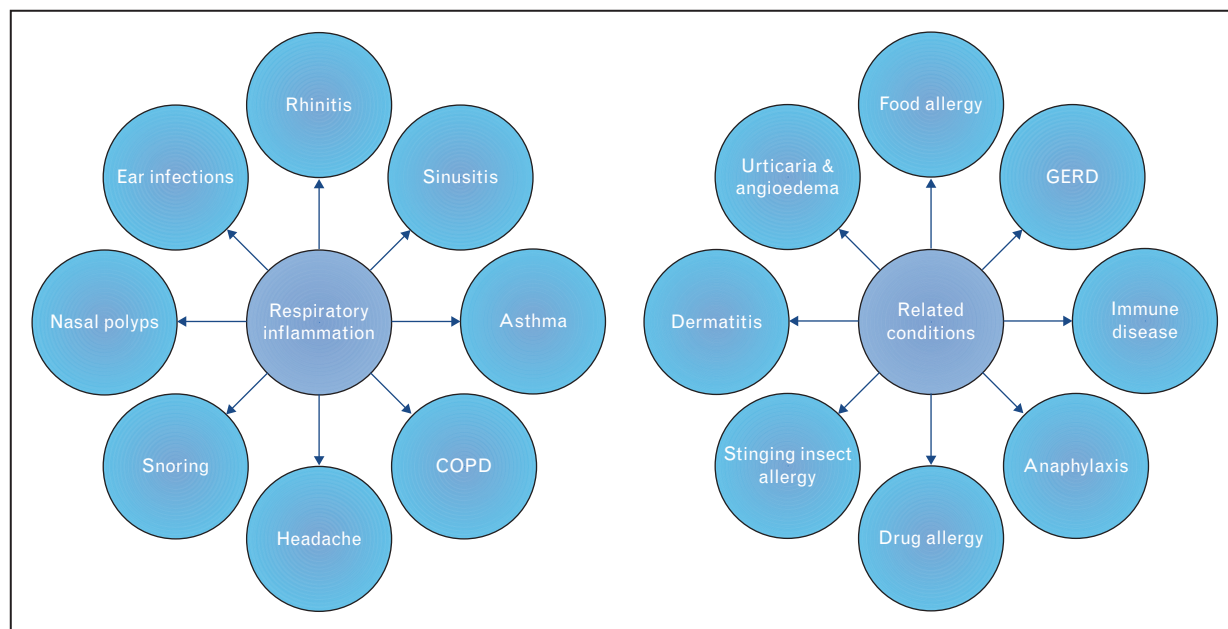


FIGURE 2. Respiratory inflammation is the main cause or a significant contributing factor to most airway diseases. In addition there are multiple known airway disorders that are typically treated by allergy/immunology. COPD, chronic obstructive pulmonary disease.

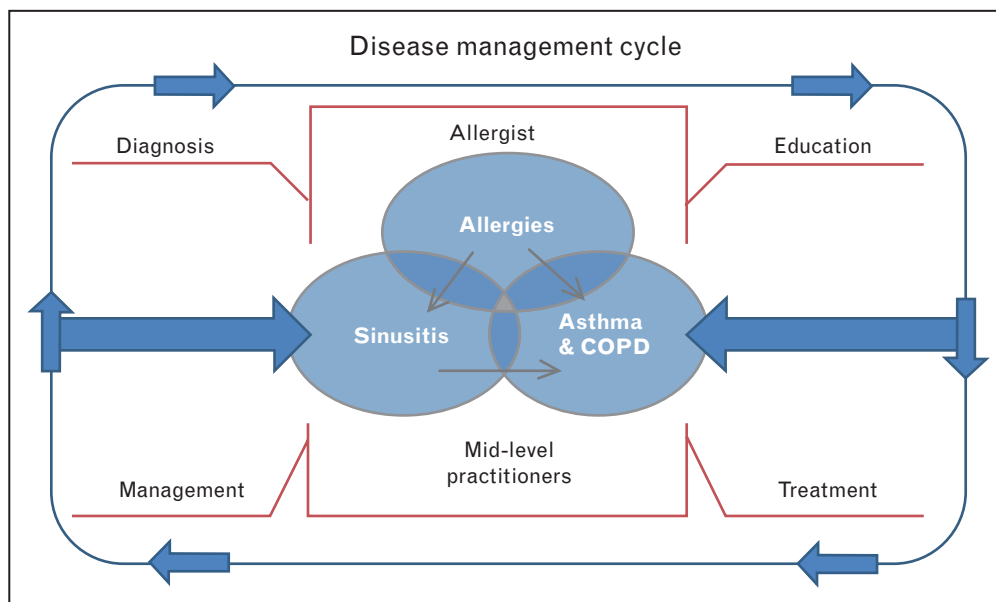


FIGURE 3. This cycle is designed to illustrate the connectivity of management of airway disease. The core of the model is the allergist and midlevels that perform the initial visit and provide the diagnosis, education, treatment and guide to long-term management of the disease state. Ear, nose, and throat (ENT) is available for diagnostic assistance and surgical correction of complex rhinological problems. Pulmonology is available for nonobstructive lung disease management and for patients that need hospitalization. COPD, chronic obstructive pulmonary disease.

evaluation, this led to patients avoiding unnecessary surgery and allowed for surgical referrals that were appropriate and ready for surgery. To be clear, the allergist did not make a decision for or against surgery, but in agreement with the surgeon determined who should be considered for surgery. Once the postoperative period was over, the allergist was again engaged to control long-term inflammatory/infectious problems to ensure adequate outcomes and to be diligent in looking for surgical failures that may suggest immunodeficient states.

For patients, VASAP accomplishes in one visit what traditional provider structures or silos do over a course of multiple visits to multiple locations resulting in multiple co-pays, lost productivity with substantially more time away from school and work. Said another way, VASAP is less disruptive, more accessible and requires less out of pocket expense for the patient. Additionally, by coordinating all patient care under one roof, VASAP fills unacceptable gaps in communication created by traditional provider silos and brings standardization to varying levels of treatment and outcomes due to inconsistency and/or the absence of treatment plans. This type of coordinated care can result in less frequent avoidable medical events and a reduction in emergency room visits, hospitalizations and pharmacy use, reducing the overall cost of providing healthcare to a large segment of the chronically ill.

THE DEVELOPMENT OF BREATHEAMERICA

After several years, Vanderbilt was convinced it had created a replicable model of healthcare that had an important relevancy beyond the University, particularly in light of trending changes in healthcare that would more fully manifest themselves in the 2010 Patient Protection and Affordable Care Act. Knowing that it was not within the mission of Vanderbilt to roll out such a plan, in 2007, Vanderbilt invited a management team to study the VASAP integrated model with the idea of taking this academically developed, provider-based disease management model to other locations. Later, the management team created BreatheAmerica to launch these programs in other markets, and currently BreatheAmerica is operational or under development in eight markets.

When Vanderbilt created VASAP and BreatheAmerica later began to launch similar programs outside Vanderbilt, the healthcare reform legislation had not been enacted. What many anticipated, however, is now playing out: numerically increasing patient demand for provider access, increased percentages of patients on government programs, increased utilization demands as baby boomers age, compressed funding for healthcare, the need to control chronic care cost and so on. The reality now facing physicians is that of increased

patient volumes, declining reimbursement, provider accountability for caring for populations within certain funding limitations, pay for performance and various forms of risk or shared risk contracting, mandates for electronic medical records, outcomes reporting and so on; and all of the above without an expansion of the provider base. Government, employers, payers and patients continue to express dissatisfaction with the performance of the healthcare system. The approach to patient care, as we have known it, will have to advance and indeed reform itself.

CONCLUSION

VASAP and the BreatheAmerica centers are well positioned to perform well in this new era. By integrating the clinical practices of ENT with allergy under good clinical protocols and efficient yet effective operational structures, the programs focus on compliance with treatment plans and drive to improved patient outcomes, which, in turn leads to a reduction in unnecessary healthcare services, thus, reducing overall costs. By maximizing physician resources through efficient staffing and operations as well as close coordination of care between specialties, the program is able to accommodate and treat higher volumes of patients while maintaining a better coordinated program with more comprehensive offerings, more time with patients, more patient education and long-term management. Patient satisfaction is improved due to the patient and disease-focused nature of the program, ease of access and reduced demands on their time and out

of pocket expenses. Further, governmental and private insurers and employer groups' concerns related to addressing outcomes, reducing costs, and providing for a healthy more productive employee base are met.

Acknowledgements

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Conflicts of interest

There are no conflicts of interest.

REFERENCES AND RECOMMENDED READING

Papers of particular interest, published within the annual period of review, have been highlighted as:

- of special interest
- of outstanding interest

Additional references related to this topic can also be found in the Current World Literature section in this issue (p. 90).

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