

## CHEST Annual Meeting 2015

### One Size Does Not Fit All in the Treatment of Asthma

**Montreal** - In recent literature, much work has illustrated the heterogeneity of asthma and its complex and different phenotypes. According to a number of presentations at the 2015 CHEST Annual Meeting, the future of asthma care will be dictated by these various phenotypes and the concept of “targeted” or “personalized” therapy, as “one size does not fit all” when it comes to the treatment of asthma. In addition, a similar approach must be taken to the education of asthma patients, so that they properly understand their treatment in order to promote better patient outcomes.

It has long been recognized that asthma is a very heterogeneous condition, although this has not always been reflected in the official definition of asthma in treatment guidelines. As Dr. Nicola Hanania, Baylor College of Medicine in Houston, Texas, stated during his presentation at the meeting, updated guidelines are needed because the impact of asthma continues to be felt throughout the world. He presented the recently updated 2015 Global Initiative for Asthma (GINA) guidelines, which include a revised definition of asthma reflecting the notion of heterogeneity: “Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation.”

*Our understanding of the disease has changed. It's not 'One size fits all.' We need a personalized approach to the problem and to the position of new targeted therapies.*  
Dr. Nicola Hanania

### Personalized Asthma Care: Case Studies on Specific Phenotypes

The notion of the heterogeneity of the disease was discussed during a case-based discussion session at the meeting. Physicians presented one patient case each and led the audience through discussion points. Dr. Justin Weis, University of Rochester, New York, presented an allergic phenotype patient. He informed the audience that one of the best tools for proper diagnosis in allergic phenotype asthma is serum specific IgE. He concluded his case by saying that the agent omalizumab is a good option for therapy in this type of asthma, as it has demonstrated favourable outcomes, such as reduced exacerbations, symptoms, hospitalizations and ER visits, as noted in a Canadian Agency for Drugs and Technologies in Health (CADTH) report published in March 2015.

Dr. Frances Eun-Hyung Lee, Emory University, Atlanta, Georgia, presented an eosinophilic asthmatic patient case. After starting the patient on various medications, the patient presented at the hospital a month later with worsening symptoms. Subsequently, a number of treatment options were tried, but the patient either could not tolerate them or did not completely respond to them. Dr. Lee asked the audience what other options were available to patients such as this one. She pointed out that research has shown that interleukin-5 (IL-5) is an important mediator of eosinophilic airway inflammation, which has led to the development of biologic agents targeting the IL-5 pathway. Similarly, other biologic agents have been developed to target

*Perhaps understanding the immunologic mechanisms of eosinophil proliferation, differentiation, maturation and migration would lead to novel drug targets for eosinophilic asthma.*  
Dr. Frances Eun-Hyung Lee

TABLE 1 | Biologic Agents in Asthma and Potential Biomarkers

Pathway	Agents Approved or in Trials	Biomarkers Predicting Response to Therapy
IL-5	Mepolizumab Reslizumab Benralizumab	Sputum eosinophils Blood eosinophils
IgE	Omalizumab	Fractional exhaled nitric oxide (F <sub>ENO</sub> ) Blood eosinophils Periostin
IL-4/IL-13	Pitrakinra Dupilumab	F <sub>ENO</sub> Sputum eosinophils Blood eosinophils
IL-13	Lebrikizumab Tralokinumab	Periostin F <sub>ENO</sub> Sputum IL-13 (periostin surrogate)

Adapted from Gauthier M et al. *Am J Respir Crit Care Med* 2015 Sep 15;192(6):660-8 and as presented during CHEST 2015 Annual Meeting, Session 134

other inflammatory pathways associated with different phenotypes (Table 1). Dr. Lee concluded by emphasizing that phenotyping in severe, persistent asthma is important when considering biological therapy, especially for the eosinophilic phenotype.

### Evolutions in Patient Care: The Notion of Humanomics

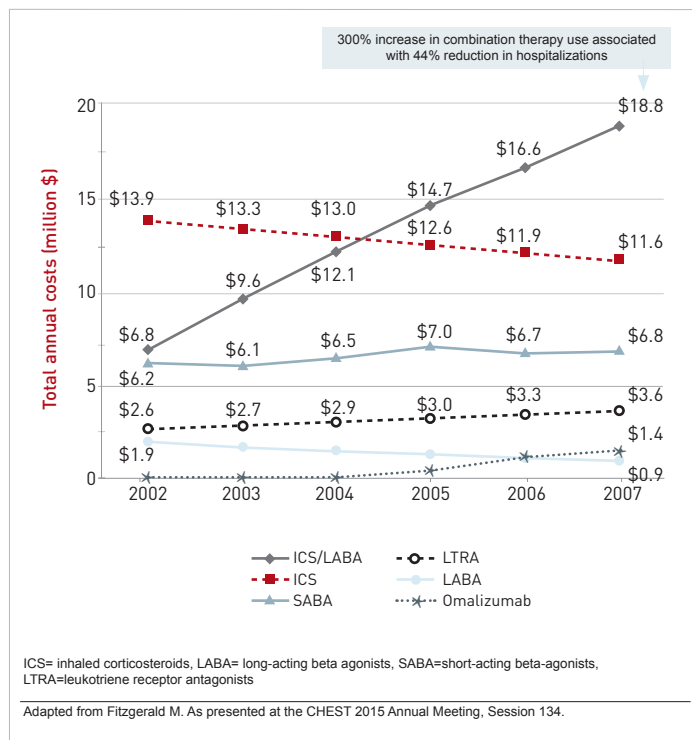
The idea of “one size does not fit all” was also echoed by Dr. Mark Fitzgerald, University of British Columbia, Vancouver, BC, who spoke about the need for humanomics in chronic disease management, a term which encompasses economics, adherence, and literacy.

Dr. Fitzgerald pointed out that, even with the availability of targeted therapies, patient non-adherence will limit their effectiveness. He gave an example of data gathered from a large administrative database study in British Columbia, which showed that only about 40% of patients with moderate to severe asthma took their asthma medications on a regular basis. However, when patients do take effective medications as prescribed, better patient outcomes can be observed. To this point, Dr. Fitzgerald presented data from the same database showing that, between 2002 and 2007, there was a 300% increase in the use of combination therapy, which led to a 44% reduction in hospitalizations (Figure 1).

It is important that healthcare professionals work to increase patient health literacy, as higher levels are correlated with better outcomes. In order to do this, physicians need to develop appropriate educational interventions and individualize treatment. Dr. Fitzgerald stressed that how physicians communicate with patients is important and that interventions must be adapted for the cultural domains and environments in which we live. Shared treatment decision-making between patients

and physicians has been shown to improve adherence and outcomes in poorly controlled asthma.

**FIGURE 1 | Annual Cost of Asthma-related Medications**



### Conclusion

Presentations at the year’s CHEST meeting focused on the necessity to update current guidelines and recognize the heterogeneous condition of asthma. Through a combination of new, exciting biologic treatments to better address specific patient phenotypes and improved humanomics, great strides in the treatment of asthma can be anticipated in the future. ●

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