Asthma Phenotypes and Real World Control

Increasingly we recognize the importance of real-world studies with real-world data in determining the efficacy of some of the therapies we use in asthma, as well as better understanding some of the clinical course and natural history of this very complex disease.

In this very large study of a hundred thousand patients, performed at the University of California, Los Angeles, the purpose of the study was to identify whether particular algorithms were more successful than others in accurately identifying children with asthma. This is a critical point in doing a real-world study because identification of a cohort accurately is the first step in conducting a successful observational study.

In this particular trial, two different algorithms were compared, the Capricorn Algorithm derived in Chicago, and what we'll call the FeKB from Philadelphia. The sensitivity, the specificity, and the positive predictive value of these two algorithms was compared. And a determination was made, whether they were superior or inferior to one another, and whether a combination of two algorithms might better identify children with asthma.

They found that the two algorithms agreed 66% of the time, and that there in fact was a slight difference between the two. But in order to achieve the best sensitivity and positive predictive value for identifying children with asthma, a combination of these two particular algorithms worked best.

This study gives us more information and allows us to put into use algorithms that may be very helpful in identifying children with asthma in future large real-world studies using large databases.

Since currently we're all already conducting large database analysis, every bit of information that we can glean from the mathematicians that create algorithms is very useful.

We now have two established algorithms, when used in combination, have a very high sensitivity and positive predictive value for identifying young children with asthma. I expect to see these put into use in large database studies and hopefully improve the accuracy and reliability of these trials.

The focus of this assessment is to look at asthma control and asthma severe. And asthma severity was looked at by what the physician coded. And I used an ICD 10 code of mild, moderate, or severe. An asthma control was looked at based on the GINA classification of control, GINA one, two, three, or four or five, based on the 2019 GINA guidelines.

So for this analysis, we actually tagged on a large claims database of about 23 million lives. And we actually specified that we looked at patients with more than two claims in the preceding year of asthma. So that downed the number to around 2 million patients.

But we also looked at their dispensing of medication. We looked at assessment of control. And because this is a retrospective analysis of a large database, we defined and controlled by several things, including stepping up to higher GINA stage, or increasing dose of ICS, or adding another controller, or neutralization of oral steroid.

We also looked at their ICD 10 code, how the physician coded their asthma, whether it's mild, moderate, or severe. We first found that there was some correlation between the GINA five, where uncontrolled asthma and severity.

But what was surprising in this study, is that many of the patients who were in the mild category had uncontrolled asthma as well. So these findings highlight that there is quite a bit of uncontrolled asthma out there when you look at their medication utilization and based on the assessment that we have set forth, despite the fact they are coded as mild or moderate.

There was a direct association between uncontrolled asthma and disease severity coded by ICD 10. But the proportion of patients with uncontrolled asthma was inversely correlated with a GINA stage. I think taken together, these data suggest that employing more aggressive therapy may lead to better asthma control. Those with GINA four or five tend to have a more controlled asthma, even though they're requiring more higher doses of medication.

I think this is one of the real-world studies that sheds light on the fact that there are quite a bit of patients out there with asthma, even though they're classified as mild, moderate, have uncontrolled disease. And in those patients with higher GINA level of treatment, tend to have a better control of their disease, possibly because of better treatments.

I believe this study really sheds some light on how we should look at GINA recommendation and classification of patients. While these are very important, one has to keep in mind in the real world, many patients who are classified with mild disease have an uncontrolled disease.

So I think clinicians have to be aware of this. And possibly these findings, and more studies, may allow us to think differently about asthma control, and which populations should we target with more treatments.

Right now we're getting to where the GINA one, two, three, four, five, based on the asthma control measures that we do in the clinic, but there may be other things that we should look at in the future.