burden: lung volume reduction surgery and lung transplantation (2). Although both these therapies can have significant benefits to patients, they also have significant complications and costs associated with them that far exceed those that have been reported in patients undergoing endobronchial lung volume reduction therapy (2, 3). We also wholeheartedly agree with Dr. Jain that future research should focus on better predictors of patient outcomes, the minimization of risk, and providing improved outcomes in the most cost-effective fashion. ■

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Sex Hormones and Asthma: Don't Forget Progesterone

To the Editor:

We read with interest the observational findings of Han and colleagues, who reported that raised serum estradiol was associated with a lower likelihood of asthma in obese women and in nonobese men (1). Pointedly, their study did not evaluate the potential effect of progesterone, which is known to aggravate airway IL-5–mediated eosinophilia and associated airway hyperresponsiveness to methacholine in the murine model of allergic asthma (2). Moreover, increased endogenous luteal phase progesterone levels in women with asthma are accompanied by a marked increase in airway hyperresponsiveness to adenosine monophosphate, which can be abolished by the combined oral contraceptive pill (3). Interestingly, in women with asthma, exogenous progesterone, but not estradiol, results in downregulation of lymphocyte β-2 receptors and an attenuated 3′,5′-cyclic adenosine monophosphate response to isoproterenol (4), whereas in women without asthma, the opposite occurs (5), and in men without asthma, there is no change (6). Hence, we believe that further observational-type studies should also focus on cyclical changes in sex hormones, including progesterone, in women, as this is more likely to explain sex-specific differences in asthma. ■

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Reply to Lipworth *et al.*

From the Authors:

We thank Dr. Brian Lipworth and colleagues for their interest in our recent cross-sectional study of sex steroid hormones and

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