



FeNO Case Study: Jessica



Jessica, 17 years old
Initial FeNO result: 113 ppb (raised)
Follow-up FeNO result: 48 ppb

Symptoms on examination:

- PEFR 370 (with suboptimal technique)
- Inhaler technique is good using a pMDI, although she needs to inhale slower for the dose to be fully effective.

Jessica's Background:

- No formal diagnosed asthma, despite being told she had asthma 3-4 years ago
- Remembers always being wheezy and recalls an episode 3-4 years ago when she was more symptomatic with URTI. GP prescribed Salbutamol PRN (regularly used)
- Recent spirometry tests have been normal
- Identifies triggers as coughs and colds, dusty environments, some pets, going from hot to cold, some sprays and exercise
- Salbutamol use is up to 10 doses weekly but is effective at relieving symptoms and lasts for 5-6 hours
- Has never been prescribed inhaled corticosteroids
- Wakes 2-3 times a week with symptoms, chest tightness most mornings
- Has hay fever and runny nose and sneezes daily but no medication or food allergies
- Has patchy breakouts of eczema which has gotten better with age
- Non-smoker
- Jessica's mother has asthma which is treated with a "pink inhaler" (likely Fostair)

How FeNO Helped:

Identifying significant airway inflammation, alongside additional lung obstruction tests, patient history and symptoms, helped support the HCP confirming an official asthma diagnosis. Identification of significant airway inflammation helped the HCP determine that an inhaled steroid, used to treat airway inflammation, was appropriate to prescribe. Increasing likelihood of successful treatment for Jessica.

The HCP was able to objectively show the positive impact adherence to medication has on airway inflammation and asthma control by showing Jessica the reduction in FeNO score from her initial visit. Jessica was able to associate a lower FeNO score and improved symptoms, motivating her to adhere to her medication. A FeNO measurement was able to show Jessica the significant role airway inflammation plays in asthma, and how her medication controls this, improving Jessica's understanding of Asthma and how her medication plays a vital role in controlling factors which leads to Jessica feeling unwell due to her asthma.

Summary:



Symptomatic asthma without any formal diagnosis, raised FeNO supportive of diagnosis.



Action:

Inflammatory nature of asthma and action of preventer and reliever inhalers explained to Jessica using simple diagrams and the raised FeNO result to illustrate that active airway inflammation is present. Inhaler technique checked and optimised using a slower inhalation. Personalised asthma action plan initiated tailored to symptoms and with supporting education. The need for need for a preventer inhaler was discussed with Jessica given her high symptom burden, rescue use and confirmation of diagnosis with raised FeNO. She was able to understand the explanation and is happy to start an inhaled steroid.

The environmental impact of pMDI inhalers was discussed, and the environmental benefit of using a dry powder inhaler. Jessica is very aware of the effects of climate change and keen to do what she can so an inhaled steroid using a dry powder was demonstrated and Jessica was able to use it with a good inhalation technique. Salbutamol was also changed to the same device for device consistency.

Jessica also has symptomatic rhinitis. Available treatment options were discussed (nasal corticosteroids or antihistamines), and Jessica opted for a trial antihistamine at this point and will add in a nasal steroid if this is not effective.

At 6 week follow-up, Jessica's FeNO test was repeated. Her FeNO score was **48 ppb**, a 58% reduction from her initial visit. In addition to this, Jessica noticed that she had felt much better after sticking to taking her prescribed inhaled steroid from her initial visit. Her chest tightness had reduced when walking in the mornings, and she hadn't woken in the night to take salbutamol. Jessica noted that her need to take salbutamol as often as she had previously, had significantly reduced.



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