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EXPERT FORUM

Transforming asthma care in New Zealand:
Insights into oral corticosteroid burden and referral pathways

Making Education Easy

About the speakers

Associate Professor Amy Chan

Dr Amy Chan is Associate Professor and Head of the Respiratory theme of the Medicines Intelligence group at the School of Pharmacy, University of Auckland. She is a clinical pharmacist with over 15 years' experience working in hospital, where she led one of the clinical pharmacy teams. She is currently leading a research group that uses big data to explore medicines use and respiratory outcomes, with a focus on airways disease. Amy has over 140 peer-reviewed research outputs and has influenced respiratory policy at a national and international level, including WHO guidelines and civil society policies. She is also part of the core leadership team for the European Respiratory Society (ERS) CONNECT clinical research collaboration, member of the Respiratory Effectiveness Group and current clinical director of Asthma NZ. She is an associate editor for three journals and sits on the Medical Committee for the Auckland Medical Research Foundation.

Dr Angela Moran

Dr Angela Moran trained as a Respiratory and General Physician at Christchurch Hospital. She went on to do a Clinical Research Fellowship at the prestigious University of Oxford, working in the Severe Asthma Service at the John Radcliffe and Churchill Hospitals in Oxford. She has a number of research publications and has presented at various international scientific meetings. She has extensive experience in using biologic therapies for the treatment of severe eosinophilic asthma. Angela is co-chair of the NZ Severe Asthma Network and runs the Severe and Complex Asthma Clinic in Christchurch.

Abbreviations used in this review

ACT = Asthma Control Test
COPD = chronic obstructive pulmonary disease
FeNO = fractional exhaled nitrous oxide
GP = general practitioner
HR = hazard ratio
ICS = inhaled corticosteroid
IgE = immunoglobulin E
LABA = long-acting beta-2 agonist
LAMA = long-acting muscarinic antagonist
OCS = oral corticosteroid
OR = odds ratio
SABA = short-acting beta-2 agonist
SMART = Single Maintenance and Reliever Therapy
TSLP = thymic stromal lymphopoietin

RESEARCH REVIEW™
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This publication summarises an AstraZeneca Medical Affairs educational webinar on transforming asthma care in New Zealand. The session, held in August 2025, was led by Associate Professor Amy Chan who spoke on severe asthma and the oral corticosteroid burden in New Zealand, and by Dr Angela Moran who spoke on clinical implications of high oral corticosteroid use and referral pathways.

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For access to the on-demand recording of the webinar please email RespiratoryNZ@astrazeneca.com

ORAL CORTICOSTEROIDS AND ASTHMA
– Associate Professor Amy Chan

Current challenges of severe asthma treatment

A/Prof. Chan explained that current challenges of managing severe asthma are multi-fold. It is evident that patients with uncontrolled severe asthma tend to have much more frequent exacerbations, which result in increased risk of hospitalisation and an eight-fold increased risk of death compared to those with well-controlled disease.[1-4] Around 72% of patients with asthma in primary care thought to have severe asthma have never visited a specialist and, worldwide, 57% remain poorly controlled despite treatment.[2,5] While oral corticosteroid (OCS) therapy on a regular basis can be effective in severe asthma, it is associated with an increased risk of systemic side effects including pneumonia, osteoporosis, and type 2 diabetes mellitus.[6,7]

A/Prof. Chan pointed out that we are fortunate to now have access to biologic agents that are effective in treating patients with severe asthma and that with the increasing use of these agents there should be a reduction in OCS use. However, worldwide 75% of patients with uncontrolled severe asthma are currently not receiving OCS-sparing biologic therapy.[2]

Difficult-to-treat and severe asthma

A/Prof. Chan explained that difficult-to-treat asthma is asthma that is uncontrolled despite medium- or high-dose inhaled corticosteroids (ICS) with a second controller (e.g., long-acting beta-2 agonist [LABA]) and/or maintenance OCS, or asthma that requires high-dose treatment to maintain good control and reduce exacerbations.[8] Severe asthma is a subset of difficult-to-treat asthma that is uncontrolled despite adherence with maximal optimised high-dose ICS/LABA and management of contributory factors, and asthma that worsens when high-dose treatment is decreased.[8]

In a study using data from 65 Dutch pharmacy databases, 23.5% of adult patients with asthma were receiving high-intensity treatment (high-dose ICS/LABA or medium-dose ICS/LABA + OCS).[9] Of these patients, 74.1% (17.4% of the total asthma population investigated) had difficult-to-treat asthma (high-intensity treatment and poor symptom control), and among those patients, 20.5% (3.6% of the total asthma population investigated) had severe asthma (high-intensity treatment and poor symptom control despite good treatment adherence and inhaler technique).[9]

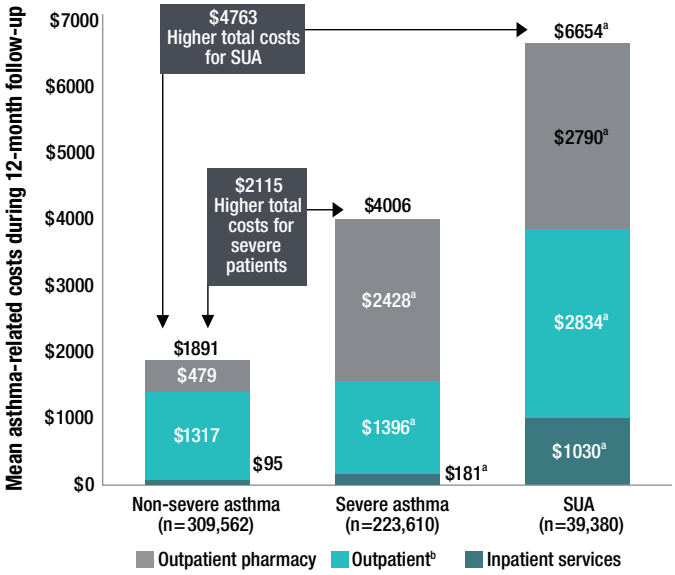
A/Prof. Chan explained that compared with non-severe asthma, difficult-to-treat asthma and severe asthma contribute a considerable cost to society. A retrospective, real-world US study used MarketScan administrative claims data between 2013 and 2019 to compare all-cause and asthma-related healthcare resource utilisation and costs between patients with severe or severe uncontrolled asthma and those with non-severe asthma.[10] The analysis revealed that asthma-related costs during a 12-month period were approximately US$2100 higher for patients with severe asthma and almost US$5000 higher for those with severe uncontrolled asthma compared to those with non-severe asthma (**Figure 1**).[10]

ABOUT RESEARCH REVIEW

Research Review is an independent medical publishing organisation producing electronic publications in a wide variety of specialist areas. Research Review publications are intended for New Zealand medical professionals.

ABOUT EXPERT FORUMS

Expert Forum publications are designed to encapsulate the essence of a local meeting of health professionals who have a keen interest in a condition or disease state. These meetings are typically a day in duration, and will include presentations of local research and discussion of guidelines and management strategies. Even for local events it is not always possible for everyone with a similar therapeutic interest to attend. Expert Forum publications capture what was said and allows it to be made available to a wider audience through the Research Review membership or through physical distribution.



[a]p < 0.001 vs non-severe asthma

[b]Outpatient service includes emergency department visits, outpatient office visits, laboratory services, radiology services, and other outpatient services

SUA = severe uncontrolled asthma

Figure 1. Asthma-related costs during a 12-month period in US patients with non-severe, severe, or severe uncontrolled asthma.[10]

OCS use in severe asthma

World-wide evidence suggests that approximately 20-93.5% of patients with severe or uncontrolled asthma use OCS 'bursts' on a regular basis, suggesting frequent asthma exacerbations.[2,11-15] Investigating the real-life experiences of patients with asthma taking OCS, a New Zealand study undertaken by A/Prof. Chan and colleagues found that while patients recognise that OCS work for their asthma, they often endure side effects and stigma associated with taking such agents.[16]

A/Prof. Chan and colleagues study identified five key themes related to patients' experiences of OCS use for their asthma.[16] She explained that patients expressed significant concerns about the use of OCS, especially with regard to becoming dependent on these agents, and that barriers and facilitators to accessing these agents were underpinned by trust in the healthcare system and their relationships with their healthcare professionals. Furthermore, patients pointed out the lack of information regarding long-term side effects of OCS use and that while they understood the benefits of `back pocket' prescriptions for rescue OCS, there was a paucity of information around harm associated with unnecessary OCS use.

Asthma exacerbations and OCS use

The 2020 Asthma and Respiratory Foundation NZ Adolescent and Adult Asthma Guidelines recommendation for OCS use in acute asthma exacerbations is a 40 mg dose of oral prednisone daily for 5 days.[17] Alternatively, one may use 40 mg oral prednisone daily until improvement, then 20 mg daily for the same number of days, with adjustment according to clinical factors such as weight, comorbidities and interactions with other agents.[17] However, A/Prof. Chan pointed out that not all asthma phenotypes respond equally to OCS and that the patient may need to be considered for referral for further work-up and an alternative diagnosis and treatment if not responding well to such therapy or requiring multiple OCS courses. She emphasised the importance of OCS stewardship as outlined in the Thoracic Society of Australia and New Zealand's position paper.[18]

A New Zealand population-based study by A/Prof. Chan and colleagues has shown that asthma exacerbations increased by 33.4% between 2010 and 2019.[19] The study also found that the total number of OCS courses dispensed for asthma exacerbations during that period increased by 63.2% and that the percentage of asthma patients dispensed OCS increased by 72.5%, from 26.7% to 40.2%.[19] Ethnicity was found to be a significant factor associated with asthma exacerbation, with the highest rates in Pasifika, but with the highest increases in Māori and European patients over the period 2010 to 2019.[19] Furthermore, while exacerbation rates were highest amongst the most socioeconomically deprived patients during 2010 to 2019, the highest increases in OCS use were seen in the least deprived groups (**Figure 2**).[19]

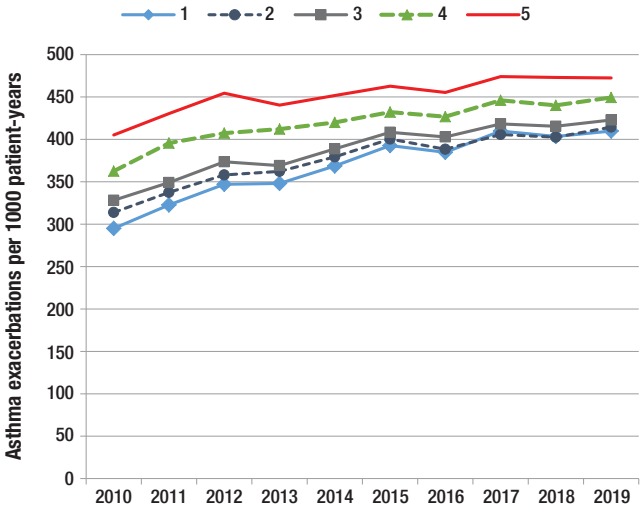


Figure 2. Asthma exacerbation rates according to deprivation status (quintiles 1-5: 1 being the least deprived and 5 being the most deprived).[19]

A/Prof. Chan reiterated that whilst OCS are effective in asthma, they do come with a number of side effects. For patients with asthma, OCS may be being administered on top of other sources of corticosteroids (e.g., inhaled corticosteroids, topical corticosteroids for dermatological conditions, and as nasal sprays for rhinitis) and that cumulative exposure to OCS increases the risk of certain adverse events.[20]

Real-world evidence from the Optimum Patient Care Research Database and the British Thoracic Difficult Asthma Registry showed elevated risks for the development of OCS-related morbidity in those with severe asthma versus those with mild/moderate asthma: hypertension 34% vs 29% (OR 1.35, p = 0.001); cardiovascular disease 10% vs 7% (OR 1.36, p = 0.035); type 2 diabetes 10% vs 7% (OR 1.46, p = 0.006); BMI >30 kg/m^2 42% vs 35% (OR 1.36. p < 0.001); psychiatric disorders 38% vs 31% (OR 1.43, p < 0.001); cataracts 9% vs 5% (OR 1.89, p < 0.001); dyspeptic disorders 65% vs 34% (OR 3.99, p < 0.001); and osteoporosis 16% vs 4% (OR 5.23, p < 0.001).[21] OCS use in patients with asthma is also associated with reduced quality of life, increased healthcare costs and mortality risk.[12,22,23]

A/Prof. Chan explained that there is a clear dose-response relationship between OCS use and serious adverse outcomes, with this risk being present at cumulative lifetime exposure as low as 0.5 to 1 g and increasing with higher cumulative exposure.[7] In a large, long-term observational study in patients with asthma, OCS cumulative doses of 1 to <2.5 g were associated with elevated risks of a number of adverse outcomes including osteoporosis (adjusted [a]HR 1.87; 95% CI 1.48-2.36), heart failure (aHR 1.63; 95% CI 1.30-2.05), type 2 diabetes (aHR 1.37; 95% CI 1.18-1.58), and pneumonia (aHR 1.70; 95% CI 1.41-2.05) when compared with cumulative doses between 0.0 and <0.5 g.[7]

Prevalence of asthma and difficult-to-treat asthma in New Zealand

The prevalence of asthma in New Zealand averages around 12.5% (n = 627,305), with 7.2% of the asthma population having difficult-to-treat asthma and 0.7% of the total asthma population having uncontrolled difficult-to-treat (severe) asthma*.[24] Māori ethnicity and higher deprivation quintiles were associated with difficult-to-treat and severe asthma. A/Prof. Chan and colleagues also investigated the use of OCS in this group of patients and discovered that over one-third of patients with severe asthma had received ≥500 mg of OCS in the previous 12-month period (July 2022 to June 2023; average dose 686 mg). Furthermore, 20% of patients with severe asthma had received ≥1 g of OCS in the previous 12 months (average dose 1.910 g). A/Prof. Chan explained that patients would generally achieve a 500 mg cumulative OCS dose after treatment of approximately three exacerbations and a 1 g cumulative dose after approximately five exacerbations, and that a 1.9 g 12-month cumulative dose would suggest that a patient might have had 10 exacerbations per year.

In their study, A/Prof. Chan and colleagues identified clear geographical differences in severe asthma prevalence within the North Island and within the South Island of New Zealand, with a higher burden of severe asthma in rural versus urban areas.[24] Significant geographical differences in OCS use ≥1 g in severe asthma were also seen across New Zealand; however, there was a geographical mismatch between severe asthma prevalence and OCS burden.

*Study funded by AstraZeneca

OCS stewardship considerations

A/Prof. Chan emphasised that there is a significant role for all clinicians to play in improving the use of OCS and in looking for alternative treatments for patients with severe asthma. She reiterated that there is often a lack of awareness for patients around the long-term side effects of OCS use and that other barriers to OCS stewardship include the perception around the positive effects of OCS on asthma, ease of accessibility and low cost of OCS, patient reluctance to try alternative treatments, lack of alternative therapies for asthma exacerbations, and delayed referrals.[20]

A/Prof. Chan outlined what she believes are the key elements of OCS stewardship in asthma care: shared decision-making with patients; clear communication between healthcare providers; standardised protocols for OCS prescribing; regular reassessment of need for maintenance OCS; and consideration of OCS-sparing therapies (biologics). She stressed that respiratory specialists (including pulmonologists and allergists/immunologists), primary care providers (including practice nurses and GPs), respiratory educators (such as nurses, physiotherapists, and occupational therapists), and clinical pharmacists all have a significant role to play in OCS stewardship. Respiratory specialists can play a role in assessing asthma severity for access to biologics and personalised tapering for those patients on long-term corticosteroid treatment. Primary care providers can be involved in the early identification of patients using multiple courses of OCS, the rapid and early referral to respiratory specialists where appropriate, and in the ongoing monitoring of asthma control. Respiratory educators can play a role in optimising existing inhaled therapies and improving patient adherence to improve self-management, minimising reliance on OCS. Clinical pharmacists can undertake medication reviews, identifying the need for OCS use and monitoring for OCS-related side effects.

What's next?

A/Prof. Chan and colleagues are currently investigating whether distance to care is associated with greater OCS use. They are also currently mapping the use of biologics for severe asthma in New Zealand to determine where the gaps in access to treatment are. Other projects include the development of a questionnaire to capture patient beliefs about corticosteroids and understanding health professionals' views of OCS prescribing in patients with asthma.

Attendees were directed to a current live survey open to all patients and whanau with asthma (https://tinyurl.com/OCSStudy) and health professionals were invited to take part in a focus group hui or 1:1 interviews to share their experiences of OCS use and prescribing. These projects are still ongoing until 2026, so please do sign up or contact A/Prof. Chan if interested in taking part.

TAKE-HOME MESSAGES

- Approximately 7.2% of the asthma population in New Zealand have difficult-to-treat asthma and 0.7% of the total asthma population have uncontrolled difficult-to-treat (severe) asthma[24]
- In New Zealand between 2010 and 2019 the percentage of asthma patients dispensed OCS increased from 26.7% to 40.2%[19]
- One-in-five severe asthma patients were exposed to >1 g OCS between 2022 and 2023 (average dose 1.91 g)[24]
- There is a geographical mismatch between severe asthma prevalence and OCS burden, and the highest burden appears to be in more rural areas. Furthermore, there is a significant ethnic and socioeconomic inequity[24]
- There is a significant role for all clinicians to play in OCS stewardship and in looking for alternative treatments for patients with severe asthma
- Respiratory specialists can play a role in assessing asthma severity for access to biologics and review of OCS treatment for those patients on long-term treatment.

IDENTIFYING EOSINOPHILIC ASTHMA IN PRACTICE AND UTILISING BIOLOGIC THERAPY TO ELIMINATE OCS

– Dr Angela Moran

Dr Moran discussed key principles that underpin decision-making in diagnosing patients with eosinophilic asthma. She presented the concept of treatable traits in asthma that have been investigated globally and identified as extremely important, as when they are treated they improve asthma control (**Table 1**).[25] Treatable traits fall under three clinical domains: pulmonary; extrapulmonary; and risk factors and behavioural traits.

Pulmonary	Extrapulmonary	Risk factors and behavioural traits
Airflow limitation	Dysfunctional breathing	Absence of written action plan
Eosinophilic airway inflammation	Anaemia	Exercise tolerance <350m
Neutrophilic airway inflammation	Systemic inflammation	Bone density
Frequent chest infections	Daytime sleepiness	Smoking
Pathogen colonisation	Obesity	Sarcopenia
Mucus hypersecretion	Depression/anxiety	Inhaler device polypharmacy
Oxygen desaturation	Significant medical history	Inadequate inhaler technique
Dyspnoea	Cardiac history	Nonadherence
Systemic allergic inflammation	Vocal cord dysfunction/ILO	

Table 1. Treatable traits in asthma (Adapted from McDonald VM et al., 2019)[25]
ILO = inducible laryngeal obstruction

Dr Moran explained that eosinophilic airway inflammation is a key treatable trait and that neutrophilic airway inflammation is often seen together with chest infections and pathogen colonisation. In the extrapulmonary domain, dysfunctional breathing and vocal cord dysfunction/inducible laryngeal obstruction are important to identify as they very commonly co-exist with or mimic asthma. There are various screening questionnaires which may aid in diagnosis. The Nijmegen Questionnaire can be helpful in identifying some people with breathing pattern disorders.[26] It is important to ask patients about where they feel their symptoms, whether they experience throat tightness, and if they have experienced stridor during their asthma attacks. If so, Dr Moran recommends considering referral to ENT and to a speech language therapist. She emphasised that mental health problems are extremely important to address as they can prevent patients from achieving the best outcomes despite biologic therapies.

Biologic therapies for severe asthma

Dr Moran explained that in In New Zealand, we have three biologic therapies funded by Pharmac for patients with severe asthma meeting certain criteria. These are omalizumab (anti-IgE), mepolizumab (anti-IL-5), and benralizumab (anti-IL-5Rα).[27-29] Furthermore, tezepelumab (anti-TSLP) has now been registered in New Zealand for the treatment of severe asthma, but is not yet funded.[30]

Dr Moran discussed the Special Authority application that respiratory physicians must complete to access funded biologic agents for their patients with severe asthma and, as an example, presented the form for benralizumab.[31] She pointed out that patients must be aged ≥12 years of age, have a documented diagnosis of severe eosinophilic asthma by a respiratory physician or clinical immunologist, have no conditions that mimic asthma, such as vocal cord dysfunction, central airway obstruction, bronchiolitis etc., had a blood eosinophil count >0.5 x 10^9 cells/L in the previous 12 months, and be adherent to high-dose optimised asthma therapy and have had >4 exacerbations requiring systemic corticosteroids in the previous 12 months (OCS for ≥3 days or parenteral corticosteroids), or have received continuous OCS equivalent to ≥10 mg/day over the previous 3 months.

Dr Moran stressed that the Special Authority requirement for a blood eosinophil count >0.5 x 10^9 cells/L is high in the context of asthma and that she considers a level of 0.3 x 10^9 cells/L to be high. She hopes that the specified level for eosinophils in this context will decrease in the future, in line with international standards.

Dr Moran presented the following cases as examples of the types of patients that clinicians might see in their clinical practice on an everyday basis.

CASE 1: An 18-year-old New Zealand European woman presented with worsening asthma over the past year. She had a history of atopy in childhood and mild asthma, and reported no other comorbidities except for allergic rhinitis. Her mother and sister also have asthma. She had received three courses of OCS over the prior 12 months, with good effect within the first 24 to 48 hours, but was now requiring another course. For the past 6 months, she had been on SMART, and prior to that SABA alone. She had good inhaler adherence and her inhaler technique was optimised. Six months prior, her blood eosinophil count was 0.6 x 10^9/L, she had an unremarkable chest x-ray, mild airflow obstruction on spirometry with a good bronchodilator response, a FeNO level of 65 ppb (>50 ppb is considered high), and an Asthma Control Test score (ACT) of 10 indicating very poor asthma control.

How should we approach management?

Dr Moran explained that this patient should be managed with a treatable traits approach and the following questions asked:

- Has inhaler adherence and technique been checked? Yes, good
- Is there eosinophilic airway inflammation? Yes. High blood eosinophils and FeNO
- Is there likely dysfunctional breathing and/or inducible laryngeal obstruction? No
- What is the ACT score? 10
- Is a biologic therapy likely to be needed soon? Yes
- Have criteria for initiating a biologic already been met? No, but after one more course of OCS they will be
- Should a referral be made to respiratory services? Yes.

CASE 2: A 32-year-old Māori man with a history of problematic asthma since childhood presented with ongoing difficult-to-control asthma. His inhaler adherence was variable and he had been started on SMART, but had poor inhaler technique. He had received six courses of OCS over the past 12 months, and while his asthma started to improve with ICS, the effect appeared to wear off after a few weeks. He had no other comorbidities, but had a family history of asthma, with both parents and two siblings being affected. He currently smoked 10 cigarettes per day and previously had smoked 20/day since the age of 15 years. Six months prior to presentation his blood eosinophil count was 1.0 x 10^9/L (this had not been flagged and was not in the referral letter). A chest x-ray revealed mild hyperinflation and spirometry showed moderate airflow obstruction without significant bronchodilator response. His FeNO was 24 ppb (this was not elevated but Dr Moran pointed out that smoking can lower this level) and he had an ACT score of 6 (very poor asthma control – the lowest score obtainable is 5).

How should we approach management?

Dr Moran explained that this patient should be managed with a treatable traits approach and the following questions asked:

- Has inhaler adherence and technique been checked? Yes, both suboptimal
- Is there eosinophilic airway inflammation? Yes. High blood eosinophil count
- Is there likely dysfunctional breathing and/or inducible laryngeal obstruction? Possible dysfunctional breathing, but not prominent
- What is the ACT score? 6
- Is a biologic therapy likely to be needed soon? Possibly
- Have criteria for initiating a biologic already been met? No – needs to improve inhaler adherence and technique (and continue smoking cessation, although not part of criteria)
- Should a referral be made to respiratory services? Yes. He has had six courses of OCS and a very high eosinophil count. Dr Moran pointed out that this man has very treatable eosinophilic asthma and that even just one visit with a different clinician explaining the importance of his treatment and how it works could make a significant difference.

CASE 3: A 65-year-old New Zealand European man with no previous history of atopy or respiratory symptoms had been diagnosed with asthma by his GP and commenced on low-dose SMART. He had no family history of asthma. He had received two courses of OCS over the past 12 months. His comorbidities included allergic rhinitis, gastro-oesophageal reflux disease and chronic rhinosinusitis. He had good inhaler technique and adherence. One-month prior, his blood eosinophil count was 0.4 x 10^9/L. A chest x-ray was unremarkable and spirometry showed mild airflow obstruction without bronchodilator response. His FeNO was 90 ppb.

How should we approach management?

Dr Moran explained that this patient should be managed with a treatable traits approach and the following questions asked:

- Has inhaler adherence and technique been checked? Yes, good
- Is there eosinophilic airway inflammation? Yes. High blood eosinophil count in the context of asthma (despite being below the Pharmac Special Authority threshold) and very high FeNO
- Is there likely dysfunctional breathing and/or inducible laryngeal obstruction? No
- What is the ACT score? 12 (sub-optimal)
- Is a biologic therapy likely to be needed soon? Yes
- Have criteria for initiating a biologic already been met? No, would need two more courses of OCS, but high FeNO despite good inhaler adherence and technique is a concern and ICS needs increasing. Dr Moran pointed out that his ICS dose could be increased further despite already being considered a high dose.
- Should a referral be made to respiratory services? Yes. Dr Moran pointed out that the respiratory team don't just need to see people who already meet biologic criteria, but also those along the way to needing a biologic in order to ensure timely access to such treatment.

CASE 4: A 54-year-old Māori woman with a history of asthma since her 20s was receiving SMART, LAMA and SABA therapy. She had a 15 pack-year smoking history and was currently smoking two cigarettes per day, but was quitting. During the previous 12-month period, she had received 15 courses of prednisone and had undergone three hospital admissions, being diagnosed with infective exacerbation of COPD. Her comorbidities included stroke and ischaemic heart disease. She exhibited a good inhaler technique and good adherence. Both of her parents and brother had asthma. At 1 and 2 months prior to presentation, she had a blood eosinophil count of 0.5 x 10^9/L (Dr Moran pointed out that this patient had received multiple courses of OCS that would have likely lowered her eosinophil count). Her chest x-ray was unremarkable. Spirometry showed severe airflow obstruction with a good bronchodilator response. Her FeNO level was 64 ppb.

How should we approach management?

Dr Moran explained that this patient should be managed with a treatable traits approach, recognising that this woman likely has a long history of eosinophilic asthma with smoking-related lung disease (not solely COPD) and could therefore be a candidate for biologic therapy. She explained that the following questions should be asked:

- Has inhaler adherence and technique been checked? Yes, good but recent decrease in ICS/LABA dose
- Is there eosinophilic airway inflammation? Yes. High blood eosinophil count (despite multiple courses of OCS) and high FeNO
- Is there likely dysfunctional breathing and/or inducible laryngeal obstruction? Yes, there is a likely element of dysfunctional breathing and she was referred to a physiotherapist
- What is the ACT score? 5
- Is a biologic therapy likely to be needed soon? Yes
- Have criteria for initiating a biologic already been met? No, she would need a slightly higher blood eosinophil count and ICS needs increasing
- Should a referral be made to respiratory services? Yes.

Which patients should be referred for respiratory specialist review?

Dr Moran explained that the following patients should be referred for review by a respiratory specialist:

- Any patient with asthma whom you are concerned about
- Patients in whom there is difficulty in making the diagnosis
- Any patient with asthma who has had more than two courses of OCS in the previous 12 months despite optimised inhaled therapy
- Patients with difficult-to-treat or severe asthma
- Patients with eosinophilic asthma reaching the threshold for treatment with a biologic (adherent to high-dose inhaled therapy, recurrent OCS courses, ACT score ≤10).

Dr Moran added that reasons for referral include review of diagnosis, help differentiating difficult-to-treat asthma from severe asthma, and phenotyping and biomarker-directed therapy, with access to biologic treatments in dedicated Severe and Complex Asthma Clinics.

What should be included in the referral?

Dr Moran explained that the following should be included in the referral of patients with asthma:

- Previous spirometry results confirming airflow obstruction and any bronchial challenge test results if done
- Any information about how the diagnosis has been made or if it has not been confirmed
- Highest blood eosinophil count and date
- Confirmation of inhaler adherence check and inhaler technique
- Number of exacerbations/courses of corticosteroids in the past 12 months
- Number of previous hospital admissions/ICU admissions for asthma
- ACT score
- Current asthma treatment
- Treatable traits identified and managed.

TAKE HOME MESSAGES

- Any course of OCS for asthma is a concern!
- If more than two courses of OCS in 12 months and good inhaler adherence and technique, refer to respiratory services
- If no response to one course of OCS, refrain from prescribing another course or a longer course – review the diagnosis carefully. Asthma that is going to respond to OCS starts to respond within the first day or two
- There is excellent treatment for severe eosinophilic asthma – four courses of OCS are required to access funded anti-IL-5 biologic therapy, but this is "a means to an end", and enables safe reduction or elimination of OCS for many patients
- For those with eosinophilic asthma not yet meeting the threshold for funded biologic therapy, a short course of OCS is indicated for exacerbations until they do meet criteria.

QUESTIONS AND ANSWERS

Q. How do we define lifetime cumulative OCS exposure and how is that measured?

A. Lifetime cumulative exposure is defined as the number of courses of OCS the patient has had over their lifetime. This can be difficult to measure and relies on prescribing and dispensing records. Access to electronic dispensing data such as TestSafe or regional data can be very helpful. It is not too late to start tracking patients' OCS use. A lot of patients reach a 1 gm OCS threshold within 12 months.

Q. Some patients tend to have an over-reliance on OCS. How do we manage the expectations of patients around OCS, especially when they don't want to hear that they can be harmful long-term?

A. Reliance and dependency on OCS can be difficult to manage. Patients need to be informed that while OCS can be useful acutely, they are not something they should be using long-term due to side-effects. The utility of OCS for severe asthma exacerbations and the use of other medications for asthma management should be discussed. The eosinophil count can be informative regarding the efficacy of OCS – if the eosinophil count has always been low, then it is highly unlikely that the patient is getting any real benefit from OCS. In this case the patient should be informed that they do not have a steroid-responsive type of asthma, and that there are different ways to improve their asthma. This is an opportunity to inform the patient that there is a lot more knowledge around asthma now and it is no longer a one-size-fits-all approach to disease management.

Q. Can GPs order FeNO tests?

A. This depends on where in the country the GP practices and regional access and protocols. If a FeNO cannot be requested directly by the GP, then they can ask their local respiratory specialist to request it if it is available in the specific region. Some areas in New Zealand don't currently have access to FeNO testing.

Q. Should eosinophil count be monitored for all patients with asthma or just those with uncontrolled or difficult-to-treat asthma?

A. Blood eosinophil count is a marker of the type of asthma a patient has. Patients with mild well-controlled asthma who are managed effectively and do not often present to clinic do not need to have their eosinophil count monitored. However, if a patient has ever received a course of OCS and/or have asthma that is not well controlled, then it is essential to have their eosinophil count measured as this is an important piece of the puzzle.

Q. What is involved in phenotyping asthma?

A. Phenotyping a patient's asthma is identifying exactly what type of asthma they have and if it is responsive to corticosteroids or if they should be on alternative treatments. Phenotyping involves measuring FeNO and eosinophil counts to determine if the patient has type 2 airways disease or if they have a non-steroid responsive type of asthma. In primary care, a full blood count is often all that is necessary before referring to a respiratory specialist.

Q. Should neutrophilic asthma be managed with OCS?

A. No! Often patients with neutrophilic asthma have an underlying chronic airway infection that is the main problem. This can be a particularly challenging type of asthma to manage, but look for the treatable traits and specifically for evidence of chronic airways infection. Patients who culture Haemophilus may benefit the most from macrolide therapy, but this may be best managed in a complex asthma clinic. This type of asthma does not respond to corticosteroids. It can be challenging to establish that the patient definitely does not have type 2 inflammation and care must be taken to not withhold steroids in an emergency setting if we are not sure.

Q. What about the effects of OCS on eosinophils?

A. OCS can mask type 2 inflammation by dampening eosinophils. One must be mindful when interpreting blood eosinophil counts when blood tests have been taken after a course of OCS. When assessing a patient for access to biologics it can be prudent to advise them to have their blood tests undertaken when they have been OCS free for a couple of weeks. This will give an indication of the true eosinophil count.

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