

HOSPITAL

BIOLOGICS

ORAL STEROIDS



DO NO HARM

SAFER AND BETTER TREATMENT
OPTIONS FOR PEOPLE WITH ASTHMA

We work to stop asthma attacks and, ultimately, cure asthma by funding world-leading research and scientists, campaigning for change and supporting people with asthma to reduce their risk of a potentially life-threatening asthma attack.

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Foreword

Many people with asthma live in constant fear of their next asthma attack. They can become caught in a vicious cycle of emergency trips to hospital, intensive care and regular doses of strong oral corticosteroids (OCS) tablets or injections. These tablets can stop the symptoms, but they have devastating side effects on physical and mental health, from kidney and bone damage to insomnia and suicidal thoughts. As this report shows, the combination of uncontrolled asthma and the side effects of their treatment ruins people's daily lives, destroying their confidence, relationships and careers. They may even have severe asthma, the most debilitating and life-threatening form of the condition, and not even know it.

The good news is that there are now potentially life-changing biologic treatments (or monoclonal antibodies (mAbs)) available on the NHS. These are injections that can halve the number of asthma attacks and even stop the need for any OCS. Our recent survey has shown the transformational impact biologic treatment can have, with almost two thirds of respondents suffering from fewer symptoms, while more than one in five said it has been completely life-changing. Yet access to these biologic treatments remains extremely poor, with ~46,000 eligible people still missing out. A simple referral for specialist review to check eligibility could drastically improve access to these drugs but previous Asthma UK research found that three out of four people with suspected severe asthma in England are not being referred when they should be. It is unacceptable that thousands continue to be

left suffering on course after course of OCS when there are these biologic treatments available.

Primary and secondary care clinicians have played a vital role in identifying and supporting people with suspected severe asthma who have been shielding during the COVID-19 pandemic. Now is the moment for a step change in primary and secondary care to identify and refer those with suspected severe asthma for assessment in specialised centres, so they can be considered for biologics and finally get the treatment they need. With services continuing to be stretched during the pandemic it is even more vital that people with severe asthma are put on the right treatments and kept out of hospital. This report aims to show that repeated use of OCS should be seen as failure of asthma management that requires urgent referral to specialist care so people with severe asthma can access potentially life-changing biologic treatments.



Samantha Walker PhD

“Oral steroids can be life saving for acute asthma attacks, but we now know that repeated use of oral steroids can have devastating long-term consequences for people with asthma. Fortunately, there are now alternatives called biologics that are appropriate for some people with severe asthma. I have seen how they can be truly transformative – stopping or significantly reducing the need for potentially harmful courses of oral steroids. I welcome this report by Asthma UK to help primary and secondary care clinicians feel confident about identifying and referring people with suspected severe asthma.”

Dr James Calvert, Respiratory Consultant, South West Asthma Network/North Bristol NHS Trust

Executive summary

It is estimated that 200,000 people in the UK have 'severe' asthma, a type of asthma which does not respond to regularly taken asthma treatments. As a last resort they are often forced to rely on regular or long-term high-dose oral corticosteroids (OCS) that have toxic side effects including weight gain, disturbed sleep, diabetes, cataracts and osteoporosis. We acknowledge the vital, life-saving importance of OCS in managing asthma in acute situations and for some people with severe asthma. However, clinicians and people with asthma shouldn't be complacent about repeated or prolonged use of OCS when there are novel biologic treatments that can be used instead. There is now an extensive body of research that shows the debilitating and costly impact of repeated OCS use including our recent survey carried out for this report, which has shown the serious impact they can have on people's mental health – mood swings, anxiety/depression and even suicidal thoughts.

Until relatively recently, OCS were the only treatment option for people with severe asthma, but this is no longer the case. **It is time that repeated OCS use is seen as a failure of asthma management that calls for urgent action.** There are now specialist NHS services which provide comprehensive, holistic care and access to potentially life-changing biologic treatment. But in order to access these services, people with suspected severe asthma must be identified and then referred to them by primary and secondary care teams.

Primary and secondary care play an important role in recognising people with suspected severe asthma and referring them on to specialist services so they can get the care they so desperately need. Worryingly, our previous research has shown that as few as 18% of those who should be referred for a specialist opinion are referred, and our recent analysis shows three in four people eligible for biologic treatment are still not accessing it.¹ This means thousands of people are stuck on inadequate treatments, enduring the unnecessary side effects

of repeated OCS use. A lack of awareness about the treatments available for severe asthma and the impact of OCS use as well as system barriers (long waiting lists and long travel distances to centres) have all contributed to the appallingly low referral rate.² However, the COVID-19 pandemic has increased the awareness of severe asthma through the government's 'shielding' criteria and sped up innovation in care that may help overcome some of these barriers.³

It is incomprehensible that a condition affecting 200,000 people in the UK did not have a National Institute of Health and Care Excellence (NICE) management guideline until the COVID-19 pandemic as guidelines can play a key role in reducing reliance on OCS. Other disease areas such as rheumatoid arthritis and Crohn's disease are much further ahead and have since seen a reduction in the use of OCS that has changed the lives of many people. This is due to more extensive use of biologic treatments and a shift in the focus of guidelines to limiting OCS exposure^{4,5}. There is an urgent need for a permanent, comprehensive and system-wide NICE severe asthma guideline to shift the thinking away from OCS as the only treatment option and to ensure primary and secondary care clinicians can confidently recognise and refer people with suspected severe asthma.

Asthma UK has developed an **interactive tool** to enable people with poorly controlled asthma to self-assess their likelihood of having severe asthma and ask for the support they need. We have produced this report to arm healthcare professionals with the knowledge and confidence to know when to refer. There has never been a better time to radically change practice and transform the lives of people with severe asthma than right now. For this to happen, health care services in primary and secondary care need to work with people with asthma to bring about lasting change in behaviour, referral practice and treatment. This report will also have a knock-on effect of improving the identification and management of poorly controlled asthma and help keep people out of hospital during this crucial time.

This report makes the following recommendations:

- Repeated OCS use must be seen as a failure of asthma management and prompt urgent action and appropriate referral.
- Primary and secondary care clinicians need to be pro-active to recognise and refer those with suspected severe asthma.
- NICE should develop a single comprehensive severe asthma guideline and ensure that all related asthma guidelines are consistent and explicit with their recommendations for people with persistent poor asthma control.
- There needs to be a system-wide drive to increase and speed up access to biologic treatment for all those eligible.

Purpose of the report

This report is intended to prompt clinicians looking after people with asthma to identify, assess and refer people with suspected severe asthma. It summarises the evidence on the risks of oral steroids, explains the rationale and criteria for referral and outlines the services that are now available via specialised severe asthma centres. This report focuses on the systems and policies in England, but there are similar issues in the other nations of the UK, and we recommend that all health systems and clinicians consider how to apply the recommendations locally. Asthma UK provides comprehensive **advice and support for people with difficult and severe asthma.**

What is severe asthma?

'Severe' asthma is a type of asthma which does not respond to regular use of inhaled corticosteroids and short- and/or long-term bronchodilators. It can be difficult to differentiate between this and 'difficult' asthma which is often the result of poor adherence, other comorbidities and/or an incorrect diagnosis. 'Severe' asthma is often thought of as just 'bad' asthma; however, there is now a large body of evidence to show that there are several different sub-types of severe asthma (including eosinophilic asthma) and it is essential to differentiate these from milder forms of asthma so that people get the right treatment. It is vital that severe asthma is considered as a life-threatening condition that requires specialised services, but the entrenched complacency about 'just asthma' has meant progress has been slow.

Severe asthma and children

Although severe asthma often develops during adulthood, it can also sometimes affect children. Paediatric severe asthma services are commissioned separately in England and often located in different hospitals. Because there is less clear guidance and evidence on severe asthma in children, and fewer clear networks for tertiary care, this report and campaign focuses on adults only. A new joint committee between specialised respiratory and specialised paediatrics experts, including Asthma UK, has now been established by NHS England to address this gap. Asthma UK is facilitating discussions between adult and paediatric providers and commissioners to share learning and to create clearer guidance for children in future.

Section I: The hidden cost of oral corticosteroids in severe asthma

Oral corticosteroids (OCS) – steroid tablets used to treat a severe asthma attack or flare-up in asthma symptoms – are an essential life-saving treatment and have been recommended by clinical guidelines for the management of asthma attacks for generations. They cost relatively little (around £1 per item)⁶ and are proven to more than halve the number of asthma-related hospital admissions.⁵ However, there is a huge hidden cost associated with them in terms of both people's health and healthcare resources.

It is well evidenced that long-term OCS use – taking steroid tablets routinely rather than only as an emergency – is associated with many debilitating and costly adverse events and side effects, yet they are still prescribed without much thought. People on maintenance/regular OCS are three times more likely to suffer from osteoporosis/osteoporotic fracture and more than twice as likely to suffer from pneumonia than those not taking OCS⁷. They are also at significantly increased risk of cardio-/cerebrovascular diseases, cataracts, sleep apnoea, renal impairment, depression/anxiety, type 2 diabetes and weight gain⁷. The toxic side effects and the long-term damage caused by continuous OCS should be a wakeup call that this treatment is doing more harm than good. With specialised services and biologic treatments now available, it is no longer justifiable to start anyone on continuous OCS without specialist assessment.

“They are evil. I took 40mg a day for nine years. I went from a size 8 to a size 24. I even strictly followed a dietician’s plan and still gained weight... Three years later I still have the hump at the top of my back, my face is becoming less round, but the

weight is very difficult to remove. Steroids made me able to breathe but they ruined my life. The insomnia, the racing thoughts, the weight gain. I have lost all confidence and self-esteem.”

Female, 30-39, South East

But it's not just maintenance OCS that is the problem; repetitive short bursts of OCS can also cumulatively result in devastating consequences. In an era when there were no other treatments available this was unavoidable, but now that we have alternatives, it is unacceptable. Someone needing four or more courses of OCS in a year is estimated to have a 29% higher chance of suffering from a serious adverse event within the year, such as osteoporosis, hypertension, obesity, type 2 diabetes, gastrointestinal ulcers/bleeds, fractures, and cataracts, than someone not taking any OCS⁸. No one should have more than two courses of OCS in a year without the appropriate referralⁱ. What is now becoming apparent is that it is the cumulative burden of OCS use that is important, with an equivalent of just four courses over a lifetime significantly increasing the risk of adverse events and toxic side effects.⁷ It is vital that everyone in the healthcare system knows that there are now much safer alternatives such as biologic treatments.

Asthma UK surveyed over 3,000 people in August 2020 who had taken oral steroids for their asthma in the last year. We can reveal the huge toll on people's mental health and everyday lives because of the side effects. Of those surveyed, 74% said they have experienced at least one side effect, over half (55%) have experienced two or more and

i The **Primary Care Respiratory Society (PCRS) guidance** states that two or more courses of OCS in a year should trigger a referral for a specialist review (see the box on page 10) and the **NICE Quality Standard (developmental) for severe asthma** uses two or more courses in its definition of severe asthma.

24% reported as many as five. The most common side effects were weight gain (43%), insomnia/difficulty sleeping (40%), mental health problems (33%), extreme tiredness (26%) and indigestion/heartburn (20%). Alarming, a third of people have experienced at least one side effect relating to their mental health including mood swings (22%), anxiety/depression (20%), confusion/problems with memory (10%) and even suicidal thoughts (4%). This simply shouldn't be allowed to continue now that we have biologic treatments that have far fewer side effects available in specialist care.

“They affect my mental health really badly and the effects last for weeks or months after I finish the course. I dread taking them but do it to make my asthma better.”

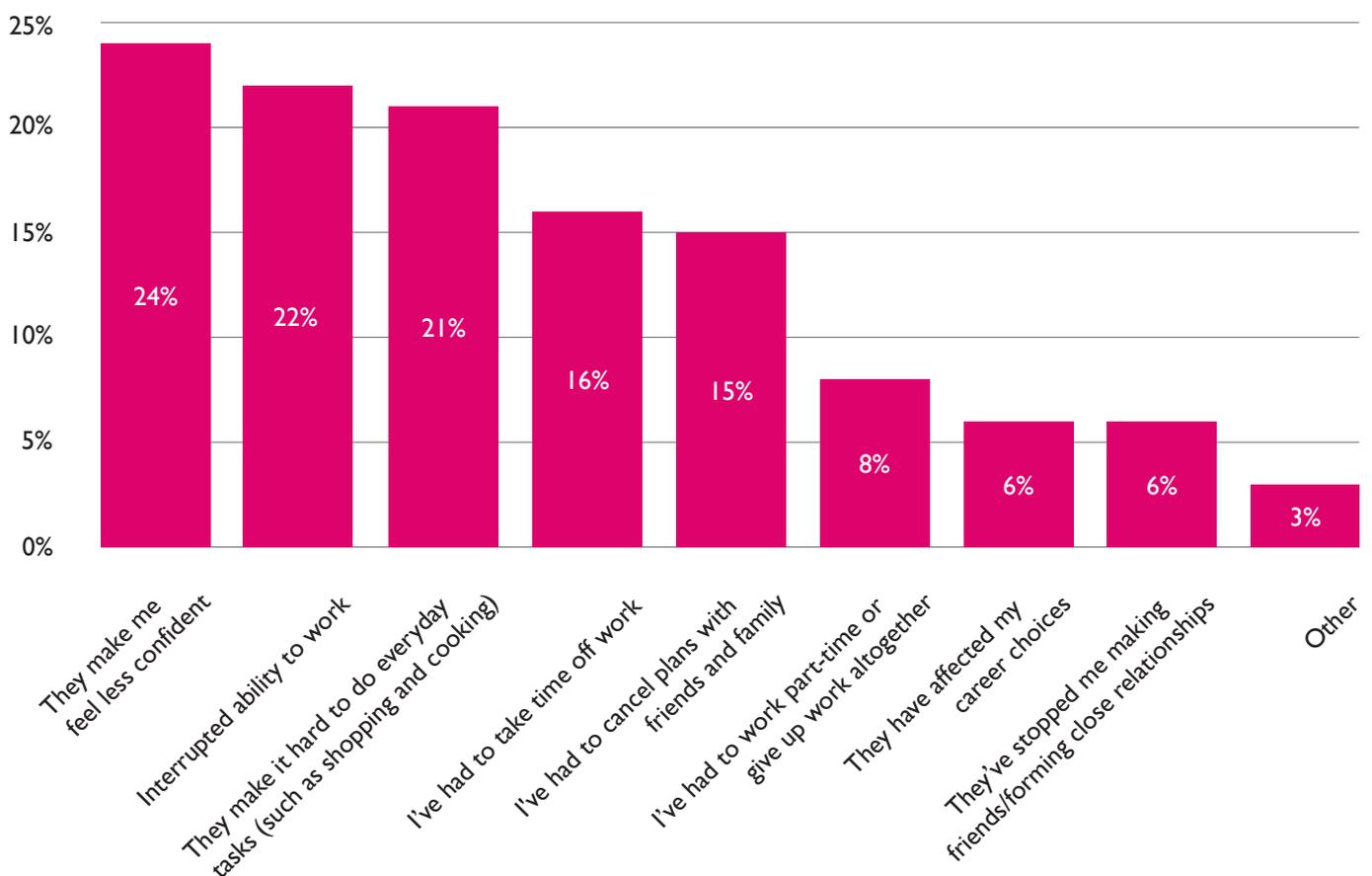
Female, 30-39, London

Shockingly, given that OCS can be so toxic, one in four (26%) weren't aware of any of the possible side effects and only 28% aware of them all. Once more, 74% said these side effects impact on their everyday life. Figure 1 shows the most common impacts of the side effects with feeling less confident (24%), difficulty doing everyday tasks (21%) and taking time off work (16%) the most common. In fact, 22% reported the side effects having impacted on their ability to work, which comes with its own huge economic cost.

“I hate being on high dose daily steroids but without them I can't breathe and have attacks. I hate the side effects and I hate the person I see in the mirror. I don't recognise the person. I am concerned about long term side effects... I am also pre-diabetic due to steroids.”

Female, 40-49, West Midlands

Figure 1: Most common impacts of OCS side effects on people with asthma



Repeated use of OCS is not only damaging to health, but it is a false economy. OCS use is consistently associated with higher healthcare costs.⁹ Alarming, people with high exposure to regular oral steroids are three times as likely to develop steroid-related complications, twice as likely to need emergency care and more than three times as likely to be admitted to hospital.¹⁰ It has been shown that comorbidities account for more than half of the healthcare costs in people with severe asthma and that 93% of people with severe asthma have at least one condition linked to OCS exposure^{11,12}. Although the tablets are inexpensive, there is a hidden cost of corticosteroid-induced morbidity (not including any direct asthma related costs) estimated at £1,310 per year for those exposed to the equivalent of a course a month and £224 for those receiving a course a year¹³. Another study has shown non-asthma related healthcare costs were 43% greater for patients receiving long-term OCS than for non-OCS users and that people who had more than two asthma attacks requiring OCS were 31% more expensive than those with fewer than two courses of OCS¹⁴.

We know from our 2019 annual report *Living in Limbo* that ~ 140,000 adults with asthma receive more than two courses of OCS a year and it is

estimated that a total of ~1.29 million adults with asthma (30%) are prescribed OCS each year in the UK¹⁵. Repeated or prolonged OCS use is therefore still a significant issue seriously impacting thousands of people with asthma and hugely costly to the NHS. A move away from relying on repeated prescriptions of OCS and seeing it as a failure of asthma management, which is costly to both the patient and the NHS, is long overdue. There is also an urgent need to raise awareness amongst people with asthma, who are known to overestimate their asthma control and not fully understand the consequences of poor asthma control and relying on OCS.

If a patient has asthma severe enough to warrant a course of OCS, clinicians should follow **NICE guidance** for monitoring and assessing asthma control. Our simple flow diagrams **What primary care clinicians can do now** and **What secondary care clinicians can do now**, which can be found in Appendix I, may be helpful to ensure the patient is on optimal therapy with all modifiable factors addressed to prevent unnecessary prescribing in the future. There is also an example diagram **What people with asthma can do now** that can be shared with patients.

The hidden cost of corticosteroid-induced morbidity



£1,310 a year

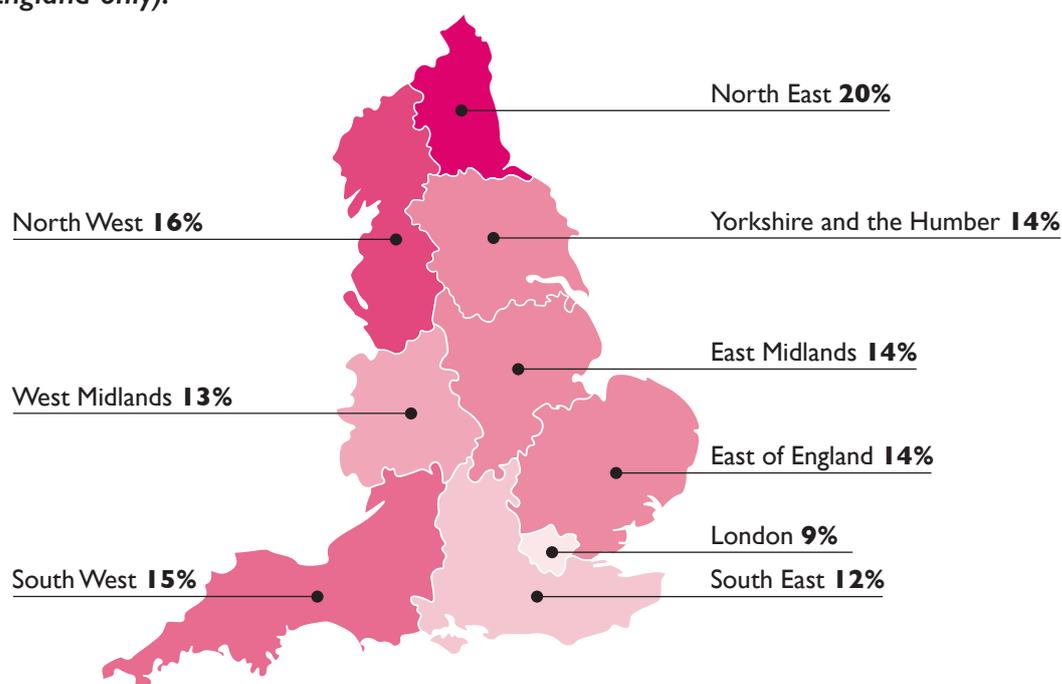
for those exposed to the equivalent of an OCS course a month

£224 a year

for those receiving an OCS course a year

Figure 2 shows the percentage of the registered asthma population who have been prescribed two or more courses of OCS across Englandⁱⁱ. This averages at 14% but is as high as 20% for the North East (please see Appendix 4 for methodology). It is simply unfair that where you live may impact your chances of suffering from the devastating consequences of OCS.

Figure 2: Percentage of the registered asthma population who have been prescribed two or more courses of OCS (England only).



Source: Asthma UK's analysis of *Astra Zeneca's heat maps*

When to refer someone with asthma for specialist review

The Primary Care Respiratory Society (PCRS) has developed a **pragmatic guide** for when to refer someone with poorly controlled or suspected severe asthma. Below are the key referral criteria for someone with suspected severe asthma:

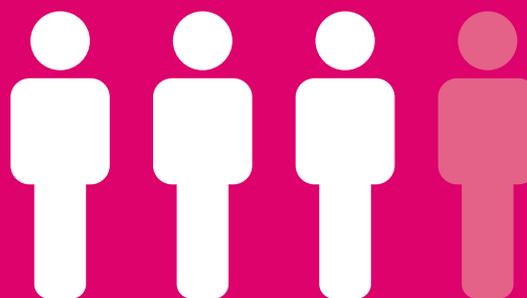
- Their asthma remains poorly controlled despite optimal treatment with, and adherence to, medications readily available in primary care; or
- The patient has received more than 12 reliever inhalers in a year; or
- They have had two or more courses of OCS in the last year; or
- They are on maintenance OCS; or
- They have had a life-threatening asthma attack, attended the emergency department or been hospitalised with asthma in the last year.

A more specialist opinion (tertiary care level) is warranted if, despite secondary care specialist review, the patient continues to suffer from asthma attacks or frequent symptoms.

ⁱⁱ Reason for prescribing OCS has not been determined, however all patients had been previously prescribed maintenance inhaled treatment.

Section 2: Biologics for severe asthma – a potentially life-changing treatment

The advent of new biologic treatments has completely changed the outlook for many people with severe asthma. It has offered hope that people with severe asthma can have a good quality of life without the side effects that OCS cause. Asthma UK surveyed 214 people on biologics in August 2020. We found that for almost two thirds (64%), biologic treatment has reduced their asthma symptoms and asthma attacks and for 43% it has reduced their number of hospital admissions. In fact, more than one in five (23%) told us that it has been completely life-changing with almost half (45%) being able to reduce their oral steroid use or stop it completely. One in five (23%) now take less time off work or have managed to go back to work and many can take better care of themselves by being able to exercise more (29%). Yet access to these biologic treatments remains stubbornly low; our new analysis estimates ~46,000 people eligible are still missing out.



Three out of four eligible people with severe asthma are still not able to access potentially life-changing biologic treatment.

What are mAbs/biologics?

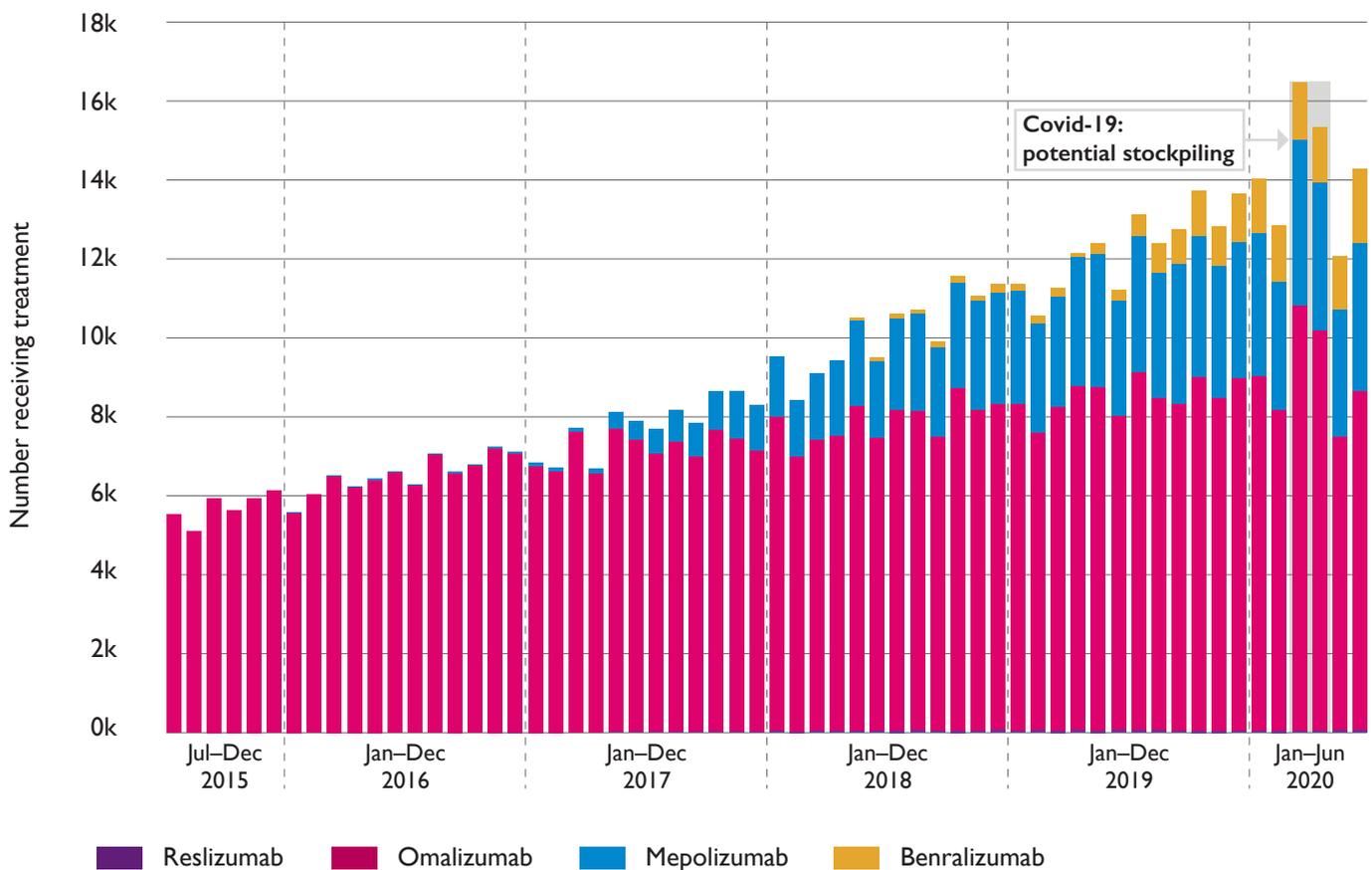
Monoclonal antibodies (mAbs) are drugs that have been developed to target specific biological markers in order to reduce inflammation in the lungs. There are currently two types of these biologic drugs, which are usually given by injection, approved for use in the UK and they both treat Type 2 (T2) inflammation-driven (eosinophilic) severe asthma (as opposed to non-T2 which is non-eosinophilic). One, omalizumab, targets the immune system protein, IgE, to help prevent the allergic reaction, and the

others, mepolizumab, reslizumab (not approved in Scotland) and benralizumab, target IL-5 to inhibit the excess production of eosinophils and to treat 'eosinophilic' asthma. Dupilumab, which targets IL-13 and IL-4, is not yet approved in the UK, but people with T2 severe asthma may already be on the patient access scheme. We hope that this treatment is also soon approved by NICE/SMC, to give hope to people with severe asthma who are not eligible for current biologics.

We have used hospital prescribing data to estimate the number of people receiving biologic treatment¹⁶. This analysis relies on assumptions about the number of 'product packs' prescribed in a month, as detailed in our previous report **Living in Limbo**, therefore there is some uncertainty around the numbers estimatedⁱ. The number of people receiving biologic treatment has seen some improvement since 2016 (Figure 3). We estimate that in June 2020 approximately 14,000 people were receiving biologic treatment out of a total eligible population of around 60,000ⁱⁱⁱ. This is an

increase of ~16% from the 12,000 we estimated in April 2019 and is driven by the approval of benralizumab^{iv} and the continued uptake of mepolizumab and omalizumab. However, there is still a long way to go with 46,000 people in the UK – more than three quarters (77%) of those potentially eligible for biologic treatment – still missing out on this life-changing treatment. In England, we estimate 50,000 are eligible for biologic treatment and 11,800 are estimated to be receiving treatment in June 2020.

Figure 3: Number of people receiving a biologic July 2015–June 2020 (UK)



Source: Asthma UK analysis of IQVIA Hospital Prescribing data

ⁱⁱⁱ This estimate is based on data on the supply of doses to providers in the UK. The surge in supply of doses in March 2020 was probably due to stockpiling before lockdown and has since been offset by a decline as stocks were used up. Our estimate for the eligible population is based on NICE criteria and published studies. The eligible population will increase when new drugs are approved. Our methodology is set out in the Appendices of our previous report, **Living in Limbo**.

^{iv} Prescribing of benralizumab is once every four weeks for the first three doses and then once every eight weeks. To estimate the number receiving benralizumab, it was assumed every injection is equal to one patient or two patients (per month). For the base case, the mid-point between these two values was used.

Section 3: Severe asthma services – a holistic approach

We know from our own **qualitative research** that severe asthma can have devastating consequences on every aspect of people's lives including employment, education, social life and relationships. It can particularly impact on people's mental health leaving people feeling anxious, scared and isolated, left without hope and the right support¹⁷. Many are left with complex health problems because of long-term OCS use and this makes it even more difficult to treat effectively.

Unlike primary or secondary care, severe asthma centres (tertiary care) can offer a comprehensive, holistic and multidisciplinary systematic assessment which aims to improve overall asthma control and enables access to potentially life-changing biologic treatment¹⁸. This systematic assessment (see Figure 4) is used to identify and improve poor adherence to treatment, optimise inhaler technique, recognise and manage contributing comorbidities such as breathing pattern disorders and psychological disease and reduce misdiagnosis. It is now known that levels of eosinophils and fractional exhaled nitric oxide (FeNO) are important biomarkers for determining a diagnosis of severe asthma, biologic treatment eligibility and treatment response. Such diagnostic tests are key to the systematic assessment approach in severe asthma services but can be easily performed in both primary and secondary care and even at home with the right equipment¹⁹. Systematic assessment has been shown to reduce OCS use by half, before biologic treatment is even prescribed²⁰. A map of severe asthma centres can be accessed by the public through **Astra Zeneca's Respiratory Outcomes website**.

Tests and skills available in specialist centres

Input from relevant specialists:

- Severe asthma consultant
- Specialist nurse
- Specialist respiratory physiotherapist
- Allergist/ENT
- Psychologist
- Dietician
- Speech and language therapist
- Pharmacist.

Wide range of diagnostic tools to confirm a diagnosis of severe asthma:

- Specialist blood tests (eosinophil levels and IgE)
- Fractional exhaled nitric oxide (FeNO)
- Lung function tests (including spirometry, with reversibility, body plethysmography, oscillometry)
- Imaging (including high-resolution CT (HRCT) chest and DEXA scan)
- Skin prick testing to common aeroallergens

Access to additional investigations such as induced sputum and bronchoscopy.

Figure 4: Systematic assessment at a severe asthma centre



Nichola's story

Nichola was diagnosed with asthma at the age of 21, after a bout of pneumonia and numerous chest infections. She then went under a long process to get referred to a specialist asthma centre. She was diagnosed with severe eosinophilic asthma and it has greatly impacted every part of her life.

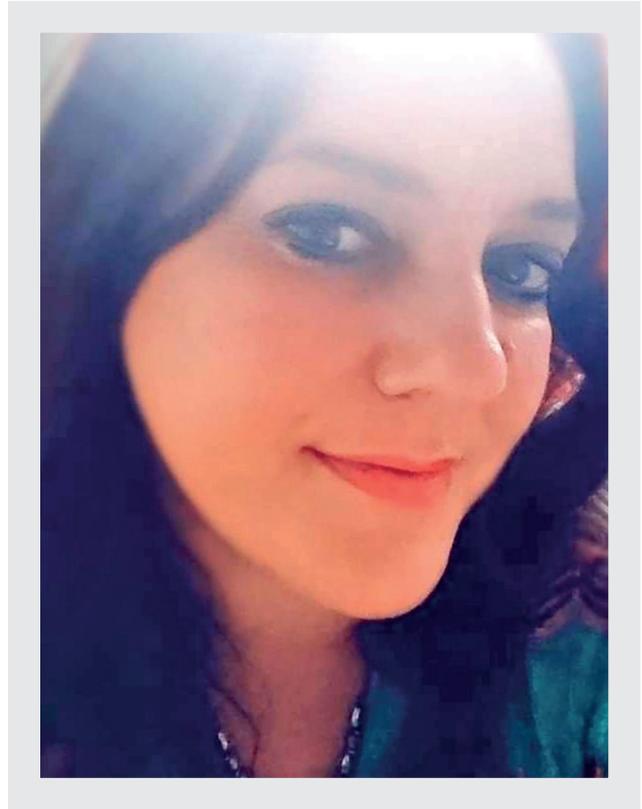
“My asthma controlled everything I did. It controlled when I went to sleep, how far I'd walk. Even, too, if I ate that day. Because some days I couldn't eat, because I was too breathless. So, it dominated every aspect of my life.

“But, obviously, I spent all the time in hospital. The first few times you get admitted, everybody comes to see you. But then, it gets a little bit boring and out of the way. So, friendships drift off and fall into a bit of isolation, really.”

Nichola has had some trouble finding a biologic treatment that works for her, but she has found the holistic approach of her severe asthma centre to be really beneficial to her asthma management, wellbeing and ability to cope with life with severe asthma. She has been offered support from a psychologist, dietician and physiotherapist and had advice on financial entitlements.

“So, one week was nutrition. One week was physio exercises. One week was about money and things that you might be entitled to. Where to go for help and grants if you needed it. And that was really useful, because there were things that I didn't realise that I could get help with.”

Nichola found it hard to adjust to living with severe asthma and the variability of the condition.



“I will do everything at once and completely burn myself out for about four days after. Especially if I've got my steroid, I feel like I'm invincible and I can clean the house and do this and that. And then, a few hours later, I'm ruined for the week.”

However, the physiotherapist has supported her in breaking down tasks into manageable stages, so she doesn't overdo it, is able to achieve what she started and can regain a sense of normality. The dietician helped her prepare food in stages, so she has it ready if she feels unwell, as well as providing tailored recipes to help her manage her diabetes and vitamin D deficiency. The support from the psychologist helped her to feel better in herself, deal with anxiety and talk to others about the mental toll of living with severe asthma. Without a referral to a specialist asthma centre, it is unlikely that Nichola would have had these issues identified or addressed.

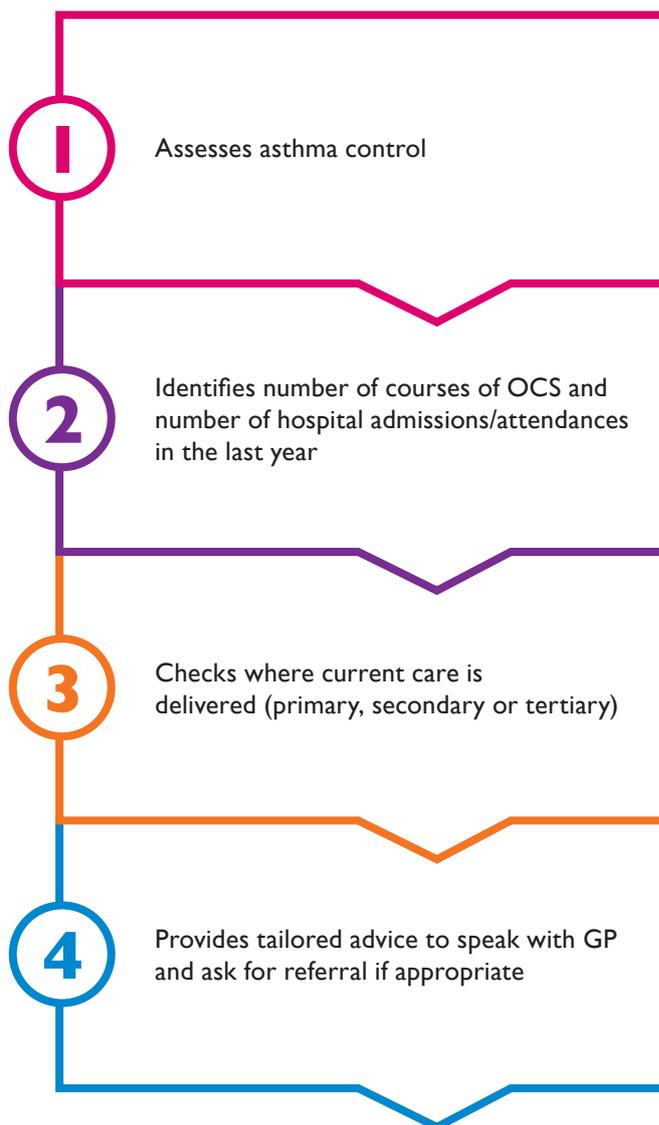
Section 4: Overcoming the barriers to severe asthma specialist care

With ~46,000 people missing out on potentially life-changing biologic treatment, it is crucial the barriers preventing people accessing treatment are overcome. There are both patient and clinician barriers as well as system challenges that prevent people with suspected severe asthma from accessing specialised services and biologic treatments². Patient factors include underestimation of disease severity and overestimation of asthma control, poor communication with clinicians and a lack of awareness about treatment options. A continued effort is needed to ensure people with asthma are aware of severe asthma and the treatments available. A new Asthma UK **interactive tool** can assist people with asthma in assessing their asthma control, speaking with their GP about referral and raising awareness of biologic treatments.

Our previous report ***Slipping through the net*** showed there was variability in the threshold used by clinicians in referring people to specialist care and attributed this to a lack of clinical consensus on when to refer²¹. There is also a lack of awareness in primary care about severe asthma and the treatments available, so there may be little incentive to refer. A **developmental NICE Quality Standard for suspected severe asthma** exists and provides a definition of severe asthma but does not go far enough. During COVID-19, NICE produced a **rapid guideline** for the treatment of severe asthma. This is a positive step, but a fully evidenced guideline with clear referral criteria is still urgently needed to address the huge unmet need and show the benefits of referring someone to specialist care. Another solution is proactive case-finding (see box on page 16), which can help identify those in need of referral and by working together, primary, secondary and tertiary care can ensure people with severe asthma access the right treatment.

Severe asthma interactive tool

Asthma UK have created an **interactive tool** to help people with uncontrolled asthma identify whether they should be requesting referral for a specialist assessment.



Case-finding case study

Wessex AHSN is working with local GP practices and Queen Alexandra Hospital, Portsmouth to identify high-risk asthma patients from GP registers. The Mission Innovative SolutionS Improving Outcomes iN Asthma Breathlessness and COPD (**MISSION ABC**) team use a tool called **GRASP** to interrogate GP records and identify high-risk patients using read codes, such as the number of courses of OCS in the last year. They then conduct Rapid Access Asthma Clinics (RAAC) and Severe Asthma Assessment Clinics (SAAC). The results so far suggest that this proactive case-finding is having a positive impact on health outcomes and is reducing unnecessary healthcare costs. Asthma UK's report **Digital asthma: re-imagining primary care** illustrated how proactive identification of people with suspected severe asthma is already happening locally². Mission ABC has created an **online toolkit** which can be used to replicate the project in other areas.

There are also system barriers, including long waiting lists, geographical barriers and unequitable access to specialist services⁵. We know that some people with severe asthma have to travel long distances to reach their severe asthma centre and this may prevent referral (clinicians don't know the centres exist or are not aware that they can refer directly to these centres) or make it difficult for people with asthma to physically access the services. COVID-19 has transformed the delivery of biologic treatment with the huge uptake of home administration. There is a real opportunity for home administration to free up clinician time and physical space in specialist services, speed up referrals to tertiary care and allow more remote virtual monitoring of people with severe asthma locally. This may help overcome some of the geographical barriers and allow primary and secondary care more local involvement and incentive to refer on.

Conclusion

This report has set out the case for change.

It is time that repeated oral corticosteroid (OCS) use is seen as a failure of asthma management which prompts urgent action and referral for specialist review. This will finally bring severe asthma in line with other conditions now widely using biologic therapies. With the wide availability of biologic treatments, there has never been a better time to radically change practice and transform the lives of people with severe asthma than right now. COVID-19 has raised awareness of severe asthma, but the entrenched complacency around asthma has meant that it is still under-recognised by both clinicians and people with asthma.

Oral steroids are a life-saving treatment, but they come with a harmful hidden cost. Too often they are prescribed with complacency and without consideration for appropriate support and referral. Our survey has revealed the devastating consequences of OCS on quality of life with 73% experiencing at least one side effect and a third experiencing side effects relating to their mental health. Of those surveyed, 24% said they make them feel less confident and one in five said they make it difficult to do everyday tasks. The hidden mental toll of OCS side effects needs urgent addressing.

Specialist services provide holistic multidisciplinary care and provide access to potentially life-changing biologic treatment, yet three out of four people who might be eligible for this treatment are still missing out. This is simply unacceptable. Innovation around service delivery (such as home administration of biologics and virtual appointments), and severe asthma networks providing specialist care more locally, have meant many of the barriers to accessing this care can be overcome but primary and secondary care clinicians still need to identify and refer people with suspected severe asthma.

In England, severe asthma services have come a long way and there is now a consensus around the best service model and treatments for severe asthma. Scotland, Wales and Northern Ireland should look at setting up severe asthma services to ensure that they meet local need.

Great strides have been made in other disease areas such as rheumatoid arthritis and Crohn's disease in reducing the use of OCS. This is due to earlier and more preventative use of biologic treatments and a crucial shift in the focus of guidelines towards limiting OCS exposure and using them only as a last resort²². Sadly, and unacceptably, asthma lags behind. There is therefore an urgent need for a comprehensive severe asthma guideline to shift the thinking away from OCS as the only treatment option and to ensure clinicians can confidently recognise and refer people with suspected severe asthma.

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Appendices

Appendix I: Assessment flow diagrams

What primary care clinicians can do now



What secondary care clinicians can do now



What people with asthma can do now

1

Identify – use our **interactive tool** to help you identify if your asthma is well controlled and what you should do now.

2

Check – Are you doing all of the right things to keep your asthma controlled?

- a. Take your medicines every day as prescribed
- b. Check your inhaler technique with your doctor, nurse or pharmacist (also see **Asthma UK inhaler videos**),
- c. Get an up-to-date **written asthma action plan** from your healthcare professional
- d. Make sure you get your annual asthma review
- e. Take action to avoid **your triggers**

3

Learn about your asthma – read up about asthma and how to manage it effectively on Asthma UK's website. Asthma UK also have brilliant **Facebook** and **Twitter** feeds with regular updates and alert to help with your asthma, and a forum to speak with other people with asthma on **HealthUnlocked**.

4

Take action:

- a. Follow your asthma action plan or contact your GP/nurse if you are having asthma symptoms or using your reliever inhaler more than three times a week
- b. Make sure you get a follow up within 2 days if
 - i. you have been to hospital with your asthma,
 - ii. had a flare up (exacerbation) or have needed oral steroids for your asthmaThis review is to check that your asthma is getting back to normal and to see what can be done to help prevent another flare up.
- c. Use the Asthma UK **interactive tool** and the speak to your GP or asthma nurse about your asthma if you have had 2 or more courses of oral steroids in the last year. Explore whether you would benefit from a referral.

5

Ask – if your asthma doesn't improve, ask for a referral to see a specialist to get a more detailed assessment of your asthma.

Appendix 2: The optimal care scenario for someone with suspected severe asthma

Poor care scenario

- Louise has been displaying frequent symptoms and using her reliever inhaler daily. She suffers an asthma attack and makes an urgent appointment with her GP.
- Her GP decides to increase her medication to a high dose combination inhaler and sends her away with her new inhaler and a course of oral steroids.
- A couple of weeks later, Louise suffers another asthma attack and is admitted to hospital where she is given oral steroids again. When she is discharged, she is not told that she should have a follow-up with her GP.
- She starts feeling anxious and has trouble sleeping, but she doesn't realise these are side effects from the oral steroids.
- After her symptoms recur on stopping the oral steroids, her GP weans her steroid dose down slowly. Louise ends up staying on a lower dose of oral steroids but needs to take them every day.
- Louise has to start working part-time because the side effects are so bad. She can't concentrate at work, has gained a lot of weight and feels depressed.
- Louise goes to her GP about her depression and he puts her on antidepressants and refers her to the IAPT, but she is on a waiting list of more than a year. No one connects her mood to her steroids.
- Louise has a series of infections including a urinary tract infection that requires a hospital admission.
- Louise starts getting blurred vision, which she puts down to stress. During an eye test, Louise's optician notices some retinopathy and tells her to ask her doctor for a blood test which confirms

she has type 2 diabetes. There was no history in her family, and before her asthma got worse, she had not had problems with her weight. A couple of years later she sees a different GP, who refers her to a severe asthma centre. Unfortunately, by now she is already suffering from the long-term consequences of oral steroids such as diabetes and osteoporosis. She has had to give up work and the toll on her mental health has meant close relationships have broken down.

- She is eventually started on a biologic, but it takes a long time to wean her off the oral steroids and now she has numerous other health problems including diabetes and osteoporosis. She has spent so much time out of work, she doesn't think she can pick her career up again.

Optimal care scenario

- Louise has been displaying frequent symptoms and using her reliever inhaler daily. She suffers from an asthma attack and makes an urgent appointment with her GP.
- Her GP thinks they need to increase her medication to a high dose combination inhaler after checking her adherence and her inhaler technique. Her GP contacts Louise after a few weeks. Her asthma is still poorly controlled, so they refer her to secondary care for a specialist assessment. They update her written asthma action plan, prescribe a course of oral steroids, explain some of the likely side effects and refer her on to secondary care.
- Louise has another exacerbation whilst waiting for her appointment, but because she was following her written asthma action plan, she got back to the GP before she needed to go to hospital. The GP prescribed her another course of oral steroids and reminded her of the common side effects of oral steroids.

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- Louise starts feeling anxious and has trouble sleeping; she realises it is probably the side effects from the oral steroids that her GP told her about.
 - Louise has her first outpatient appointment in secondary care. They assess her adherence and inhaler technique, which is good. She has pulmonary function tests, tests to check for airway inflammation (FeNO) and additional blood tests. The presence of any comorbidities is assessed, and management initiated.
 - Unfortunately, Louise is still having frequent symptoms and needs another course of oral steroids when her asthma is triggered by flu. Her consultant tells her about biologic treatments that might be able help with her asthma and refers her to a specialist asthma centre.
 - She is assessed at specialist centre, diagnosed with severe eosinophilic asthma and started on a life-changing biologic treatment. She returns to work and her life is almost back to normal.

Appendix 3: Survey data tables

OCS side effect	Responses	%
Weight gain	1373	43%
Insomnia/difficulty sleeping	1292	40%
Extreme tiredness	827	26%
None of the above	822	26%
Mood swings	697	22%
Indigestion or heartburn	659	20%
Anxiety/depression	649	20%
Thin skin/increased bruising/slower wound healing	616	19%
Red/puffy/rounded face	594	18%
Fluid retention (swelling of the body)	420	13%
Confusion/problems with memory	328	10%
Weakening of the bones (osteoporosis)	326	10%
Increased risk of infections (such as pneumonia)	292	9%
Hair loss	280	9%
High blood pressure	231	7%
Clouding of the lens in one or both eyes (cataracts)	168	5%
Diabetes	137	4%
Suicidal thoughts	118	4%
Adrenal suppression (a condition where the body can't make enough of the hormone cortisol)	88	3%
Raised pressure in the eyes (glaucoma)	71	2%
Weight loss	42	1%
Any mental health side effect	1053	33%
Total	3215	

Number of OCS courses in last year	Responses	%
I have had 1 course of oral steroid tablets (e.g. prednisolone)/steroid injection in the last year	1232	38%
I have had 2 courses of oral steroid tablets (e.g. prednisolone)/steroid injections in the last year	773	24%
I have had 3 or more courses of oral steroid tablets (e.g. prednisolone)/steroid injections in the last year	940	29%
I take oral steroid tablets (e.g. prednisolone) everyday	270	8%
Total	3215	19%

Aware of OCS side effects	Responses	%
No	621	26%
Not sure	66	3%
Yes, all of them	673	28%
Yes, but only a few of them	337	14%
Yes, some of them	685	29%
Total	2382	

Impact of side effects	Responses	%
They don't impact on my everyday life	845	26%
They make me feel less confident	765	24%
They make it hard to do everyday tasks (such as shopping and cooking)	682	21%
I've had to take time off work	518	16%
I've had to cancel plans with friends and family	467	15%
I've had to work part-time or give up work altogether	254	8%
They have affected my career choices	196	6%
They've stopped me making friends/forming close relationships	186	6%
Other	84	3%
Work related	708	22%
Total	3215	

Impact of biologic treatment	Responses	%
I have fewer asthma symptoms/asthma attacks	137	64%
Fewer hospital attendances for my asthma or steroid side effects (going to A&E)	92	43%
It's improved my quality of life	92	43%
Fewer hospital admissions for my asthma or steroid side effects (being admitted overnight)	76	36%
I've been able to reduce my oral steroids	71	33%
I can do more exercise	62	29%
I take less time off work/I've been able to go back to work	50	23%
It's been completely life-changing	49	23%
I have experienced side effects from the biologic treatment	37	17%
I've been able to come off oral steroids altogether	36	17%
I can make more future plans than before	35	16%
My asthma is the same/worse than before I went on biologic treatment	30	14%
I'm less anxious/scared	27	13%
Reduce or stop oral steroids	96	45%
Total	214	

Appendix 4: OCS heat map

Figure 2 uses data on OCS prescribing from heat maps developed by NHS South Central and West Commissioning Support Unit and AstraZeneca (accessible [here](#) with access granted to registered healthcare professionals from AstraZeneca). The original source of the data is the prednisolone 5mg prescribing metric in the **NHS Respiratory Dashboard**. The data provides patient numbers at CCG or GP practice level who received two or more prescription items for prednisolone 5mg over a rolling 12 months for an unconfirmed condition, i.e. the number of patients that month who had two or more courses in the previous 12 months. Reason for prescribing OCS has not been determined, however all patients had been previously prescribed maintenance inhaled treatment.

To provide a comparable rate, 12 individual months of data were obtained for each GP practice and CCG, and averaged. This was then divided by the GP practice/CCG asthma QoF register to give a rate, i.e. numerator was the 'average' number of patients per month receiving two or more courses in the previous 12 months, and the denominator was the number of asthma patients. We analysed CCG level data and provided an average for each region in England.

References

1. Cumella, A. and C. Renwick. **Living in Limbo: the scale of unmet need in difficult and severe asthma.** 2019
2. Majellano E. C., Clark V. L., Winter N. A., Gibson P. G. & McDonald, V. M. **“Approaches to the assessment of severe asthma: barriers and strategies.”** *Journal of Asthma and Allergy* 2019; 12:235-51.
3. Farrington-Douglas, J. & C. Renwick. **Confused about whether you have severe asthma or not? You’re not alone.** 2020
4. Mallory, G. W., Halasz, S. R. & Clarke, M. J. **“Advances in the treatment of cervical rheumatoid: Less surgery and less morbidity.”** *World Journal of Orthopedics.* 2014, Jul 18;5(3):292-303.
5. Chung, L. P., Upham, J. W., Bardin, P. G. & Hew, M. **“Rational oral corticosteroid use in adult severe asthma: A narrative review.”** *Respirology* 2020; 25: 161-172.
6. NHS Digital, **Prescription Cost Analysis 2018.**
7. Price, D. B., Trudo, F., Voorham, J., et al. **“Adverse outcomes from initiation of systemic corticosteroids for asthma: long-term observational study.”** *Journal of Asthma and Allergy.* 2018; 11:193-204.
8. Sullivan, P. W., Ghushchyan, V. H., Globe, G. & Schatz, M. **“Oral corticosteroid exposure and adverse effects in asthmatic patients.”** *Journal of Allergy and Clinical Immunology* 2018; 141(1):110-16.e7.
9. Bleeker et al. **“Systematic Literature Review of Systemic Corticosteroid Use for Asthma Management.”** *American Thoracic Society* 2019.
10. Dalal, A. et al. **“Dose-Response Relationship Between Long-Term Systemic Corticosteroid Use and Related Complications in Patients with Severe Asthma.”** *Journal of Managed Care and Speciality Pharmacy* 2016 Jul; 22(7):833-47.
11. Chen, W., Safari, A., FitzGerald J.M., et al. **“Economic burden of multimorbidity in patients with severe asthma: a 20-year population-based study.”** *Thorax* 2019; 74:1113-19.
12. Sweeney, J., Patterson, C. C., Menzies-Gow et al. **“Comorbidity in severe asthma requiring systemic corticosteroid therapy: cross-sectional data from the Optimum Patient Care Research Database and the British Thoracic Difficult Asthma Registry.”** *Thorax* 2016; 71:339-46.
13. Barry, L. E., Sweeney, J., O’Neill, C. et al. **“The cost of systemic corticosteroid-induced morbidity in severe asthma: a health economic analysis.”** *Respiratory Research,* 2017, 18, 129

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14. O'Neill, S., Sweeney, J., Patterson, C. C., et al. '**The cost of treating severe refractory asthma in the UK: an economic analysis from the British Thoracic Society Difficult Asthma Registry.**' *Thorax* 2015; 70:376-8
 15. Trung, N. Tran, Elizabeth King, Rajiv Sarkar, Cassandra Nan, Annalisa Rubino, Caroline O'Leary, Ruvimbo Muzwidzwa, Laura Belton & Jennifer K. Quint. "**Oral corticosteroid prescription patterns for asthma in France, Germany, Italy and the UK.**" *European Respiratory Journal* Jun 2020, 55 (6) 1902363
 16. IQVIA, Monthly Hospital Prescribing Data, July 2015–June 2020.
 17. Renwick, C. **Falling into isolation: the lived experience of people with severe asthma.** 2020
 18. Hew. M. et al. "**Systematic Assessment of Difficult-to-Treat Asthma: Principles and Perspectives.**" *The Journal of Allergy and Clinical Immunology: In Practice* 8.7, July-August 2020, 2222-33. DOI:
 19. Hambleton, K. et al. "**Comparison of the peripheral blood eosinophil count using near-patient testing and standard automated laboratory measurement in healthy, asthmatic and COPD subjects.**" *International Journal of Chronic Obstructive Pulmonary Disease* vol. 12, 2771-5. 26 Sep. 2017.
 20. Denton, E. et al. "**Systematic Assessment for Difficult and Severe Asthma Improves Outcomes and Halves Oral Corticosteroid Burden Independent of Monoclonal Biologic Use.**" *The Journal of Allergy and Clinical Immunology: In Practice* Volume 8, Issue 5, 2020, 1616-24.
 21. Allen, O. **Slipping through the net: the reality facing patients with difficult and severe asthma.** 2018
 22. King, J. & A. Whittamore. **Digital asthma: re-imagining primary care.** 2020

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