THE PHARMACIST HANDBOOK

SPECTRA: Identification of SusPECTed seveRe Asthma in adults

A key clinical system resource to identify potential severe asthma, optimise treatment, and refer where appropriate.

This handbook was initiated, funded and organised by AstraZeneca

Produced in collaboration with Cogora.

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Intended for healthcare professionals only.

Foreword

Abbreviations

ACT	Asthma control test
FeNO	Fractional exhaled nitric oxide
FEV_1	Forced expiratory volume in one second
FVC	Forced vital capacity
ICS	Inhaled corticosteroid
IgE	Immunoglobulin E
IL-5	Interleukin-5
LABA	Long-acting beta-2-agonist
mAbs	Monoclonal antibodies
MART	Maintenance and reliever therapy
MDT	Multidisciplinary team
OCS	Oral corticosteroids
PAAP	Personalised asthma action plan
PEFR	Peak expiratory flow rate
pMDIs	Pressurised metered-dose inhalers
PSA	Potential severe asthma
QoL	Quality of life
SABA	Short-acting beta-2-agonist
SACs	Severe asthma centres
SCS	Systemic corticosteroids

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In the UK, approximately 12% of the population, have been diagnosed with asthma and this accounts for 2-3% of primary care consultations.[1]

The pathophysiology of severe asthma involves a greater degree of severe airway remodelling, marked thickening of the airway wall, and excessive airway narrowing upon stimulation of airway smooth muscle contraction.[2,3] Some of the common challenges faced by severe asthma patients are persistent symptoms, frequent exacerbations, impaired quality of life (QoL), and eventual loss of lung function.[4]

The NHS Long Term Plan outlines priorities for better outcomes for respiratory patients such as those with severe uncontrolled asthma and the NHS Accelerated Access Collaborative (AAC) sought to improve access to asthma biologics through the Rapid Uptake Products (RUP) programme.[5]

The targeted treatments available have been shown to reduce asthma exacerbations, improve lung function, reduce oral corticosteroid use and improve QoL.[6] Yet still large numbers of patients with potential severe asthma in the United Kingdom are under-recognized in primary care. These patients would benefit from a more systematic

assessment in primary care and possible specialist referral.[7]

During the AAC Rapid Uptake programme more than 4,690 additional patients have been initiated onto asthma biologics and around 3000 fewer patients have been prescribed 3g or more of prednisolone each month.[8] Over a third of practices reported not having a method to identify high-risk patients and a recent review of primary care databases (OPCRD) showed about 8% of Asthma patients in primary care have potentially severe asthma; of these less than 30% were referred to or known to secondary care.[8]

SPECTRA proactively identifies and prioritises patients for review to support the accelerated referral of those with suspected severe asthma to a specialist centre for diagnosis and access to specialist treatments. The tool has been utilised in 558 practices and 1.74 million patient records had been proactively searched using SPECTRA.

I have found SPECTRA easy to install and run in GP clinical systems whilst the resources have been invaluable when identifying potential severe asthma patients for my advanced respiratory clinics. Referring patients with suspected severe asthma using the SPECTRA template ensured all the relevant information was included, thus reducing the delay in patients receiving specialist care. Benchmarking all the practices in the primary care network (PCN) has enabled more focused respiratory reviews and allowed the PCN to plan more clinics in areas of health inequality and improve access to specialist treatment.

Improving patient care and outcomes by reducing inequalities and increasing access to biologics for patients with severe asthma remains a priority in the NHS long-term plan. Systems, places, and neighbourhoods need to work together to gain a greater awareness of severe asthma and tackle the barriers that exist in their local asthma pathways, enabling patients with suspected severe asthma to be identified much earlier and referred on to specialist care.

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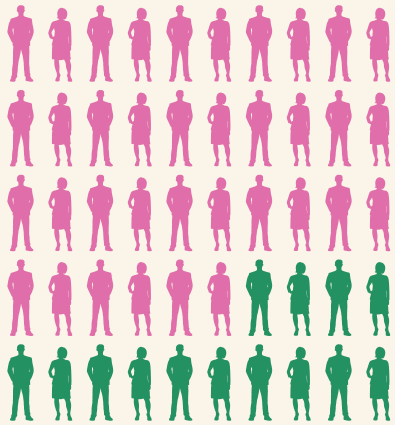
Introduction

Severe asthma is defined as asthma that remains uncontrolled even when patients are adherent to high doses of medicines.[1] It is estimated that for every 100 asthma patients, four have severe asthma in the UK.[1] Although the condition can be life threatening, a large proportion of those in primary care who could potentially have severe asthma are not referred.[1–3] A recent study found that 72% of patients (n=16,409) with potential severe asthma (PSA) had not been referred to a secondary care or had a specialist review in the past year.[3] PSA patients are on high dose inhaled therapy and present with at least one of the following: poor symptoms control, serious exacerbations, two or more issues of systemic corticosteroids and the use of 6 or more reliver inhalers in the past 12 months.[4–6] It is crucial for PSA patients to be identified and referred when guidance suggests because uncontrolled asthma is associated with frequent exacerbations needing recurrent courses of oral corticosteroids (OCS).[6] Limited evidence suggests that even short courses of systemic corticosteroids (SCS) can result in negative outcomes for the patients by increasing risk of hypertension, gastrointestinal ulcers/bleeds, loss of bone density and negatively impacting mental health.[7]

SPECTRA can help primary care clinicians quickly identify adults with PSA through alerts and searches. Once uncontrolled and suspected severe asthma patients are identified through SPECTRA, primary care clinicians can continue their duty of care, reviewing patients per current guidelines, and referring to secondary care where necessary. Once referred to secondary care patients gain access to a multi-disciplinary team who can confirm their diagnosis and provide access to specialist treatment, if deemed beneficial.[8] This increases the number of patients receiving the right care, reduces morbidity associated with uncontrolled asthma and enables eligible patients to access treatments, thereby improving patients' health and quality of life (QoL).

The use of SPECTRA does not replace clinical judgement.

72% of PSA patients had no referral or specialist review in the past year.[3]



Patient profile

Not a real patient, for illustrative purposes only

Meet Jane, a patient with asthma
Jane is 23 years old and works as a teacher. Jane has recently had her 4th exacerbation this year and is experiencing worsening symptoms. Jane required treatment with oral corticosteroids (OCS) on all four occasions. Her asthma interferes with her daily life as she reports disturbed sleep and when playing hockey, she becomes wheezy. Jane is on a combination inhaler containing a medium-dosed inhaled corticosteroid (ICS) and long-acting bronchodilator (LABA) inhaler, to which she demonstrates good inhaler technique. Additionally, she has ordered six short-acting beta-agonist (SABA) inhalers in the past six months.

Introduction to SPECTRA

SPECTRA is a key clinical system resource currently used by over 500 practices across the UK. The system assists clinicians to identify PSA patients which prompts a review of their condition. The search criteria used by SPECTRA consists of:

- Serious exacerbations (≥1 hospitalisation, ICU stay or mechanical ventilation in the past 12 months)[6]
- ≥ 2 issues of systemic corticosteroids[6]
- ≥ 6 reliever inhalers in the last 12 months[4,5]
- Poor symptom control (Asthma control test <20)[6]

As of April 2023, 1.74 million patient records have been proactively searched using SPECTRA. Following clinical review and any necessary treatment optimisation in primary care, if patients remain uncontrolled, they can be referred using SPECTRA's useful referral template. The system can also be used to generate reports measuring the impact of the review and referral process.

Check out the SPECTRA website

Click here

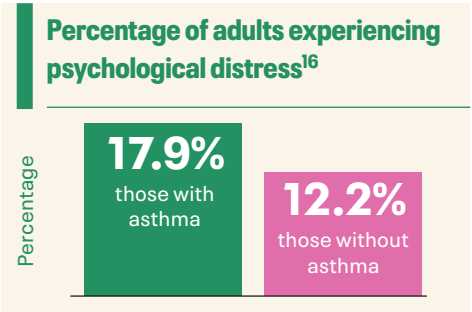
Importance of effective severe asthma treatment
Asthma is a highly prevalent respiratory disease and over 8 million people in the UK are afflicted with this long-term lung condition.[9] Out of 100 people with asthma in the UK around 4 will have severe asthma, this equates to roughly

200,000 people living with severe asthma in the UK.[1] Although there are treatments for asthma available that enable most individuals to live relatively symptom-free, 4 people die every day in the UK due to an asthma attack.[10] This is a high mortality rate for a treatable disease and, even more shockingly, the UK has the highest asthma mortality rate for those aged 10-24 when compared to 13 other European countries.[11]

It should also be acknowledged that this high mortality rate is not evenly spread amongst UK asthma patients, studies have demonstrated that more people with asthma from deprived areas have a higher risk of death and hospital admission.[12]

The high prevalence of asthma has a wide societal impact with the disease generating 4.1m work-days lost in the UK.[13] The total cost of asthma was estimated to be at least £1.1bn between 2011-2012, this includes costs from primary care services, disability claims, and hospital care.[13]

Impact on patient quality of life



As with many chronic diseases, asthma has a large impact on a patient's QoL.[14] Recent findings have suggested that asthma exerts a complex and detrimental effect upon both the physical and psychological health of patients which inevitably impacts the QoL for the patient.[15]

Psychological distress is more frequent in adults with asthma, with 17.9% of those with asthma experiencing psychological distress compared to 12.2% of those without asthma.[16] Those with asthma are also more likely to be diagnosed with a mental health condition.[16]

Asthma can have an impact on an individual's ability to work. The average percentage of work hours missed in a single week due to asthma symptoms is 3.5% in the UK.[17] Furthermore, workers with asthma report negative emotions connected to how their asthma impacts workplace productivity.[17] Asthmatic workers report feeling sad and depressed and feelings of guilt due to other colleagues sometimes having to pick up their work.[17] This inferiority they feel can have an impact on their self-esteem which may negatively affect their QoL.

Difference between uncontrolled asthma and severe asthma

Uncontrolled asthma is defined by poor symptom control and frequent exacerbations (≥2 exacerbations or requiring OCS or ≥1 hospital admission related to asthma [serious exacerbation]

in a 12 month period).[6] It may be caused by poor adherence to therapy, poor inhaler technique or a requirement for an increased dose of medication.[18] It is important to address common problems before referring patients to severe asthma services.

Severe asthma is a subset of asthma that is uncontrolled despite adherence to high-dose medication and after the elimination and/or treatment of contributory factors.[18,19]

Asthma can also be defined as allergic or eosinophilic (or both).[19]

Common problems to address before diagnosing severe asthma: [18]

- Initial diagnosis of asthma is incorrect; the symptoms are a result of another condition
- The presence of comorbidities, such as obesity
- Incorrect inhaler technique
- Poor adherence to prescribed asthma treatments
- Presence of sensitising agents at home or in the work environment

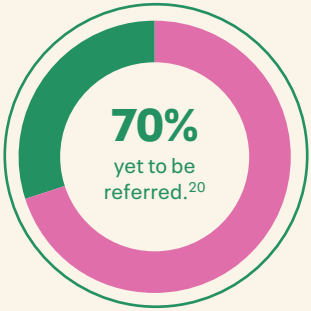
Severe asthma patients are under-referred and under-treated

Referral to secondary care is critical for patients with PSA to ensure they can access the specialist care needed to successfully assess and manage their condition.[8] Without proper management, patients could continue to suffer from frequent asthma attacks, hospital admissions and, in the worst-case scenario, death.[2] Despite the importance of referral, reports suggest that over 70% of adults who have received three or more courses of OCS are yet to be referred, and 40% of patients were uncontrolled for over two years prior to referral to a severe asthma centre (SAC).[20]

England has one of the lower rates of asthma biologic prescribing.[21] Currently only 20% of those eligible are receiving them, highlighting the need for increased focus on earlier identification and referral of patients with PSA.[2,22]

SPECTRA can help to increase the identification of patients with PSA, thereby ensuring patients can access the appropriate care and medication they require.

Over 70% of adults who have received three or more courses of OCS are yet to be referred.[20]



The SPECTRA pathway

Identify patients with suspected severe asthma

Review & refer appropriate patients needing further input

Treatment escalation to severe asthma centres

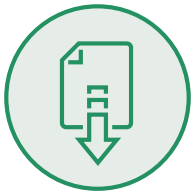
Searches & Alerts*

Patients with:

- Serious exacerbations (≥1 hospitalisation, ICU stay or mechanical ventilation in the past 12 months)[6]
- ≥ 2 issues of systemic corticosteroids (in the past 6 months)[6]
- ≥ 6 reliever inhalers in the last 12 months[4,5]
- Poor symptom control (Asthma control test <20)[6]

Referral Extract Template

A referral extract template to facilitate the automatic collection of data and medication as part of the referral process



Impact Reporting

Practice level and local health economy dashboards.

Download baseline and follow-up PDF reports (*if required*) to measure continual review and impact of the service

SPECTRA integrates with your electronic patient records (EMS, SystmOne and Vision) and searches for patients based on certain criteria.

* EMIS, SystmOne & Vision

When SPECTRA identifies patients who meet the criteria it will alert the user to review the patient.

H

High Intensity Treatment

Is the patient already at the high-end of the treatment escalator?

A

Adherence

Are patients taking their medication at the correct dose and frequency?

S

Severe Exacerbations

Has the patient had ≥2 courses of oral corticosteroids or been hospitalised due to asthma in the last 12 months?

T

Technique

Is the patients inhaler technique correct?

E

Exclude Other Conditions

Are conditions that mimic or exacerbate asthma being managed?

Reviewing Jane

Remember the HASTE tool when reviewing your primary care patients. This memorable acronym details five questions to keep in mind when reviewing an asthma patient. If the answer is yes to all the questions, it is time to refer your patient to secondary care for further assessment.

The HASTE tool was used in the following review of Jane.

1. Confirm the asthma diagnosis
Patients may not be responding well to treatment if the initial asthma diagnosis was incorrect. To eliminate this option, check records for diagnostic confirmation.

This could include:[23]

- Spirometry results showing airflow obstruction (forced expiratory volume in one second [FEV_1]/forced vital capacity [FVC] FEV_1/FVC <70%)
- Peak expiratory flow rate (PEFR) variability (>20%) after monitoring at least twice daily for 2-4 weeks
- Bronchodilator reversibility (BDR) (≥12% + ≥200ml) in response to beta-2-agonists or corticosteroids
- Fractional exhaled nitric oxide (FeNO) (≥40 parts per billion)
- Responses to previous treatments

Jane's records showed:

- Diurnal PEFR variability (>20%)
- Obstructive Spirometry (FEV_1/FVC 68%) and positive bronchodilator reversibility (FEV_1 increase of ≥12%)

Common causes of PMDI misuse[24]

Omissions

- Device not actuated at beginning of inspirations
- No slow inspiratory flow
- No complete inspiration
- Incomplete actuation

Errors

- Forced expiration
- No expiration
- Inspiration by nose
- Actuation at the end of inspiration
- No inspiration

2. Assess adherence
Simple interventions should be addressed before escalating treatment. One of the simplest interventions is correcting inhaler technique. One study showed that pressurised metered-dose inhalers (pMDIs) were misused by 71% of patients (n=3,955).[24] Demonstrating and checking inhaler technique significantly reduces misuse when compared to patients with no prior education.[24] Common causes of

pMDI misuse include the incorrect holding of the inhaler, not holding breath for 5s following inspiration and not removing the cap prior to use.[24] Consider the use of a spacer for patients who have poor technique.[25] When checking adherence it is important to review how often the patient collects their inhaled steroid prescription, compared to how often they *should* collect it in a 6 or 12-month period (medicine possession ratio).

Jane is adhering to her treatment and demonstrates good inhaler technique.

3. Assess asthma control

Use a validated tool such as the asthma control test (ACT) questionnaire to assess asthma control in your patients.[26] The five questions in the ACT questionnaire assess to what extent the patient's asthma is interfering with their daily life and how often they require certain medications. Following the patient's answers a score is generated; the lower the score, the more poorly controlled their asthma is. Scores ranging from 0-20 indicate your patient's asthma symptoms are poorly controlled.

Jane's score is 10 indicating her asthma is poorly controlled.

4. Assess exacerbation risk

Look at the patient's history and assess their exacerbation risk.

Having any of the following risk factors increases the patient's risk of exacerbation:[18]

- High SABA use
- Poor adherence or not using their inhaler optimally
- Comorbidities e.g., obesity and food allergies
- Exposure to smoking
- Ongoing exposure to known triggers
- Major socioeconomic or psychological problems
- Low FEV_1 (especially <60% predicted)
- High bronchodilator responsiveness
- High levels of blood eosinophils and elevated FeNO
- Intubated or admitted to intensive care unit for asthma, ≥1 severe exacerbations in the last 12 months

Jane has 3 of the warning signs detailed, indicating she could be at risk of another exacerbation.

5. Treatment escalation

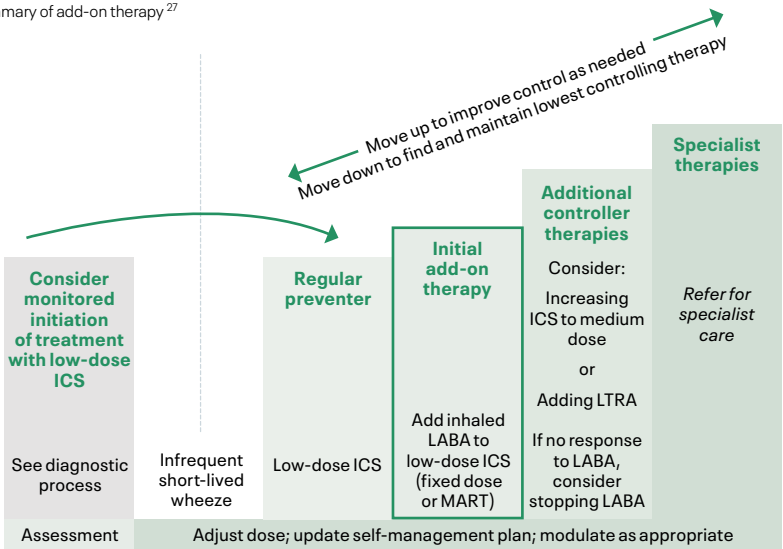
If the asthma diagnosis has been confirmed and your patient is adherent and competent in managing and administering their medication it could be time to adapt their current medication. The British Thoracic Society suggests a trial of add-on therapy of varying lengths depending on the desired outcome.[27] There is no defined ICS dose that signifies when to try adding another therapy but note that a considerable number of patients will not benefit from ICS dose above 200 micrograms BDP/day as much as they would an additional therapy.[27]

An outline of add-on therapies is provided below for your information, but please refer to your local and national guidelines.

Add-on therapy [27]

- An inhaled long-acting β_2 agonist (LABA) should be considered before increasing ICS dosage in adults. Combination inhalers guarantee LABA and ICS are taken simultaneously, and that one medication is not forgotten. Maintenance and reliever therapy (MART) is a form of combined ICS and LABA treatment, with the difference being, it is not a fixed dose. MART works on the basis that as a patient's need for reliever increases, the dose of their preventer medication also increases.
- If patients are still presenting with poor control, check the adherence to their new therapy, additionally, clinicians may want to carry out a FeNO test at this stage, as studies have shown it can be a useful marker for medicine adherence.[28] If patients show no improvements with the addition of LABA, consider stopping this line of medication. Consider the addition of a leukotriene receptor antagonist.
- Long-acting muscarinic antagonists (LAMA) may be considered as an add-on therapy in a combination ('triple') inhaler.[18]
- At this stage, if the patient is still presenting with poorly controlled asthma they need to be referred for specialist care.

Figure 1: Summary of add-on therapy [27]



Review and refer appropriate patients

Patients need to be referred to a specialist care team to access additional tests where appropriate. This will aid differential diagnoses and identify less-common comorbidities that are potentially contributing to the symptoms and exacerbations a patient is experiencing.[18] These specialist tests include additional pulmonary function tests, FENO, allergy testing, bone density scans, high-resolution chest computer tomography (CT) and potentially an echocardiogram.[18] The referral letter should include:

- Reason for referral
- Number of courses of steroids, antibiotics and how many times the patient was admitted to the hospital in the past 12 months
- The patients' current asthma treatment
- Specific triggers for the patient
- Smoking status
- Interventions and treatments initiated in primary care
- Details of their medication adherence (number of ICS containing inhaler prescriptions collected by the patient in the previous 12 months)
- Any other information deemed to be relevant

Check Referral Criteria

Click here

SPECTRA offers a referral template that has been designed in consultation with clinical champions which helps busy clinicians save time during the referral process. This template is a coded file which facilitates the automatic collection of data and medication and pulls through relevant information onto the template for the clinician to edit, update, save, and send off for a referral. The template includes sections for lung function tests, blood tests, diagnosis, medication, patient biometrics and medication use (adherence).

Treatment escalation to severe asthma centres (SACs)

Systematic assessment and multidisciplinary team (MDT) input in SACs can improve asthma control, quality of life, and reduce exacerbations, asthma related hospital admissions and oral steroid use, regardless of the use of biologics.[30]

The MDTs consist of doctors specialising in severe asthma, dieticians, psychologists, pharmacists, respiratory physiotherapists, specialist asthma nurses, and speech and language therapists. The severe asthma MDT also work closely with radiologists, ear, nose and throat specialists and allergists when needed.

Biologic therapies are a class of drugs that target specific pathways that lead to inflammation within the airways.[31,32] They are currently licensed for people with severe asthma who experience frequent exacerbations or are OCS-dependent.[33] Biologics are only initiated in SACs and select secondary care sites. Their initiation and ongoing use is monitored under the guidance of the severe asthma MDT.

Useful resources

Toolkit: Better outcomes for asthma patients and the planet

Oxford Academic Health Science Network provide a useful toolkit to assist clinicians in not only providing better care for asthma patients but also assisting the NHS goal of becoming net zero. This toolkit has links to information from identifying severe asthma in adults using SPECTRA to reducing the carbon footprint of inhaler prescribing.

Find out more about Oxford Academic Health Science Network toolkit.

External link, not produced by AstraZeneca.

Click here

Asthma structured medication review template

This template supports clinicians when reviewing asthma patients and guides users on the best practice for adherence review, inhaler technique assessment and other important topics. This review template is useful for pharmacists, advanced nurse practitioners and GPs. Import this template free of charge into GP prescribing systems (SystmOne and EMISweb).

Learn more and import the Asthma structured medication review template.

External link, not produced by AstraZeneca.

Click here

Analysis of the number of untreated biologic-eligible patients in the UK

Investigators sought to find out how many patients were eligible for biologics; they used a singular primary care network located in London to determine the quantity of biologic-eligible adult patients. They found 1.4% of all patients with asthma meet the criteria needed to initiate biologic therapy and yet currently 80% of these patients have not yet started biologic treatment.[22]

Read the full paper from BMJ journals.

External link, not produced by AstraZeneca.

Click here

The HASTE tool

A memorable tool useful for primary care clinicians undertaking asthma reviews. Answer the five questions indicated by the tool and if the answer is yes to all HASTE questions it is time to refer your patient.

View the HASTE tool.

External link, not produced by AstraZeneca.

Click here

H A S T E

SPECTRA: A practical guide

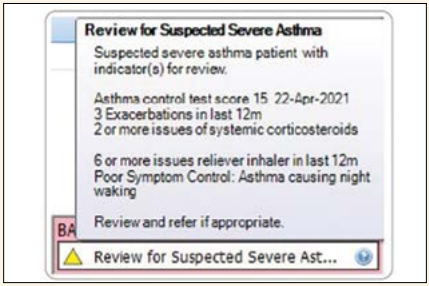
Searches

Name	Population Count	%	Last Run	Search Type
01) Adult patients with Asthma on high strength ICS last 12m Cohort 1	49	1%	10-Aug-2022	Patient
01a) Cohort 1 patients with "serious exacerbations" last 12m	8	16%	10-Aug-2022	Patient
01b) Cohort 1 patients with =>2 issues of systemic corticosteroids i...	4	8%	10-Aug-2022	Patient
01c) Cohort 1 patients with 6+ issues of reliever inhalers in last 12m	8	16%	10-Aug-2022	Patient
01d) Cohort 1 patients with poor symptom control or latest ACT <2...	2	4%	25-May-2022	Patient
02) Adult patients with Asthma on all other ICS strengths Cohort 2	141	2%	10-Aug-2022	Patient
02a) Cohort 2 patients with "serious exacerbations"	8	6%	10-Aug-2022	Patient
02b) Cohort 2 patients with =>2 issues of systemic corticosteroid is...	5	4%	10-Aug-2022	Patient
02c) Cohort 2 patients with 6+ issues of reliever inhaler in last 12m	18	13%	10-Aug-2022	Patient

Snapshot of SPECTRA search results

SPECTRA have pre-created downloadable searches that once imported, integrate with the clinical system and become visible on all clinician's desktops. Following SPECTRA's identification of suspected severe asthma patients in your clinic you can easily access patients lists for review. You can individually review the patients in each cohort, checking their consultations, medications, problems, investigations, and care history diary in a few clicks.

Alerts



The alert as it appears on a clinician's system following the identification of a new suspected severe asthma patient.

Once SPECTRA is set up in your clinic you can enable alerts. These alerts aid clinicians to prompt a review of the patient record each time a patient meets the specified criteria. Make sure when setting up alerts you enable triggers to 'always run'.

Referral Extract Template

The referral extract template is a coded file that pulls through key data and medication into one document, saving you time in the process. You can edit, update, and save the file into the patient record. It can also be further utilised to conduct a review of the patient record.

The following sections are included in the referral template:

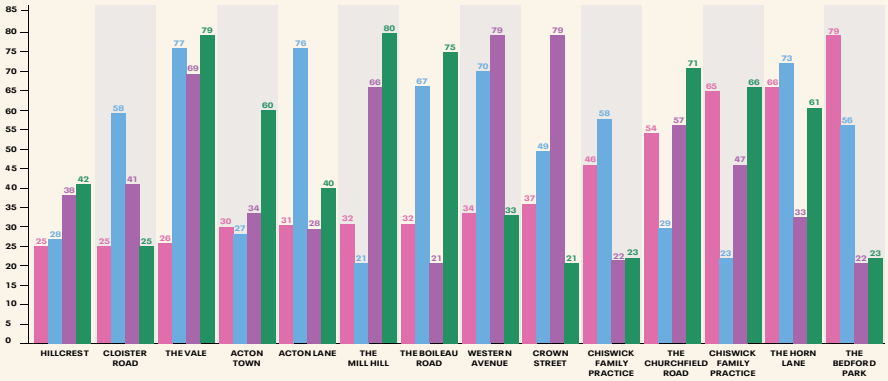
- Blood Tests
- Lung Function Tests
- Patient Biometrics
- Current Acute & Repeat Medication
- Exacerbation/Symptom Control
- Diagnosis
- Other Diagnosis

Impact Reporting

Search Number	Search Title	Patient Numbers	
		Baseline	Follow-up
1a	**Cohort 1** patients with **serious exacerbations** *(at least one hospital admission)* **OR** **2 or more exacerbations****.[1]	11	12
1b	**Cohort 2** patients who have had **2 or more issues** of systemic corticosteroids**[1♦]	13	7
1c	**Cohort 1** patients who have had **6 or more issues** or** reliever inhaler	31	14
1d	**Cohort 1** patients with "Poor Symptom Control" coded** **OR** Latest ACT <20.[1]	11	3

Practice report example

Cohort 2: Number of patients with indicators of uncontrolled asthma by practice



Serious exacerbations or 2 or more exacerbations | 2 or more issues or systemic corticosteroids | 6 or more issues of reliever inhaler | Poor symptoms control coded or latest ACT < 20

Patient numbers between 1 and 7 are suppressed, aligned to NHS digital's approach to suppression of small patient counts*

PCN & cluster reports example

SPECTRA reporting functionality enables healthcare organisation to generate baseline and follow-up reports to measure the **impact** of the **review and referral** process across practices, primary care networks and broader healthcare organisation networks to enable risk stratification of adult asthma patients at a population health level.

AstraZeneca provides helpful instruction guides to follow when setting up SPECTRA in your practice. Once registered for SPECTRA you can access the instruction guides in the portal.

Additionally, contact the SPECTRA Support Team for assistance regarding any part of the SPECTRA process:

01332 546 909 | support@suspected-severe-asthma.co.uk

Patient profile revisited

What's next for Jane?
Jane's clinician started her on add-on therapy; after working their way through the stepwise process, Jane's asthma remained poorly controlled. This led Jane's clinician to refer her to secondary care and subsequently to a SAC where she was assessed by the MDT. The MDT diagnosed her with severe eosinophilic asthma and began to discuss specialist treatment with her.

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4 in 100 asthma patients have severe asthma[1]

75% of those on three or more courses of oral corticosteroids are yet to be referred[2]

Pressurised metered-dose inhalers are misused by 71% of patients[24]

SPECTRA: Identification of SusPECTed seveRe Asthma in adults, is a clinical system which has been developed to help identify adults with potential severe asthma, optimise treatment and, where required, refer them to severe asthma centres

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