The multidisciplinary team severe asthma day case assessment and its impact on patient care

Abstract

People with severe and difficult to control asthma can be a complex and heterogenous group of patients often with multiple comorbidities. Living with this disease imposes a huge physical and psychological burden upon the patient which requires a comprehensive, systematic and patient-focused assessment, using a wide range of clinical expertise from within the multidisciplinary team.

This article describes a severe asthma systematic and multidimensional day case assessment, and the positive benefits that the authors perceive it offers for patient care. These benefits include a confirmed diagnosis, consideration of alternative diagnosis, enhanced adherence, medication optimisation, access to and gatekeeping of high-cost specialist medications, improved patient self-management skills and signposting to appropriate therapies. As a consequence, they believe that this facilitates better patient outcomes through a reduction in corticosteroid exposure, exacerbations and hospitalisation.

This severe asthma multidisciplinary team day case approach offers more than just physical benefits when compared with the traditional medical model. Patient feedback reports an excellent patient experience, feeling listened to, understood, empowered and hopeful for the future.

Key words: Adherence; Chronic disease; Multidisciplinary team; Quality of life; Severe asthma

Submitted: 1 March 2021; **accepted following double-blind peer review:** 11 March 2021

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Introduction

Asthma is defined as 'severe' when the disease remains uncontrolled despite daily high-dose inhaled corticosteroids, or where daily oral corticosteroids are required in order to maintain control (Jackson et al, 2021). Asthma control relates to the overall symptom burden; poor or difficult to control asthma may be related to the severity of the disease itself but may also be impacted by perception, psychosocial issues and adherence (Allen, 2018).

People with severe or uncontrolled asthma live with a high daily symptom burden, poor quality of life, incapacitating asthma attacks, frequent hospitalisations, and a high risk of morbidity and mortality (Renwick and Walker, 2020). There is a historical reliance on corticosteroids; while they are potentially lifesaving, they can lead to debilitating side effects that negatively impact upon everyday life and psychological wellbeing (Allen, 2018).

It is estimated that approximately 5% of the UK asthma population suffer with severe poorly controlled asthma (NHS England, 2017), yet this small minority contribute disproportionately to the NHS financial burden. Burke et al (2016) estimated that 50% of NHS asthma costs are attributable to this cohort, and NHS England (2017) calculate the indirect costs of this cohort to be an additional £1.2 billion.

Patients with severe and difficult to control asthma are a complex group, often with multiple comorbidities. An indisputable diagnosis of severe asthma can only be established once all factors including diagnosis, medication adherence, additional diagnoses and psychosocial factors have been addressed (Hew et al, 2020). Clear consensus from the National Institute for Health and Care Excellence (2018) quality statement on severe asthma states that, within the UK, any patients with suspected severe asthma should undergo a holistic, comprehensive and systematic assessment by a dedicated multidisciplinary team experienced in the assessment and management of severe and difficult to control asthma.

How to cite this article:
Holmes L-J, Sheehan R, Elsey L, Allen L. The multidisciplinary team severe asthma day case assessment and its impact on patient care. Br J Hosp Med. 2021. https://doi.org/10.12968/hmed.2021.0142

Historically, the initial assessment followed the traditional medical model of the patient being assessed by a consultant and an intervention or referral to other multidisciplinary team members given as deemed appropriate. In 2019, the authors reassessed this initial practice through an amalgamation of a multidisciplinary team working party and patient feedback, and subsequently developed the systematic multidisciplinary team day case assessment. They believe that this approach offers not only an excellent patient experience, delivering a significant positive impact on patient care and value for money, but also provides a valuable learning opportunity for all members of the multidisciplinary team.

The severe asthma multidisciplinary team

To facilitate a true multidisciplinary team approach, each specialist discipline works cohesively, combining individual skills and knowledge, to undertake a multi-faceted assessment while working collaboratively with the patient to develop an individualised plan to support their needs (NHS England, 2018).

As per the NHS England (2017) severe asthma service specification, the severe asthma multidisciplinary team includes a dedicated consultant, specialist nurse, physiotherapist, pharmacist and psychologist review to provide multidimensional care.

The severe asthma multidisciplinary team day case assessment: the patient journey

The patient's journey begins with referral from their GP or local secondary care services which is triaged by the consultant team.

Before the appointment they are informed of the day case via a patient leaflet outlining what the visit entails and are also called in advance by a senior nurse to explain the day case process, pre-screen for COVID-19 symptoms and confirm availability to attend. Patient feedback indicates that this pre-assessment contact has a positive impact in allaying their anxieties before the appointment and consequently maximises attendance and slot use.

During the day case appointment, the patient is reviewed by core members of the multidisciplinary team including a specialist consultant, a clinical nurse specialist, a specialist respiratory pharmacist and a specialist respiratory physiotherapist. Their roles are now outlined.

Specialist consultant

The consultant undertakes a medical clinical history and physical examination and reviews any previous investigations, including radiological imaging, that have been transferred over from referring services.

Clinical nurse specialist

The clinical nurse specialist undertakes a holistic needs assessment, discusses the patient's hopes and expectations, reviews health-related quality of life and general asthma understanding and management skills, and provides support to complete patient-reported outcome measures (Asthma Control Questionnaire, Asthma Quality of Life Questionnaire, Hospital Anxiety and Depression score, Vocal Cord Dysfunction Questionnaire and Illness perception questionnaire). Bloods are taken for full blood count, immunoglobulin E and specific aeroallergens, functional antibody tests, pneumococcal titres, COVID-19 antibodies, anti-neutrophil cytoplasmic antibodies, kidney and liver function screens, cortisol and prednisolone or theophylline levels (where appropriate), glycated haemoglobin and vitamin D metabolites.

Specialist respiratory pharmacist

The pharmacist confirms adherence to inhaled medications, via GP prescription records, hospital records and community pharmacies. They confirm the number of courses of oral corticosteroids and antibiotics the patient has had in the previous 12 months. There is a review of the patient's medications, including whether any of the medications currently being used interact with each other, as well as previously trialled therapies, the patient's understanding of medications, use of short-acting beta agonists, allergy status and inhaler technique.

Specialist respiratory physiotherapist

The physiotherapist assesses chest clearance, sputum burden, cough and breathlessness, including triggers, easing factors and impact on activities of daily living, and any alteration of breathing pattern (assessing for abnormal patterns in respiration and/or inducible laryngeal obstruction features). Sputum sampling (microbiology, fungal culture and sensitivity, and sputum eosinophils), fractional exhaled nitric oxide (FeNO) and spirometry with reversibility (where possible) is completed following local COVID-19 guidelines.

Multidisciplinary team discussion and feedback

Following each core team member's assessment, the multidisciplinary team meeting is held on the same day with further team members, including additional consultants, psychologists and speech and language therapists to discuss each patient's case. Once diagnosis and potential plans of care have been discussed within the multidisciplinary team, this is directly fed back to each patient, with the opportunity to ask questions, address uncertainties and agree upon a comprehensive plan between the patient and team. This plan is subsequently fed back to the initial referrer with the patient copied into the correspondence. Follow-up plans involve a review appointment with the clinical senior nurse specialist to answer further questions, and ensure the treatment plan has been followed and that subsequent results and tasks have been acted upon.

Impact on patient care

In response to feedback from patients and colleagues, and following comparison of this process against national and international guidance, the authors propose that this multidisciplinary team day case approach offers a significant benefit to the care of patients with severe asthma.

A patient-centred approach to care

The ethos of the multidisciplinary team day case approach is to ensure a robust patient-centred approach to care. This approach is defined by NHS England (2018) as care delivery being facilitated by a team that collaboratively works to put the patient first, through seeking to understand patient needs, providing a platform to support the patient to understand their disease and treatment options to maximise patient outcomes.

Menzies-Gow et al (2018) outline the minimal standards of care that all patients with severe asthma should receive, including a timely referral from primary care. Sadly, it is estimated that on average it takes 7 years to be referred into a specialist centre (Menzies-Gow et al, 2018). Often by the time a patient reaches the authors' service, they are disillusioned with care, resigned to debilitating symptoms, accepting of reduced life quality, often receiving multiple courses of prednisolone, and have had years of futile assessments and failed treatment trials.

The team's goal is to understand their thought processes, feelings and perceptions which will then help facilitate the patient's ownership of care. The team is honest and open, and sets realistic goals that put into context the patient's wishes and expectations to build the foundations upon which to pin the consultation. This allows the team to work within realistic parameters, avoiding disappointment in not meeting unachievable goals or unrealistic expectations.

Table 1 reports friends and family feedback direct from patients post-consultation. Deviating away from the traditional models, which have previously failed patients, they are now seen in a format which, while unfamiliar, offers hope through its comprehensive multidimensional approach. This is reflected in the previously reported patient-reported outcome measures (Holmes et al, 2019): between assessment and first review, the Asthma Quality of Life Questionnaire demonstrates a clinically significant increase of 0.76, while the Asthma Control Questionnaire shows an overall improvement, decreasing by 0.75.

The impact of severe asthma extends beyond physical consequences and can have a significant impact upon education, work, relationships and emotional health (Allen, 2018). This multidisciplinary team approach allows a greater in-depth assessment of issues beyond those of physical health. Patients with severe asthma report higher levels of anxiety, panic disorder and depression, which can feed into negative everyday coping strategies, frequent exacerbations and the need for unscheduled healthcare visits (Vamos and Kolbe, 1999).

Table 1. Friends and family patient feedback
A very efficient process from reception to assessment. Made to feel welcome and comfortable. All staff very kind and professional
I feel listened to with good medical and professional attention. I feel like some of my worries about asthma are alleviated
Staff all extremely welcoming and given me a better understanding of my asthma, how to breathe and the use of inhalers. Felt comfortable talking with staff and would recommend it
I felt listened to and was much better to do it in one appointment for time off work
Everything explained to me to help me better understand how to manage my asthma better. Everyone is helpful and friendly
I'm going home more knowledgeable. Very friendly staff
I feel like I'm getting somewhere
Seeing various specialists in one visit has both been informative and convenient. Gave me a better understanding of my condition

Improved adherence and medication optimisation

Suboptimal adherence to asthma medications incurs a huge cost both personally to the patient through potential unnecessary escalation of therapy and financially to the NHS through increased demands in treating poor control and wasted medications. Multiple contributors to suboptimal adherence include lack of education, financial concerns, inability to use inhaler devices, lack of perception of the impact of non-adherence, and confusion between inhaled corticosteroids and short-acting beta agonists (Amin et al, 2020). Within the multidisciplinary team day case assessment, the review allows identification and greater understanding of the drivers of intentional or unintentional non-adherence and therefore appropriately targetted care.

To facilitate good adherence to therapy, an honest and open conversation is needed with the patients to ascertain their perception of the medications and understanding of why treatments have been prescribed and how they work. These simple interventions have led to an improvement in adherence, resulting in improved asthma control (Holmes et al, 2019).

Inhaled therapy is the foundation of asthma treatment, delivering medication direct to the site of action. Good inhaler technique is paramount to ensuring good patient outcomes, yet in a systematic review of 54 345 patients, only 31% had confirmed good inhaler technique (Sanchis et al, 2016). Within the authors' cohort of patients with severe asthma, during the first year of day case assessments, only 15% were able to demonstrate good technique, 22% fair technique and 61% poor technique. Educational intervention in correcting inhaler technique, either through enhancing the current inhaler device or finding a better tolerated device, has led to patients with the poorest inhaler technique showing a higher improvement in their Asthma Control Questionnaire scores at their second assessment.

A full medication review allows assessment of all medications and removal of unnecessarily prescribed drugs which ease the patient burden and reduce polypharmacy. Polypharmacy correlates directly with multimorbidity (National Institute for Health and Care Excellence, 2017), and makes for a large patient treatment burden and increased risk of harm, secondary to side effects which increase with the number of medications taken (National Institute for Health and Care Excellence, 2017). Patients with severe asthma also tend to have comorbidities and are likely to be affected by polypharmacy, which is associated with lower rates of adherence (Duerden et al, 2013). Inhaler device polypharmacy often involves use of multiple inhaler types, each requiring different techniques and leading to unintentional non-adherence (McDonald and Gibson, 2005). Within the authors' cohort, most patients are prescribed multiple medications which often have not been evaluated for years. Through a personalised approach the pharmacist discusses the risk–benefit of each medication with the patient, which frequently allows safe deprescribing or prescription of safer options.

Corticosteroids carry a significant burden with regard to patients' physical and emotional health. While they have been the mainstay of treatment for years, the availability of new biologic therapies means that frequent use is no longer justified, given the long-term impact they can have on a patient's physical and emotional health. Renwick and Walker (2020) report that requiring four or more courses of steroids per annum gives a 29% increase in risk of associated side effects including diabetes, cardiovascular disorders, cataracts, gastrointestinal bleeding and osteoporosis. A survey of 3000 asthmatics reported additional side effects including weight gain, skin atrophy, bruising, insomnia, mood disturbance, anxiety, depression, memory problems and suicidal ideation (Renwick and Walker, 2020). Optimising medications can potentially reduce steroid exposure: Chung et al (2020) demonstrated that multidisciplinary team assessment of patients with severe asthma can reduce steroid burden by 50% even before considering biologics.

Access to specialist high-cost specialist therapies

Severe asthma services are gatekeepers to biologic therapy which falls within specific prescribing criteria as outlined by the National Institute for Health and Care Excellence (2018). Systematic assessment also aims to identify the key trait responsible for the patient's reported symptoms to ensure that patients are taking appropriate therapy.

Currently, 68% of patients on the severe asthma registry are taking a biologic monoclonal antibody (Jackson et al, 2021). Within the UK, there are currently four available biologics, omalizumab, benralizumab, mepolizumab and rezlizumab, that work through blocking immunological pathways of Th2 eosinophil or allergic-mediated disease, with the overall principle of reducing the corticosteroid burden.

Biologic therapy can have a significant and transformational impact on patients' quality of life. Renwick and Walker (2020) reported that 64% of patients on biologic therapy reported reduced symptoms, 43% reduced hospitalisation, 45% reduce or stop prednisolone, 23% report a life-changing positive impact, and 23% have been able to return back to work.

The day case multidisciplinary team approach allows identification of patients who are appropriate and can be referred directly or patients who do not meet criteria because of factors such as limited adherence or insufficient prednisolone courses caused by avoidance. It also allows identification of patients who over-report prednisolone courses which can lead to unnecessary changes to asthma treatment and unnecessary biologic therapy. King et al (2020) identified that patients reported median 3.58 (interquartile range 1.00–5.00) prednisolone courses in the previous year, which differed from the confirmed number of prednisolone courses (2.96; interquartile range 1.00–4.25).

This information allows a true assessment of the severity of the patient's asthma and eligibility for biologic therapy. This accelerates the patient's access to the correct therapy for their severity and phenotype of asthma.

Improved tools and self-management skills

Systematic review and meta-analysis show that supported self-management reduces the need for additional healthcare resources and also improves overall quality of life through empowerment (Hodkinson et al, 2020). Through spending time with the patient within the day case approach, the team can focus upon educational interventions to help them be more autonomous in managing their disease. Teaching them how asthma impacts upon the respiratory system, how different medications work and when to seek medical support enhances self-management.

Within the first 6 months of day case assessments, the team identified that only 8.1% of patients had an personal asthma action plan on referral, yet the national registry of asthma deaths identified that patients without personal asthma action plans had a higher risk of an asthma-related death (Levy, 2015). All patients with asthma should have a personal asthma action plan. Formulating the plan gives the opportunity to assess the patient's understanding of their disease, abate any misconceptions or gaps in their knowledge and provide a plan personalised to the patient. All patients within the service have a personalised action plan developed as soon as possible.

Confirmed correct diagnosis

In the first 6 months of the severe asthma day case approach, 100 patients were referred for assessment and management of their suspected asthma symptoms, of which 94% had a pre-existing diagnosis of asthma. Baseline assessment identified a phenotype of atopic asthma (25%), eosinophilia (34%), neutrophilia (6%), occupational asthma (1%), bronchiectasis (2%), tracheo-bronchomalacia (7%), inducible laryngeal disorder (1%) and mixed phenotype (24%). Appropriately identifying phenotypes and coexisting conditions improves patient outcomes through stratification to the most appropriate therapy.

McDonald et al (2020) describe treatable traits as pre-identified treatable health conditions, and identify that a patient with severe asthma has approximately 10.4 treatable traits. Treatable traits are categorised into three domains: extrapulmonary, pulmonary and behavioural risk factors. The extrapulmonary domains include upper airway disease, gastro-oesophageal reflux disease, inducible laryngeal obstruction, sleep apnoea osteoporosis, depression, anxiety and obesity, all of which are considered within the in-depth multidimensional day case assessment.

Analysis of the first 6 months of day case assessment confirmed several diagnoses in addition to asthma, including tracheo-bronchomalacia (n=20; 20.4%), inducible laryngeal disorder (n=13; 13.1%) and breathing pattern disorder (n=20; 20.6%). Through identification of these traits and applying directed intervention, for example through direct access to the service's specialist physiotherapists and speech and language therapists, quality of life and asthma control can not only be significantly improved (McDonald et al, 2020) but also prevent the patient from being exposed to multiple courses of prednisolone and escalation of other treatments with no resolution of the original symptoms.

Conclusions

Adopting a systematic and multidimensional multidisciplinary team assessment allows clinicians to consider differential diagnosis and demonstrate an improvement in asthma control and quality of life with positive patient feedback. Improved adherence to therapy, access to biologics, review of medications, better self-management skills and the identification of coexisting conditions will reduce admissions, exacerbations and use of corticosteroids, reducing the impact on individual patients and subsequent costs to the NHS.

The structured day case assessment offers much more than the physical benefits. Through a multidisciplinary team approach the patient feels heard and supported, while realistic parameters are laid down from the offset. The different approach to the traditional medical model, which has often failed patients, inspires hope and realistic goals. Delivering a multidisciplinary team approach requires a wide range of clinical expertise and the availability of trained doctors, nurses, pharmacists and allied healthcare professions in order to provide holistic, effective care for patients with severe asthma.

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Conflicts of interest

Dr David Allen is an advisory board member for AstraZeneca and GSK, has received speaker fees from AstraZeneca and Teva and has received support to attend conferences from Teva, Chiesi and Sanofi Genzyme. Lynn Elsey has received speaker and advisory board fees and travel support from AstraZeneca, GSK, Chiesi, Novartis and Teva. Leanne-Jo Holmes has received speaker and advisory board fees and travel support from AstraZeneca, GSK, Chiesi, Novartis and Teva. Reyenna Sheehan declares no conflicts of interest.

References

Allen O. Slipping through the Net: why patients with difficult/severe asthma aren't getting the care they deserve. 2018. https://www.asthma.org.uk/about/media/news/blog-post-slipping-through-the-net-why-patients-with-difficultsevere-asthma-arent-getting-the-care-they-deserve/ (accessed 18 March 2021)

Key points

- A multidisciplinary team assessment can bring many positive benefits to the care and outcomes of the patient with severe asthma.
- By ensuring correct diagnosis, medication optimisation and referral into appropriate treatment pathways an improvement in patient-reported outcomes is seen.

Amin S, Soliman M, McIvor A, Cave A, Cabrera C. Understanding patient perspectives on medication adherence in asthma: a targeted review of qualitative studies. PPA. 2020;14:541–551. https://doi.org/10.2147/PPA.S234651

Burke H, Davis J, Evans S et al. A multidisciplinary team case management approach reduces the burden of frequent asthma admissions. ERJ Open Res. 2016;2(3):00039-2016. https://doi.org/10.1183/23120541.00039-2016

Chung LP, Upham JW, Bardin PG, Hew M. Rational oral corticosteroid use in adult severe asthma: A narrative review. Respirology. 2020;25(2):161–172. https://doi.org/10.1111/resp.13730

Duerden M, Avery T, Payne R. Polypharmacy and medicines optimisation making it safe and sound. 2013. https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/polypharmacy-and-medicines-optimisation-kingsfund-nov13.pdf (accessed 18 March 2021)

Hew M, Menzies-Gow A, Hull JA et al. Systematic assessment of difficult-to-treat asthma: principles and perspectives. J Allergy Clin Immunol Pract. 2020;8(7):2222–2233. https://doi.org/10.1016/j.jaip.2020.02.036

Hodkinson A, Bower P, Grigoroglou C et al. Self-management interventions to reduce healthcare use and improve quality of life among patients with asthma: systematic review and network meta-analysis. BMJ. 2020;370:m2521. https://doi.org/10.1136/bmj.m2521

Holmes LJ, Elsey Sommerton C, Tavernier G, Allen D. P162 The impact of day-case multidisciplinary assessment on asthma control and quality of life scores of patients referred to the Manchester severe asthma service. Thorax 2019;74:A178-A179. https://doi.org/10.1136/thorax-2019-BTSabstracts2019.305

Jackson DJ, Busby J, Pfeffer PE et al; UK Severe Asthma Registry. Characterisation of patients with severe asthma in the UK Severe Asthma Registry in the biologic era. Thorax. 2021;76(3):220-227. https://doi.org/10.1136/thoraxjnl-2020-215168

King J, Fowler SF, Holmes LJ, Allen D, Elsey L. Patient-reported versus objective adherence and exacerbation rates in severe asthma. Eur Resp J Congr. 2020;56:2231. https://doi.org/10.1183/13993003.congress-2020.2231

Levy ML. The national review of asthma deaths: what did we learn, what needs to change? Breathe. 2015;11(1):14–24. https://doi.org/10.1183/20734735.008914

McDonald VM, Gibson PG. Inhalation-device polypharmacy in asthma. Med J Aust. 2005;182(5):250–251. https://doi.org/10.5694/j.1326-5377.2005.tb06680.x

McDonald VM, Clark VL, Cordova-Rivera L et al. Targeting treatable traits in severe asthma: a randomised controlled trial. Eur Respir J. 2020;55(3):1901509. https://doi.org/10.1183/13993003.01509-2019

Menzies-Gow A, Canonica GW, Winders TA et al. A charter to improve patient care in severe asthma. Adv Ther. 2018;35(10):1485–1496. https://doi.org/10.1007/s12325-018-0777-y

National Institute for Health and Care Excellence. Multimorbidity and Polypharmacy. Key Therapeutic Topic [KTT18]. 2017. https://www.nice.org.uk/advice/KTT18/chapter/Evidence-context (accessed 7 May 2021)

National Institute for Health and Care Excellence. Asthma quality standard [QS25]. 2018. https://www.nice.org.uk/guidance/qs25/chapter/Quality-statements (accessed 18 March 2021)

NHS England. Specialised respiratory services (adult) – severe asthma. 2017. https://www.england.nhs.uk/publication/specialised-respiratory-services-adult-severe-asthma/ (accessed 18 March 2021)

NHS England. Making it happen: Multi-disciplinary team (MDT) working. 2018. https://www.england.nhs.uk/publication/making-it-happen-multi-disciplinary-team-mdt-working/ (accessed 3 June 2021)

Renwick R, Walker S. Do no harm, safer and better treatment options for people with asthma. 2020. https://www.asthma.org.uk/418cbc36/globalassets/campaigns/publications/severe-asthma_report_final.pdf (accessed 7 May 2021)

Sanchis J, Gich I, Pedersen S. Aerosol drug management improvement team (ADMIT). Systematic review of errors in inhaler use: has patient technique improved over time? Chest. 2016;50(2). https://doi.org/10.1016/j.chest.2016.03.041

Vamos M, Kolbe J. Psychological factors in severe chronic asthma. Aust N Z J Psychiatr. 1999;33(4):538–544. https://doi.org/10.1080/j.1440-1614.1999.00591.x