### 1. Indicators of Uncontrolled Asthma

1. Over previous 12 months (any of):
   - ≥2 courses OCS for asthma
   - ≥1 hospital admission/ED attendance for asthma
   - ≥6 SABA prescribed
   - Poor symptom control (as assessed by validated questionnaire)

2. On maintenance OCS for asthma

### 2. Primary care

- Identification of patients with uncontrolled asthma
- Consider proactive identification using search tools e.g. SPECTRA or similar
- Diagnostic confirmation
- Clinical optimisation
- Review and optimise inhaler technique and adherence
- Review biomarkers: blood eosinophil count + FeNO
- Step up treatment according to national guidelines
- Consider other factors that may impact on symptoms including smoking, mental health disease, physical activity and social influences
- Start to identify and manage co-morbidities including rhinitis and gastroesophageal reflux disease
- Recommended maximum time for attempting optimisation: 6 months
- To refer patients by 6 months (or sooner) if remain uncontrolled

### 3. Secondary care

- Patients to be reviewed and treatment initiated within 18 weeks of referral
- Diagnostic confirmation and phenotyping
- Treatment optimisation
- Additional investigations as needed
- Identification and management of comorbidities
- Agreed referral pathway and diagnostics required pre-referral to SAC
- 3 levels of secondary care services for severe asthma patients based on resource, capability and local agreements:
  - Tier 1: all patients referred to and managed by SAC
  - Tier 2: patients referred to SAC; accept patients back after biologic initiation at SAC
  - Tier 3: local initiation of biologics after approval by SAC MDT

### 4. Severe asthma centre

- Patients to be reviewed within 8 weeks of referral
- Diagnostic confirmation and phenotyping
- Comorbidity management through MDT input
- Additional investigations as needed
- Adherence and Treatment optimisation

**Severe asthma multi-disciplinary team meeting**

- Other treatments, research opportunities
- Other specialist input: Psychology, Physiotherapy etc.
- Initiation of biologic in Tier 3 sites
- Initiation of biologic treatment in SAC

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**Acronyms:**

- OCS - Oral corticosteroid
- SABA - Short-acting beta-agonist
- ED - Emergency department
- FeNO - Fractional exhaled nitric oxide
- SAC - Severe asthma centre
- MDT - Multi-disciplinary team
5. Identifying Uncontrolled Asthma

5.1. Indicators of Uncontrolled Asthma:
- Frequent exacerbations (>2/year) requiring oral steroids, or serious exacerbations (≥1/year) requiring hospitalisation or ED attendance
- Poor symptom control (frequent symptoms/reliever use, night waking due to asthma, activity limited by asthma), as identified through the use of a validated, objective symptom questionnaire (ACT, ACQ)
- ≥6 or more SABAs in a 12-month period

5.2. Identifying patients with uncontrolled asthma
Patients can be identified at any time but the 3 main opportunities are:
1. At the time of the annual review
2. Exacerbation visit/post exacerbation review –
   - Ensure mechanisms in place to support identification and follow up of patients admitted to ED with asthma exacerbations
3. Proactive case-finding through interrogation of electronic patient records; recommend to carry out every 6 months

Consider direct referral to SAC:
- If on maintenance steroids for asthma
- Maintenance OCS: ≥5mg prednisolone daily (for asthma) for ≥3 months
- Previous admission to intensive care for asthma
- ≥2 courses or oral corticosteroids or been ≥2/year requiring hospitalisation or ED attendance
- Confirm diagnosis (do not necessarily need to repeat all investigations)

5.3. Use search tools to support proactive case finding
A wide selection of case-finding and population health management tools are available to support identification of uncontrolled asthma patients. The AAC has developed some useful resources around this to support local asthma leads. The AAC has available to support identification of uncontrolled asthma patients. The AAC has developed some useful resources around this to support local asthma leads. The AAC has available to support identification and follow up of patients admitted to ED with asthma exacerbations.

6. Elements of Optimisation

6.1. Elements of asthma optimisation in primary care to include:
- Review patient notes to confirm diagnosis (do not necessarily need to repeat all investigations)
- Review and optimise inhaler technique; can also support patients by directing to online videos 
- Consider direct referral to SAC:
  - If on maintenance steroids for asthma
  - Maintenance OCS: ≥5mg prednisolone daily (for asthma) for ≥3 months
  - Previous admission to intensive care for asthma

6.2. An aide memoire designed for clinicians undertaking asthma reviews to help review the indicators for referral to secondary care:
- MASTE checklist
- High intensity treatment: is the patient already at the high-end of the treatment escalator
- Adherence: is the patient taking their medication at the correct dose and frequency
- Severe exacerbations: has the patient had ≥2 courses or oral corticosteroids or been hospitalized due to asthma?
- Technique: is the patient's inhaler technique correct

6.3. If patient remains uncontrolled following optimisation, patient should be referred to secondary care within 6 months of initial asthma consultation

7. Integrated care

7.1. Consider local/Community/PCN based respiratory MDT meeting:
- Local health care systems should consider personalised model that support local set up and needs
- Two-way discussion with shared decision making
- Members include Respiratory Consultant, specialist nurse, Practice Nurse +/- GP, District nurse, pharmacist

8. Local recommendations

8.1. Asthma champion:
- A local asthma champion should be considered to provide leadership around improving asthma care
- Local champion roles will likely differ but may include support around: education, case-finding approaches, adherence and inhaler technique checks, asthma action plans and referrals

8.2. Local Community Diagnostic Hubs:
- Inclusive and integrate into local services for diagnostic and management options
- Access to local and national diagnostic and management options

9. Patients with severe asthma

Ensure SNOMED code for severe asthma is applied (once severe asthma diagnosed in SAC)
Consensus Overviews: Secondary care

10. Referral into Secondary Care

Patients with uncontrolled asthma should be seen by a respiratory specialist within 18 weeks of the referral.

Each secondary care centre should have a nominated asthma lead and a dedicated asthma clinic.

11. Integrated care

Secondary care team should consider offering community Respiratory MDTs to include discussion of patients with asthma.

Support patient diagnosis through community diagnostic centres

Specialist support in primary care

Two-way discussion with shared decision making

Identify potential biologics patients earlier and to ‘pull’ into the asthma service

12. Roles and Responsibilities

12.1 All patients referred to a secondary care with a pre-existing diagnosis of asthma should be assessed to:
- Objectively confirm or reject the diagnosis of asthma
- Phenotype according to biomarkers
- Assess adherence and address suboptimal adherence
- Assess and optimise inhaler technique
- Ensure appropriate level of asthma treatment in accordance with guidelines
- Assess and address relevant comorbidities including psychosocial factors
- Assess oral corticosteroid usage
- Support smoking cessation
- Weight management and physical activity

12.2 All asthma teams to be familiar with NICE indications for biologic prescribing

12.3 Referral to SAC
- Review biomarkers in patients who have had ≥3 exacerbations and consider referral to SAC
- All patients on maintenance oral steroids

12.4 Investigations to consider prior to referral to SAC/discussion at SAC MDT:
- Full lung function testing
- Objective measure of control e.g. Asthma Control Questionnaire
- HRCT thorax (if indicated)
- Measurement of exhaled nitric oxide
- Peripheral blood eosinophil count
- IgE with specifics to common aeroallergens

13. Service Structure

- Each secondary care centre should have a nominated asthma lead and a dedicated asthma clinic.
- All referring centres will be categorised into one of the following Tiers based on current multidisciplinary workforce and experience.
- Allocation will be made by the local SAC following discussion with the centre.

13.1. Tier 1
No existing asthma clinic or lead. Minimal engagement with SAC network. Will refer all patients to the SAC

Aim: SACs to encourage sites to have an asthma lead and support plans to develop local services. Referral to SAC should be in line with SAC asthma referral protocols

13.3. Tier 2
Has a designated Asthma lead and currently engaged with SAC network with experience of monitoring biologics

Aim: Spokes to accept patients back for continuation of treatment and monitoring following a positive trial at the SAC. Encouraged to engage in SAC MDT

13.5. Tier 3
A designated asthma lead with job planned time for this role, highly engaged in the SAC network with the experience or capability to initiate biologics. Ability to conduct local asthma MDTs. Access to physiotherapy, SLT and psychology services

Aim: Local initiation and monitoring of biologics after approval at multi-disciplinary meeting with SAC. Patient does not need to be physically seen at the SAC

Acronyms:
SAC - Severe asthma centre
MDT - multi-disciplinary team
HRCT - High-resolution computed tomography
IgE - Immunoglobulin E
SLT - Speech language therapy
14. Roles and Responsibilities

The Severe Asthma Toolkit details biologic choice and assessment of response, MDT processes, adherence assessment and the severe asthma registry.

15. MDT Meetings with spoke sites

- SAC to offer minimum of monthly virtual MDT meetings to network tier sites
- Clinicians at tier hospitals able to discuss new or existing patients with severe or complex asthma, and utilize MDT expertise
- Streamline subsequent review at SAC with relevant MDT input
- Opportunity to discuss collaborative asthma research projects

16. Biologic approval and initiation

- Biologic approval as per NICE criteria
- Biologic to be initiated within 4 weeks of MDT approval
- Consider using a validated remote monitoring solution to support monitoring
- Move appropriate patients to home administration of biologic as soon as clinically and practically possible (within 6 months)

17. Monitoring of patients on biologics

17.1. Not on maintenance OCS
- Review 3 to 6 monthly in first year

17.2. On maintenance OCS
- Regular reviews at 4-8 weekly intervals to:
  - Guide OCS wean
  - Understand any factors contributing to failure to wean
  - Assess adrenal function (reviews can be virtual or face to face depending on clinical context)

17.3. Assess response to biologic at 6 months

Indicators of suboptimal response include:
- Minimal symptom improvement (<0.5 improvement in ACQ)
- Failure to significantly reduce mOCS dose (e.g. <50% reduction)
- No significant reduction in exacerbation frequency
- Patient expectations of improvement are not met

Assessment of suboptimal response to include:
- Medication adherence, spirometry, T2 biomarkers, evidence of chronic airway infection
- Consider: Additional imaging (+/- bronchoscopy) if indicated, assessment of comorbidities, sputum induction if available

17.4 Decisions around ongoing management of patients will be determined through SAC MDT

18. Tier-SAC interaction

Criteria for discussion with SAC:
- Suboptimal response at 6 months
- >1 severe exacerbation since initiation of biologic or in preceding 12 months
- Annually to review response to biologic and continued use

Ongoing steroid-related toxicity management (e.g. bone mineral clinic) to take place at tier hospitals

19. Steroid weaning (after biologic initiation)

Steroid weaning to begin shortly after biologic initiation - after 1st or 2nd dose

Suggested steroid weaning plan:
- Involve local endocrinology team when assessing adrenal function

20. Long-term follow up of patients

- Review 6 monthly by appropriate member of asthma MDT
- Face-to-face review recommended if >1 exacerbation on biologic treatment during the year
- At 12+ months, repatriate ‘super-responder’ (no OCS for asthma in last 12 months and low symptom score) to spoke hospitals
- In general, patients with ongoing OCS requirement to remain under SAC

Acronyms:
- MDT = Multi-disciplinary team
- SAC = Severe asthma centre
- OCS = Oral corticosteroid
- mOCS = Maintenance oral corticosteroid
- ACQ = Asthma control questionnaire
- T2 = Type 2
- ACTH = Adrenocorticotropic hormone