



AUSTRALIAN
ASTHMA
HANDBOOK

Version 2.0

Key figures and tables

DIAGNOSIS OF ASTHMA IN ADULTS AND ADOLESCENTS

Figure. Steps in the diagnosis of asthma in adults

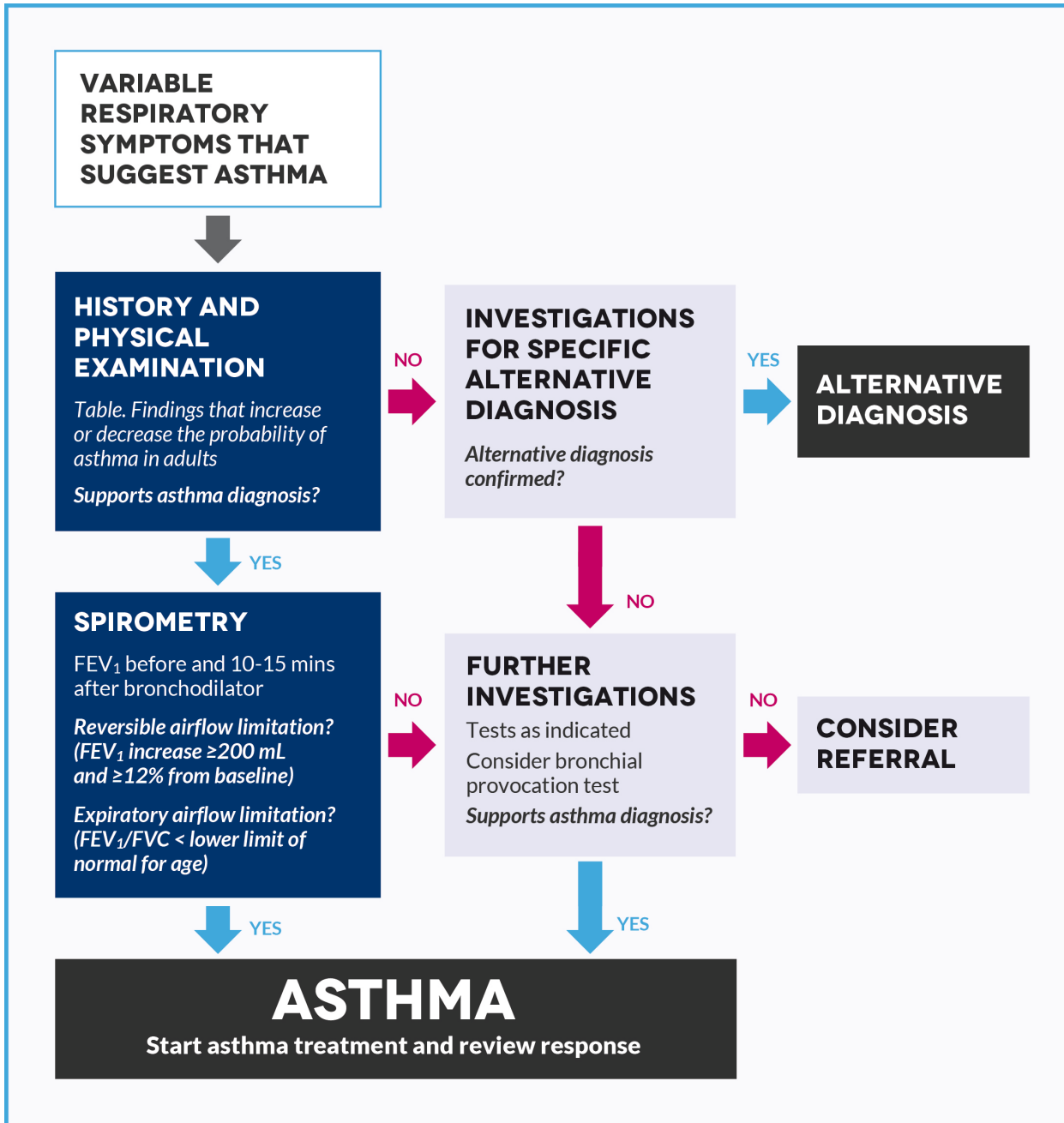


Table. Findings that increase or decrease the probability of asthma in adults

| <i>Asthma is more likely to explain the symptoms if any of these apply</i> | <i>Asthma is less likely to explain the symptoms if any of these apply</i> |
|---|---|
| <p>More than one of these symptoms:</p> <ul style="list-style-type: none">• wheeze• breathlessness• chest tightness• cough <p>Symptoms recurrent or seasonal</p> <p>Symptoms worse at night or in the early morning</p> <p>History of allergies (e.g. allergic rhinitis, atopic dermatitis)</p> <p>Symptoms obviously triggered by exercise, cold air, irritants, medicines (e.g. aspirin or beta blockers), allergies, viral infections, laughter</p> <p>Family history of asthma or allergies</p> <p>Symptoms began in childhood</p> <p>Widespread wheeze audible on chest auscultation</p> <p><u>FEV₁</u> or <u>PEF</u> lower than predicted, without other explanation</p> <p>Eosinophilia or raised blood <u>IgE</u> level, without other explanation</p> <p>Symptoms rapidly relieved by a <u>SABA</u> bronchodilator</p> | <p>Dizziness, light-headedness, peripheral tingling</p> <p>Isolated cough with no other respiratory symptoms</p> <p>Chronic sputum production</p> <p>No abnormalities on physical examination of chest when symptomatic (over several visits)</p> <p>Change in voice</p> <p>Symptoms only present during upper respiratory tract infections</p> <p>Heavy smoker (now or in past)</p> <p>Cardiovascular disease</p> <p>Normal spirometry or <u>PEF</u> when symptomatic (despite repeated tests)</p> |

Table. Conditions that can be confused with asthma in adults and adolescents

Conditions characterised by cough

Pertussis (whooping cough)

Gastro-oesophageal reflux

Rhinosinusitis/upper airway cough syndrome

Adverse effect of medicines (e.g. ACE inhibitors)

Bronchiectasis

Chronic obstructive pulmonary disease

Pulmonary fibrosis

Large airway stenosis

Habit-cough syndrome

Inhaled foreign body

Conditions characterised by wheezing

Respiratory infections

COPD

Upper airway dysfunction

Conditions characterised by difficulty breathing

Breathlessness on exertion due poor cardiopulmonary fitness

Hyperventilation

Anxiety

Chronic heart failure

Pulmonary hypertension

Lung cancer

DIAGNOSIS OF ASTHMA IN CHILDREN

Figure. Steps in the diagnosis of asthma in children aged 1-5 years

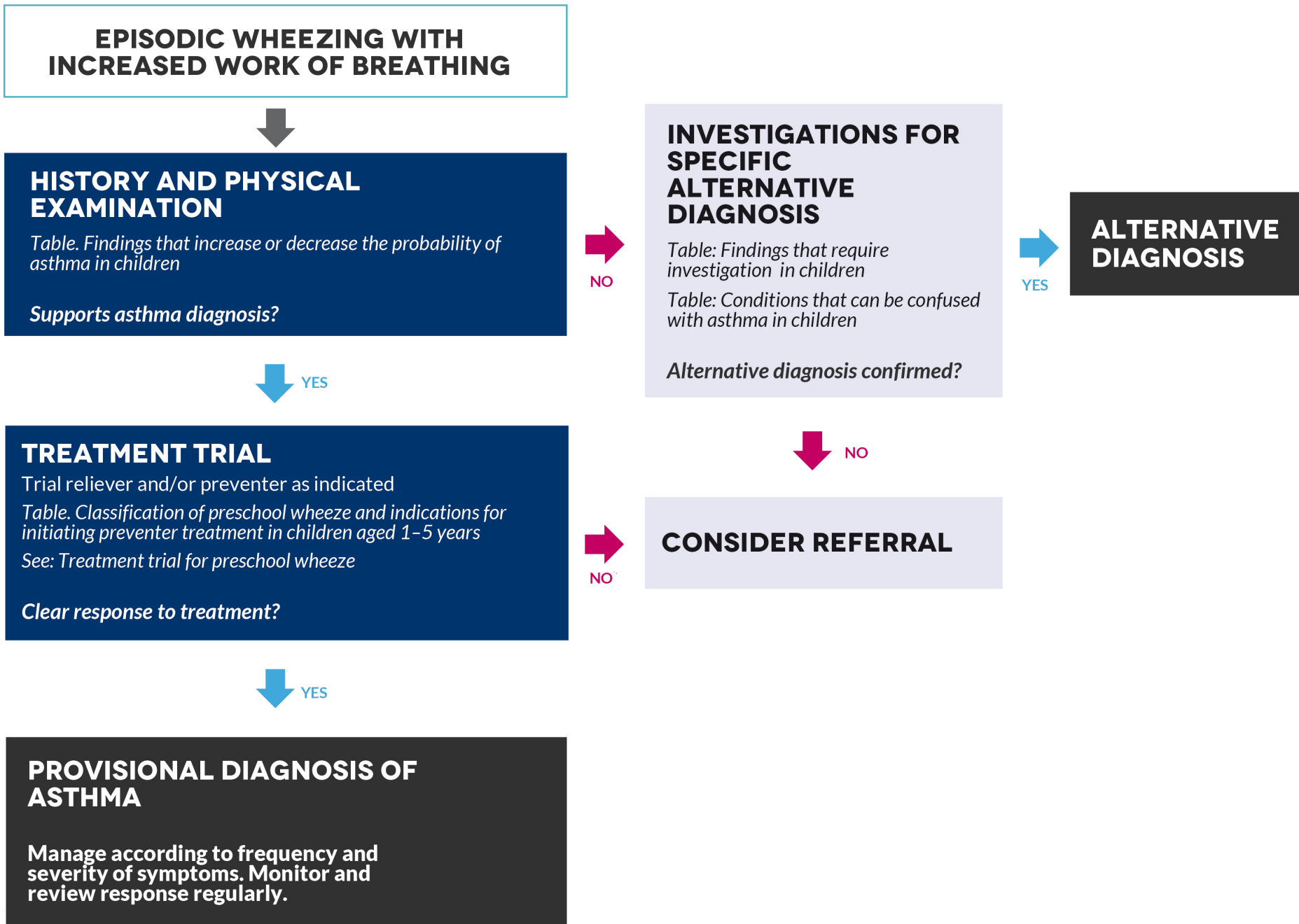
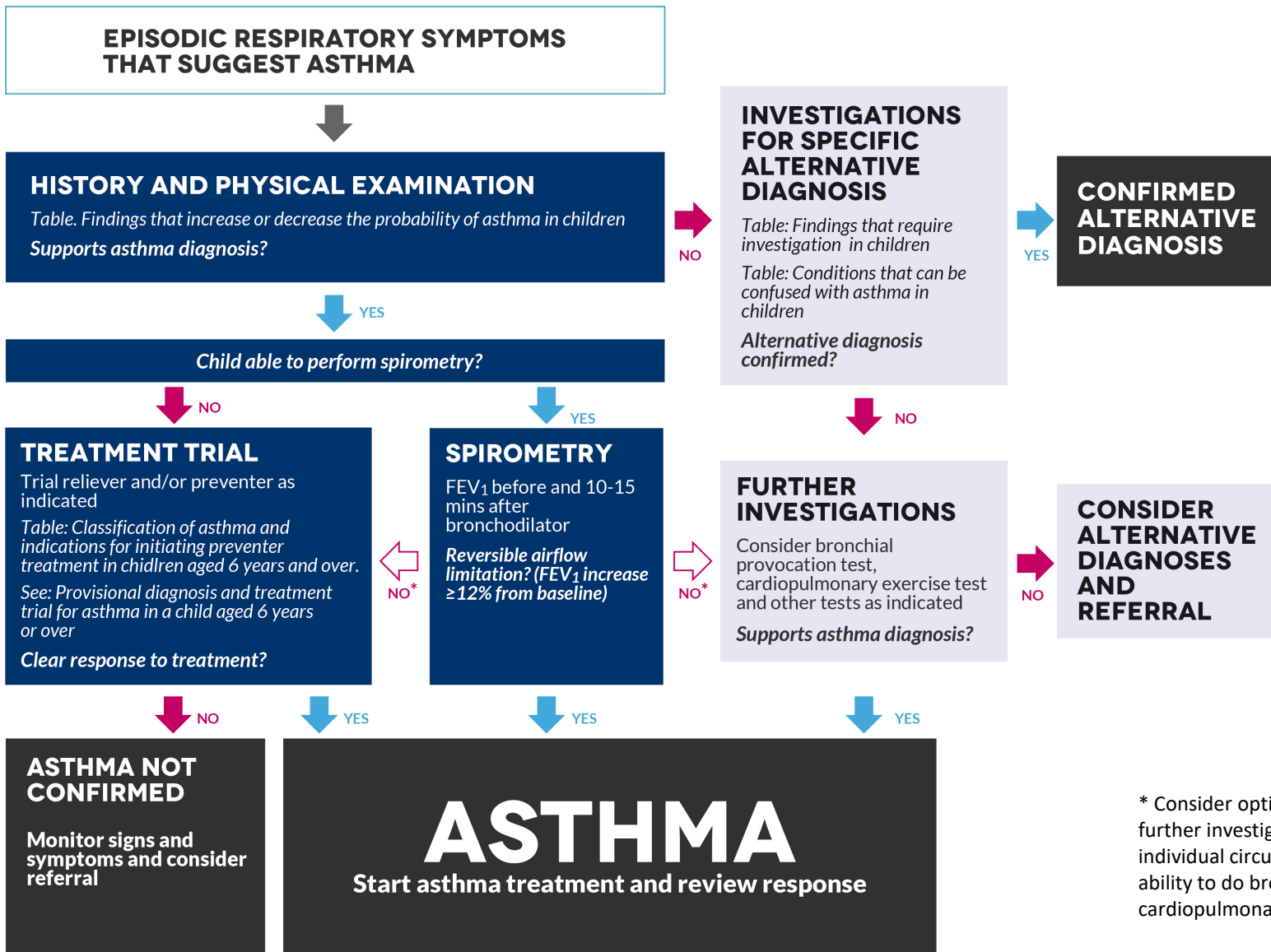


Figure. Steps in the diagnosis of asthma in children aged 6 years and over



* Consider options (treatment trial or further investigations) according to individual circumstances, including child's ability to do bronchial provocation test or cardiopulmonary exercise test.

Table. Findings that increase or decrease the probability of asthma in children

| <i>Asthma more likely</i> | <i>Asthma less likely</i> |
|---|--|
| <p>More than one of:</p> <ul style="list-style-type: none">• wheeze• difficulty breathing• feeling of tightness in the chest• cough | <p>Any of:</p> <ul style="list-style-type: none">• symptoms only occur when child has a cold, but not between colds• isolated cough in the absence of wheeze or difficulty breathing• history of moist cough• dizziness, light-headedness or peripheral tingling• repeatedly normal physical examination of chest when symptomatic• normal spirometry when symptomatic (children old enough to perform spirometry)• no response to a trial of asthma treatment• clinical features that suggest an alternative diagnosis |
| <p>AND</p> <p>Any of:</p> <ul style="list-style-type: none">• symptoms recur frequently• symptoms worse at night and in the early morning• symptoms triggered by exercise, exposure to pets, cold air, damp air, emotions, laughing• symptoms occur when child doesn't have a cold• history of allergies (e.g. allergic rhinitis, atopic dermatitis)• family history of allergies• family history of asthma• widespread wheeze heard on auscultation• symptoms respond to treatment trial of reliever, with or without a <u>preventer</u>• lung function measured by spirometry increases in response to rapid-acting bronchodilator• lung function measured by spirometry increases in response to a treatment trial with inhaled corticosteroid (where indicated) | |

Table. Conditions that can be confused with asthma in children

Conditions characterised by cough

Pertussis (whooping cough)

Cystic fibrosis

Airway abnormalities (e.g. tracheomalacia, bronchomalacia)

Protracted bacterial bronchitis in young children

Habit-cough syndrome

Conditions characterised by wheezing

Upper airway dysfunction

Inhaled foreign body causing partial airway obstruction

Tracheomalacia

Conditions characterised by difficulty breathing

Hyperventilation

Anxiety

Breathlessness on exertion due to poor cardiopulmonary fitness

Table. Findings that require investigations in children (part 1)

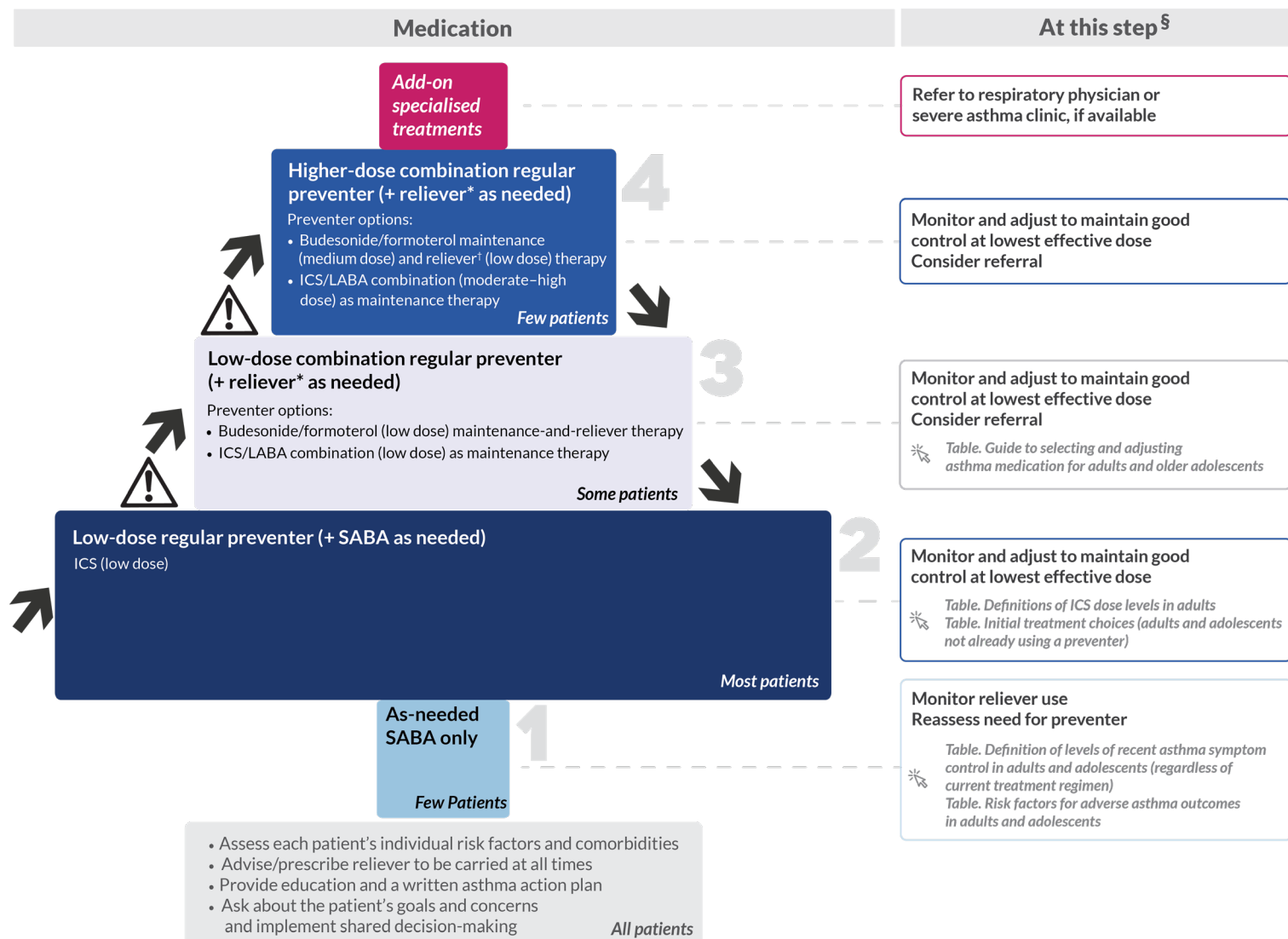
| <i>Finding</i> | <i>Notes</i> |
|---|---|
| <i>Persistent cough that is not associated with wheeze/shortness of breath or systemic disease</i> | Unlikely to be due to asthma |
| <i>Onset of signs from birth or very early in life</i> | Suggests cystic fibrosis, chronic lung disease of prematurity, primary ciliary dyskinesia, bronchopulmonary dysplasia, congenital abnormality |
| <i>Family history of unusual chest disease</i> | Should be enquired about before attributing all the signs and symptoms to asthma |
| <i>Severe upper respiratory tract disease (e.g. severe rhinitis, enlarged tonsils and adenoids or nasal polyps)</i> | Specialist assessment should be considered |
| <i>Crepitations on chest auscultation that do not clear on coughing</i> | Suggest a serious lower respiratory tract condition such as pneumonia, atelectasis, bronchiectasis |
| <i>Unilateral wheeze</i> | Suggests inhaled foreign body |
| <i>Systemic symptoms (e.g. fever, weight loss, failure to thrive)</i> | Suggest an alternative systemic disorder |

Table. Findings that require investigations in children (part 2)

| | |
|---|--|
| <i>Feeding difficulties, including choking or vomiting</i> | Suggests aspiration – specialist assessment should be considered |
| <i>Inspiratory upper airway noises (e.g. stridor, snoring)</i> | Acute stridor suggests tracheobronchitis (croup) |
| <i>Persistent voice abnormality</i> | Suggests upper airway disorder |
| <i>Finger clubbing</i> | Suggests cystic fibrosis, bronchiectasis |
| <i>Chronic (>4 weeks) wet or productive cough</i> | Suggests cystic fibrosis, bronchiectasis, chronic bronchitis, recurrent aspiration, immune abnormality, ciliary dyskinesia |
| <i>Focal (localised) lung signs</i> | Suggests pneumonia |
| <i>Nasal polyps in child under 5 years old</i> | Suggests cystic fibrosis |
| <i>Severe chest deformity</i> | Harrison's Sulcus and Pectus Carinatum can be due to uncontrolled asthma, but severe deformity suggests an alternative diagnosis |
| <i>Obvious breathing difficulty, especially at rest or at night</i> | Specialist assessment should be considered |
| <i>Recurrent pneumonia</i> | Specialist assessment should be considered |

MANAGEMENT OF ASTHMA IN ADULTS AND ADOLESCENTS

Figure. Stepped approach to adjusting asthma medication in adults



Notes

! : Before considering stepping up, check symptoms are due to asthma, inhaler technique is correct, and adherence is adequate

↗ : Consider stepping up if good control is not achieved despite good adherence and correct inhaler technique.

↘ : When asthma is stable and well controlled for 2–3 months, consider stepping down (e.g. reducing inhaled corticosteroid dose, or stopping long-acting beta₂ agonist if inhaled corticosteroid dose is already low).

ICS: inhaled corticosteroid; SABA: short-acting beta₂ agonist; LABA: long-acting beta₂ agonist

* Reliever means rapid-onset beta₂ agonist and includes: short-acting beta₂ agonists; low-dose budesonide/formoterol combination – only applies to patients using this combination in a maintenance-and-reliever regimen (steps 3 and above). This combination is not classed as a reliever when used in a maintenance-only regimen.

§ At all steps: review recent symptom control and risk regularly. Manage comorbidities and individual risk factors. Manage flare-ups with extra treatment when they occur. Manage exercise-related asthma symptoms as indicated.

† Medium dose as maintenance, low dose as reliever.

Table. Definition of levels of recent asthma symptom control in adults and adolescents (regardless of current treatment regimen)

| <i>Good control</i> | <i>Partial control</i> | <i>Poor control</i> |
|--|---|--|
| <p>All of:</p> <ul style="list-style-type: none"> • Daytime symptoms ≤ 2 days per week • Need for <u>SABA</u> reliever ≤ 2 days per week[†] • No limitation of activities • No symptoms during night or on waking | <p>One or two of:</p> <ul style="list-style-type: none"> • Daytime symptoms > 2 days per week • Need for <u>SABA</u> reliever > 2 days per week[†] • Any limitation of activities • Any symptoms during night or on waking | <p>Three or more of:</p> <ul style="list-style-type: none"> • Daytime symptoms > 2 days per week • Need for <u>SABA</u> reliever > 2 days per week[†] • Any limitation of activities • Any symptoms during night or on waking |

SABA: short-acting beta₂ agonist

[†] SABA, not including doses taken prophylactically before exercise. (Record this separately and take into account when assessing management.)

Note: Recent asthma symptom control is based on symptoms over the previous 4 weeks.

Table. Definitions of ICS dose levels in adults

| Inhaled corticosteroid | Daily dose (mcg) | | |
|-------------------------------------|------------------|---------|------|
| | Low | Medium | High |
| <i>Beclometasone dipropionate †</i> | 100–200 | 250–400 | >400 |
| <i>Budesonide</i> | 200–400 | 500–800 | >800 |
| <i>Ciclesonide</i> | 80–160 | 240–320 | >320 |
| <i>Fluticasone furoate*</i> | — | 100 | 200 |
| <i>Fluticasone propionate</i> | 100–200 | 250–500 | >500 |

† Dose equivalents for *Qvar* (TGA-registered CFC-free formulation of beclometasone dipropionate).

*Fluticasone furoate is not available as a low dose. TGA-registered formulations of fluticasone furoate contain a medium or high dose of fluticasone furoate and should only be prescribed as one inhalation once daily.

Note: The potency of generic formulations may differ from that of original formulations. Check TGA-approved product information for details.

Table. Guide to selecting and adjusting asthma medication for adults and older adolescents

| Clinical situation | Action |
|--|---|
| Newly diagnosed asthma | <p>Consider low-dose <u>ICS</u> (plus <u>SABA</u> as needed)</p> <p>If symptoms severe at initial presentation, consider one of:</p> <ul style="list-style-type: none"> • <u>ICS</u> plus a short course of oral corticosteroids • a short initial period of high-dose <u>ICS</u> then step down • (private prescription) combination <u>ICS/LABA</u>[†] <p>See: <i>Table. Initial treatment choices (adults and adolescents not already using a preventer)</i></p> |
| Good recent asthma symptom control | <p>If maintained 2–3 months, no <u>flare-up</u> in previous 12 months and low risk for <u>flare-ups</u>, step down where possible (unless already on low-dose <u>ICS</u>)</p> |
| Partial recent asthma symptom control | <p>Review inhaler technique and adherence – correct if suboptimal</p> <p>If no improvement, consider increasing treatment by one step and reviewing (if still no improvement, return to previous step, review diagnosis and consider referral)</p> |
| Poor recent asthma symptom control | <p>Review inhaler technique and adherence – correct if suboptimal</p> <p>Confirm that symptoms are likely to be due to asthma[‡]</p> <p>Consider increasing treatment until good asthma control is achieved, then step down again when possible</p> |
| Difficult-to-treat asthma ‡ | <p>Consider referral for assessment or add-on options</p> |
| Patient with risk factors § | <p>Tailor treatment to reduce individual risk factors</p> |

† Check the Pharmaceutical Benefits Scheme for subsidisation status; criteria for some asthma medicines differ between age groups and indications

‡ Poor recent asthma symptom control despite ICS/LABA combination at high–medium dose.

§ Risk factors for asthma events or adverse treatment effects, irrespective of level of recent asthma symptom control.

Table. Initial treatment choices (adults and adolescents not already using a preventer) (part 1)

| <i>Clinical situation</i> | <i>Suggested starting regimen †</i> | <i>Alternative options and notes</i> |
|---|--|---|
| <i>Symptoms less than twice per month and no <u>flare-up</u> that required oral corticosteroids within previous 12 months</i> | <u>SABA</u> as needed | |
| <i>Symptoms twice per month or more</i> | Regular <u>ICS</u> starting at a low dose (plus <u>SABA</u> as needed) | Montelukast [‡] Cromones [§] |
| <i>Waking due to asthma symptoms at least once during the past month</i> | Regular <u>ICS</u> starting at a low dose (plus <u>SABA</u> as needed) | If patient also has frequent daytime symptoms consider either of: <ul style="list-style-type: none"> • medium- to high-dose <u>ICS</u> (plus <u>SABA</u> as needed) • (private prescription) combination low-dose <u>ICS/LABA</u>[#] |

† When prescribing inhaled asthma medicines, take into account the person’s preferences, ability to use the device, and cost issues.

§ Requires multiple daily doses and daily maintenance of inhaler.

‡ # Check the Pharmaceutical Benefits Scheme for subsidisation status; criteria for some asthma medicines differ between age groups and indications

Table. Initial treatment choices (adults and adolescents not already using a preventer) (part 2)

| | | |
|---|--|--|
| <p><i>Oral corticosteroids required for an asthma flare-up within the last 12 months (even if symptoms infrequent, e.g. less than twice per month on average)</i></p> | <p>Regular <u>ICS</u> starting at a low dose (plus <u>SABA</u> as needed)</p> | |
| <p><i>History of artificial ventilation or admission to an intensive care unit due to acute asthma (even if symptoms infrequent, e.g. less than twice per month on average)</i></p> | <p>Regular <u>ICS</u> starting at a low dose (plus <u>SABA</u> as needed)</p> <p>⚠ Monitor frequently</p> | |
| <p><i>Patient not currently taking a preventer whose symptoms are severely uncontrolled or very troublesome</i></p> | <p>Regular <u>ICS</u> (plus <u>SABA</u> as needed)</p> <p>For very uncontrolled asthma at presentation (e.g. frequent night waking, low lung function), consider (either of):</p> <ul style="list-style-type: none"> • high-dose <u>ICS</u> (then down-titrate when symptoms improve) • a short course of oral corticosteroids in addition to <u>ICS</u> | <p>Consider (private prescription) combination <u>ICS/LABA</u>[#]</p> |

† When prescribing inhaled asthma medicines, take into account the person's preferences, ability to use the device, and cost issues.

§ Requires multiple daily doses and daily maintenance of inhaler.

‡ # Check the Pharmaceutical Benefits Scheme for subsidisation status; criteria for some asthma medicines differ between age groups and indications

Table. Risk factors for adverse asthma outcomes in adults and adolescents (part 1)

| | Medical history | Investigation findings | Other factors |
|--|--|---|--|
| Factors associated with increased risk of flare-ups | <p>Poor asthma control</p> <p>Any asthma flare-up during the previous 12 months</p> <p>Other concurrent chronic lung disease</p> | <p>Poor lung function (even if few symptoms)</p> <p>Difficulty perceiving airflow limitation or the severity of flare-ups</p> <p>Eosinophilic airway inflammation[§]</p> | <p>Exposure to cigarette smoke (smoking or environmental exposure)</p> <p>Socioeconomic disadvantage</p> <p>Use of illegal substances</p> <p>Major psychosocial problems</p> <p>Mental illness</p> |
| Factors associated with increased risk of life-threatening asthma | <p>Intubation or admission to intensive care unit due to asthma (ever)</p> <p>2 or more hospitalisations for asthma in past year</p> <p>3 or more ED visits for asthma in the past year</p> <p>Hospitalisation or ED visit for asthma in the past month</p> <p>High short-acting beta₂ agonist use</p> <ul style="list-style-type: none"> • Dispensing of 3 or more canisters in a year (average 1.6 puffs per day) is associated with increased risk of flare-ups in adults and children. • Dispensing 12 or more canisters in a year (average 6.6 puffs per day) is associated with increased risk of asthma death. | <p>Sensitivity to an unavoidable allergen (e.g. <i>Alternaria</i> species of common moulds)</p> | <p>Inadequate treatment</p> <p>Experience of side-effects of OCS use (may contribute to under-treatment or delayed presentation to hospital during flare-ups)</p> <p>Lack of written asthma action plan</p> <p>Socioeconomic disadvantage</p> <p>Living alone</p> <p>Mental illness</p> <p>Use of alcohol or illegal substances</p> <p>Poor access to health care (e.g. rural/remote region)</p> |

§ White cell differential count on a peripheral blood sample is not routinely recommended in the investigation and management of asthma, except for patients with severe refractory asthma. In research studies, peripheral blood eosinophilia suggests the presence of eosinophilic airway inflammation.

Table. Risk factors for adverse asthma outcomes in adults and adolescents (part 2)

| | | | |
|---|---|---|---|
| | History of delayed presentation to hospital during <u>flare-ups</u> | | |
| | History of sudden-onset acute asthma | | |
| <i>Factors associated with accelerated decline in lung function</i> | Cardiovascular disease | | |
| | Chronic mucus hypersecretion | Poor lung function | Exposure to cigarette smoke (smoking or environmental exposure) |
| <i>Factors associated with treatment-related adverse events</i> | Severe asthma <u>flare-up</u> in a patient not taking <u>ICS</u> | Eosinophilic airway inflammation [§] | <u>Occupational asthma</u> |
| | Long-term high-dose <u>ICS</u> | | Anxiety disorder (due to increased sensitivity to asthma symptoms and reluctance to reduce <u>ICS</u> dose when asthma well controlled) |
| | Frequent use of <u>OCS</u> | | Euphoria with <u>OCS</u> use |

§ White cell differential count on a peripheral blood sample is not routinely recommended in the investigation and management of asthma, except for patients with severe refractory asthma. In research studies, peripheral blood eosinophilia suggests the presence of eosinophilic airway inflammation.

Table. Management of risk factors for adverse asthma outcomes in adults (part 1)

| Risk factor | Clinical action † |
|---|--|
| <i>Any risk factor for <u>flare-ups</u></i> | <p>Check patient has an appropriate action plan</p> <p>Carefully check inhaler technique and adherence, and identify any barriers to good adherence</p> <p>Review frequently (e.g. every 3 months)</p> |
| <i>Hospitalisation or <u>ED</u> visit for asthma or any asthma flare-up during the previous 12 months</i> | <p>Ask about triggers for <u>flare-ups</u>, and lead time</p> |
| <i>History of intubation or intensive care unit admission for asthma</i> | <p>Ensure action plan recommends early medical review when asthma worsens</p> |
| <i>Hospitalisation or <u>ED</u> visit for asthma in the past month</i> | <p>Emphasise importance of maintaining regular <u>ICS</u> use after symptoms improve</p> <p>Confirm that patient has resumed using <u>SABA</u> only when needed for symptoms</p> |
| <i>High <u>SABA</u> use (>3 canisters per year)</i> | <p>Check lung function</p> <p>If <u>SABA</u> use appears to be habitual, investigate causes and consider alternative strategies, e.g. short-term substitution of ipratropium for <u>SABA</u></p> |

† In addition to actions applicable to all risk factors

Table. Management of risk factors for adverse asthma outcomes in adults (part 2)

| | |
|--|--|
| <p><i>Long-term high-dose <u>ICS</u></i></p> | <p>Consider gradual reduction of <u>ICS</u> dose if symptoms stable</p> <p>Monitor regularly (e.g. assessment of bone density, regular eye examinations)</p> <p>For local side-effects, ensure inhaler technique is appropriate</p> |
| <p><i>Poor lung function (even if few symptoms)</i></p> | <p>Consider 3-month trial of higher <u>ICS</u> dose, then recheck lung function</p> <p>Consider referral for detailed specialist investigation</p> |
| <p><i>Sensitivity to unavoidable allergens (e.g. <i>Alternaria</i> species of common moulds)</i></p> | <p>Refer for further investigation and management</p> |
| <p><i>Exposure to cigarette smoke (smoking or environmental exposure)</i></p> | <p>Emphasise the importance of avoiding smoke</p> <p>Provide quitting strategies</p> <p>Consider increasing <u>ICS</u> dose (higher dose of <u>ICS</u> likely to be necessary to control asthma)</p> <p>Refer for assessment of asthma-<u>COPD</u> overlap</p> |
| <p><i>Difficulty perceiving airflow limitation or the severity of exacerbations</i></p> | <p>Regular <u>PEF</u> monitoring</p> <p>Action plan should recommend early review and measurement of lung function</p> |
| <p><i>No current written asthma action plan</i></p> | <p>Provide and explain written asthma action plan</p> |

† In addition to actions applicable to all risk factors

MANAGEMENT OF ASTHMA IN CHILDREN

Table. Definition of levels of recent asthma symptom control in children (regardless of current treatment regimen)

| Good control | Partial control | Poor control |
|---|--|---|
| <p>All of:</p> <ul style="list-style-type: none"> • Daytime symptoms[†] ≤2 days per week (lasting only a few minutes and rapidly relieved by rapid-acting bronchodilator) • No limitation of activities[‡] • No symptoms[§] during night or when wakes up • Need for <u>SABA</u> reliever[#] ≤2 days per week | <p>Any of:</p> <ul style="list-style-type: none"> • Daytime symptoms[†] >2 days per week (lasting only a few minutes and rapidly relieved by rapid-acting bronchodilator) • Any limitation of activities[*] • Any symptoms during night or when wakes up^{††} • Need for <u>SABA</u> reliever[#] >2 days per week | <p>Either of:</p> <ul style="list-style-type: none"> • Daytime symptoms[†] >2 days per week (lasting from minutes to hours or recurring, and partially or fully relieved by <u>SABA</u> reliever) • ≥3 features of partial control within the same week |

SABA: short-acting beta₂ agonist

† e.g. wheezing or breathing problems

‡ child is fully active; runs and plays without symptoms

§ including no coughing during sleep

not including doses taken prophylactically before exercise. (Record this separately and take into account when assessing management.)

* e.g. wheeze or breathlessness during exercise, vigorous play or laughing

†† e.g. waking with symptoms of wheezing or breathing problems

Notes:

Recent asthma control is based on symptoms over the previous 4 weeks. Each child's risk factors for future asthma outcomes should also be assessed and taken into account in management.

Validated questionnaires can be used for assessing recent symptom control:

[Test for Respiratory and Asthma Control in Kids \(TRACK\)](#) for children < 5 years

[Childhood Asthma Control Test \(C-ACT\)](#) for children aged 4–11 years

Table. Definitions of ICS dose levels in children

| Inhaled corticosteroid | Daily dose (microg) | |
|-------------------------------------|---------------------|--------------------|
| | Low | High |
| <i>Beclometasone dipropionate †</i> | 100–200 | >200 (maximum 400) |
| <i>Budesonide</i> | 200–400 | >400 (maximum 800) |
| <i>Ciclesonide ‡</i> | 80–160 | >160 (maximum 320) |
| <i>Fluticasone propionate</i> | 100–200 | >200 (maximum 500) |

† Dose equivalents for *Qvar* (TGA-registered CFC-free formulation of beclometasone dipropionate)

‡ Ciclesonide is registered by the TGA for use in children aged 6 and over

Table. Classification of preschool wheeze and indications for preventer treatment in children aged 1–5

| <i>Severity of flare-ups</i> | <i>Frequency of symptoms</i> | | | |
|--|--|----------------------------------|---------------------------------|--|
| | <i>Symptoms every 6 months or less</i> | <i>Symptoms every 3–4 months</i> | <i>Symptoms every 4–6 weeks</i> | <i>Symptoms at least once per week</i> |
| <i>Mild flare-ups</i> <i>(managed with salbutamol in community)</i> | Not indicated | Not indicated | Consider | Indicated |
| <i>Moderate–severe flare-ups</i> <i>(require ED care/oral corticosteroids)</i> | Indicated | Indicated | Indicated | Indicated |
| <i>Life-threatening flare-ups</i> <i>(require hospitalisation or PICU)</i> | Indicated | Indicated | Indicated | Indicated |

PICU: paediatric intensive care unit; ED: emergency department

Indicated: Prescribe preventer and monitor as a treatment trial. Discontinue if ineffective.

Not indicated: Preventer is unlikely to be beneficial

Consider prescribing preventer according to overall risk for severe flare-ups

Symptoms: wheeze, cough or breathlessness. May be triggered by viral infection, exercise or inhaled allergens

Flare-up: increase in symptoms from usual day-to-day symptoms (ranging from worsening asthma over a few days to an acute asthma episode)

Preventer options: an inhaled corticosteroid (low dose) or montelukast

[!] Advise parents/carers about potential adverse behavioural and/or neuropsychiatric effects of montelukast

Notes:

Preventer medication is unlikely to be beneficial in a child whose symptoms do not generally respond to salbutamol

In children taking preventer, symptoms should be managed with a short-acting inhaled beta₂ agonist reliever (e.g. when child shows difficulty breathing).

Table. Classification of asthma and indications for initiating preventer treatment in children aged 6–11

| Severity of flare-ups | Average frequency of flare-ups and symptoms between flare-ups | | |
|--|--|---|--|
| | Infrequent intermittent Flare-ups every 6 weeks or less and no symptoms between flare-ups | Frequent intermittent Flare-ups more than once every 6 weeks and no symptoms between flare-ups | Persistent Between flare-ups (any of): <ul style="list-style-type: none"> Daytime symptoms‡ more than once per week Night-time symptoms‡ more than twice per month Symptoms restrict activity or sleep |
| Mild flare-ups (almost always managed with salbutamol in community) | Not indicated | Consider | Indicated |
| Moderate-severe flare-ups (>2 in past year requiring ED or oral corticosteroids) | Consider | Indicated | Indicated |
| Life-threatening flare-ups (require hospitalisation or PICU) | Indicated | Indicated | Indicated |

Preventer should be started as a treatment trial. Assess response after 4–6 weeks and review before prescribing long term.

ED: emergency department

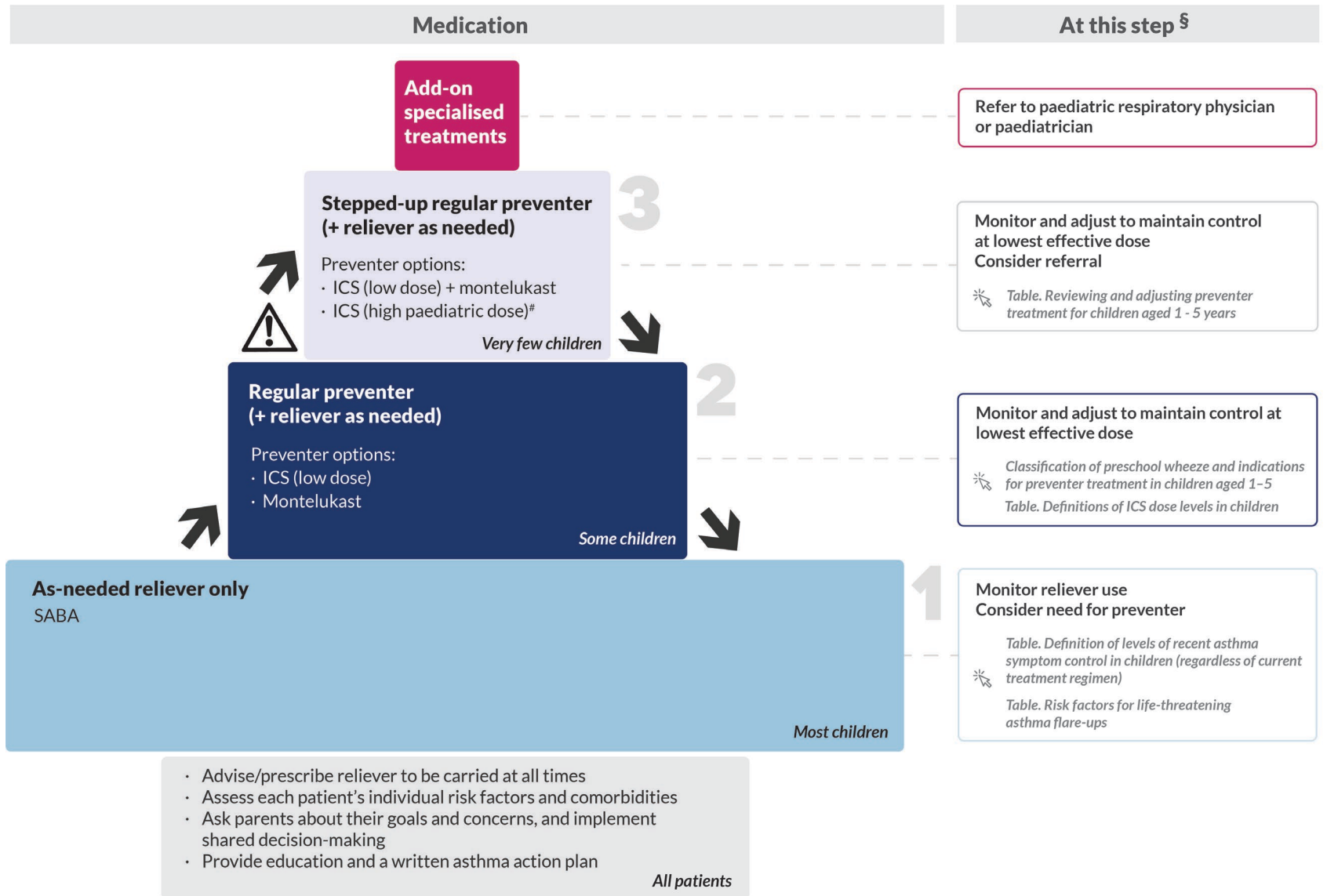
Indicated: Prescribe preventer and monitor as a treatment trial. At follow-up, discontinue if ineffective

Not indicated: Preventer is unlikely to be beneficial

Consider prescribing preventer according to overall risk for severe flare-ups

‡ Symptoms between flare-ups. A flare-up is defined as a period of worsening asthma symptoms, from mild (e.g. symptoms that are just outside the normal range of variation for the child, documented when well) to severe (e.g. events that require urgent action by parents/carers and health professionals to prevent a serious outcome such as hospitalisation or death from asthma).

Figure. Stepped approach to adjusting asthma medication in children aged 1-5 years



Notes

! : Before considering stepping up, check symptoms are due to asthma, inhaler technique is correct, and adherence is adequate

↗ : Consider stepping up if good control is not achieved despite good adherence and correct inhaler technique.

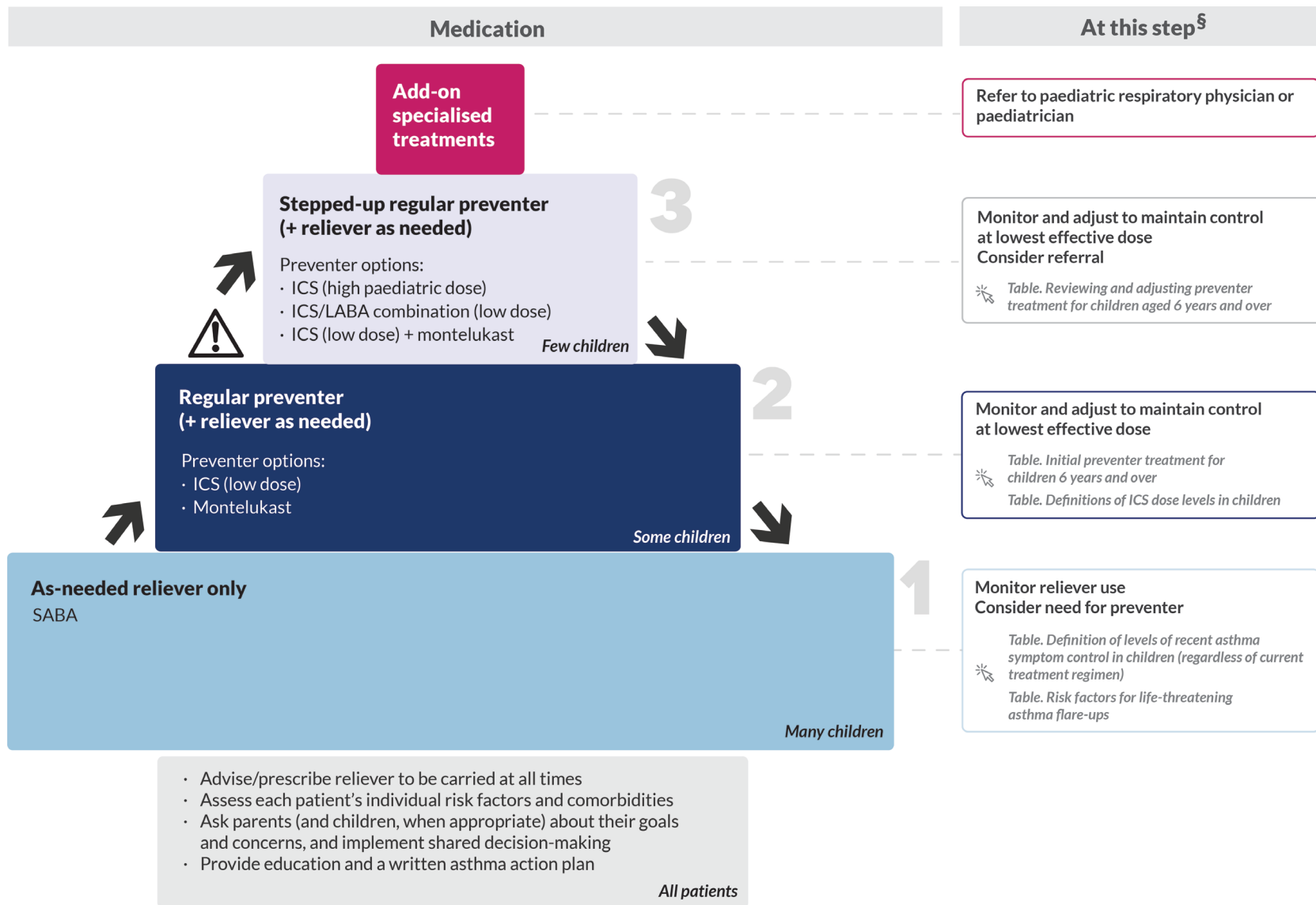
↘ : Consider stepping down when asthma is stable and well controlled for more than 6 months.

ICS: inhaled corticosteroid; SABA: short-acting beta₂ agonist

§ At all steps: Review recent symptom control and risk regularly. Manage flare-ups with extra treatment when they occur. Manage exercise-related asthma symptoms as indicated.

Consultation with a specialist is recommended before prescribing high-dose inhaled corticosteroids in children aged 5 and under.

Figure. Stepped approach to adjusting asthma medication in children aged 6-11 years



Notes

! : Before considering stepping up, check symptoms are due to asthma, inhaler technique is correct, and adherence is adequate. Consider modifiable factors contributing to asthma symptoms (e.g. exposure to tobacco smoke or allergens, obesity or overweight).

↗ : Consider stepping up if good control is not achieved despite good adherence and correct inhaler technique.

↘ : Consider stepping down when asthma is stable and well controlled for more than 6 months.

ICS: inhaled corticosteroid; SABA: short-acting beta₂ agonist; LABA: long-acting beta₂ agonist

§ At all steps: Review recent symptom control and risk regularly. Manage flare-ups with extra treatment when they occur. Manage exercise-related asthma symptoms as indicated.

Table. Risk factors for life-threatening asthma flare-ups in children

Asthma-related factors

Poor asthma control

Admission to hospital in preceding 12 months

History of intubation for acute asthma

Over-use of short-acting beta₂ agonist reliever

Abnormal spirometry findings

Reversible expiratory airflow limitation on spirometry despite treatment

Poor adherence to preventer

Incorrect inhaler technique for preventer

Poor adherence to asthma action plan

Exposure to clinically relevant allergens

Exposure to tobacco smoke

Other clinical factors

Allergies to foods, insects, medicines

Obesity

Family-related factors

Frequent failure to attend consultations/lack of follow-up after an acute flare-up

Significant parental psychological or socioeconomic problems

Parent/carer unequipped to manage asthma emergency

MANAGEMENT OF ACUTE ASTHMA IN ADULTS AND CHILDREN

Table. Rapid primary assessment of acute asthma in adults and children

| <i>Mild/Moderate</i> | <i>Severe</i> | <i>Life-threatening</i> |
|---|--|---|
| <p>Can walk, speak whole sentences in one breath (For young children: can move around, speak in phrases)</p> <p>Oxygen saturation >94%</p> | <p>Any of these findings:</p> <ul style="list-style-type: none"> • Use of accessory muscles of neck or intercostal muscles or 'tracheal tug' during inspiration or subcostal recession ('abdominal breathing') • Unable to complete sentences in one breath due to dyspnoea • Obvious respiratory distress • Oxygen saturation 90–94% | <p>Any of these findings:</p> <ul style="list-style-type: none"> • Reduced consciousness or collapse • Exhaustion • Cyanosis • Oxygen saturation <90% • Poor respiratory effort, soft/absent breath sounds |

Notes

If features of more than one severity category are present, record the higher (worse) category as overall severity level.

The severity category may change when more information is available (e.g. pulse oximetry, spirometry) or over time.

The presence of pulsus paradoxus (systolic paradox) is not a reliable indicator of the severity of acute asthma.

Oxygen saturation measured by pulse oximetry. If oxygen therapy has already been started, it is not necessary to cease oxygen to do pulse oximetry.

Oxygen saturation levels are a guide only and are not definitive; clinical judgment should be applied.

Definitions of severity classes for acute asthma used in this handbook may differ from those used in published clinical trials and other guidelines that focus on, are or restricted to, the management of acute asthma within emergency departments or acute care facilities.

Figure. Managing acute asthma in adults (part 1)

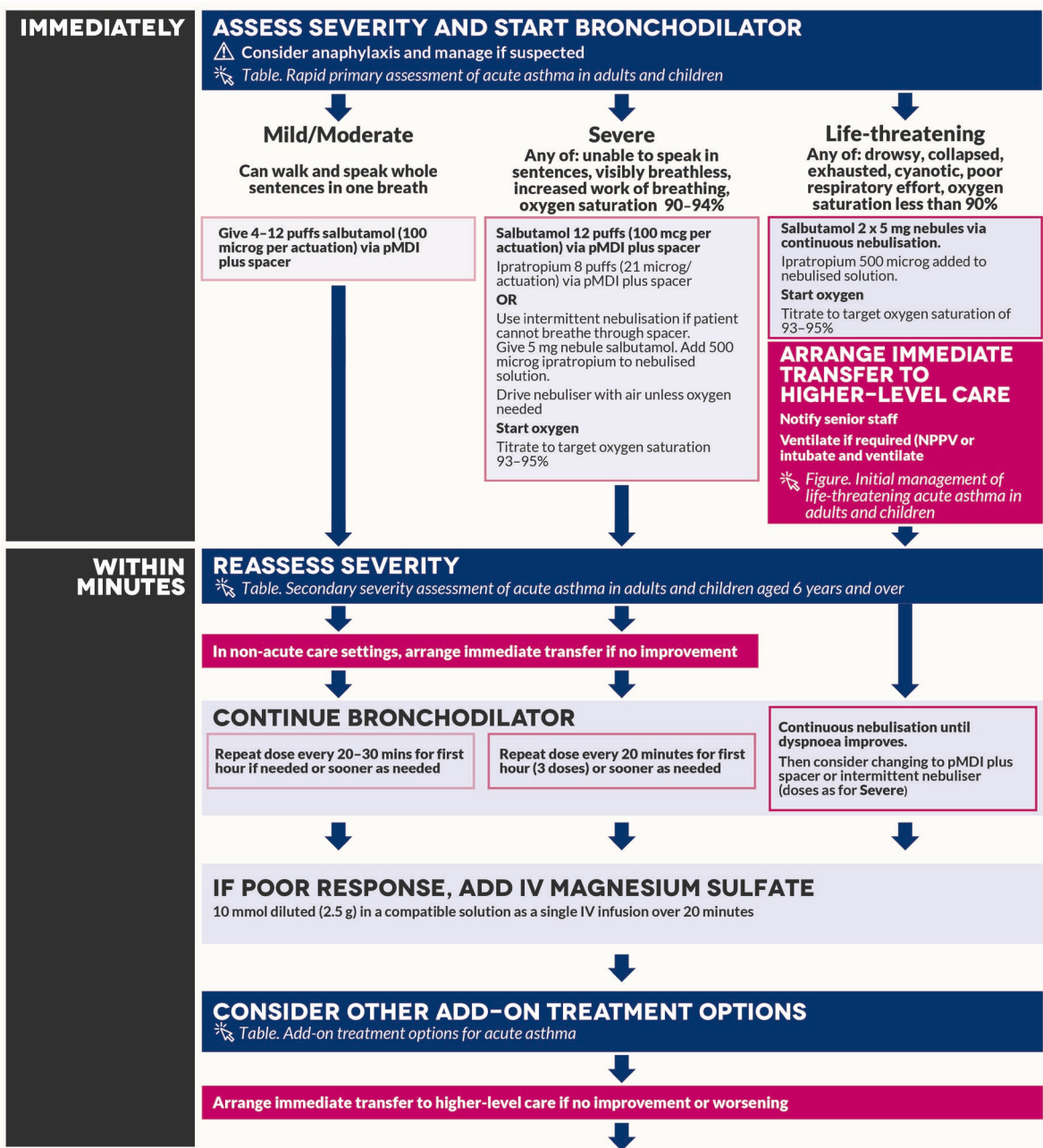


Figure. Managing acute asthma in adults (part 2)

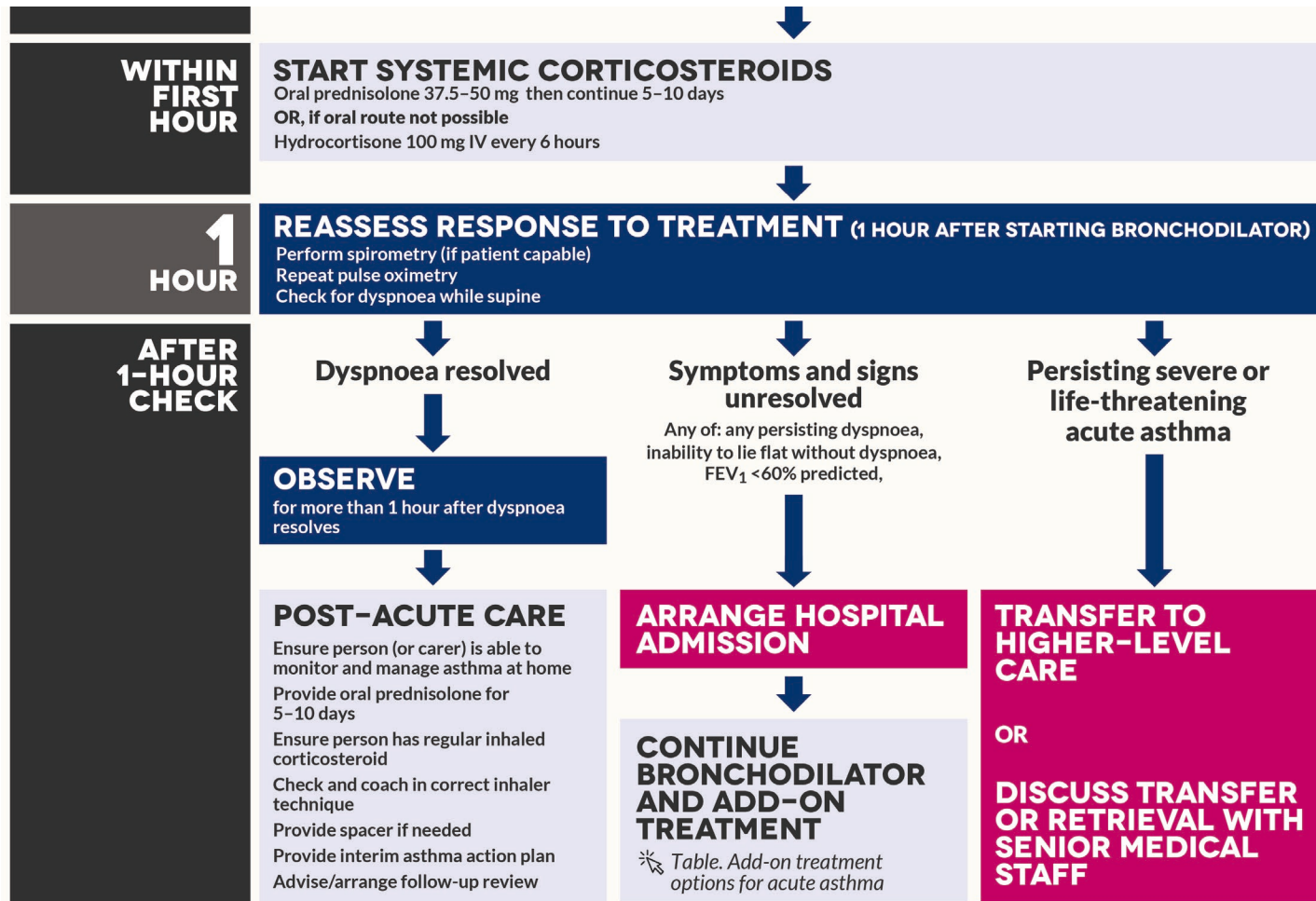


Figure. Managing acute asthma in children (part 1)

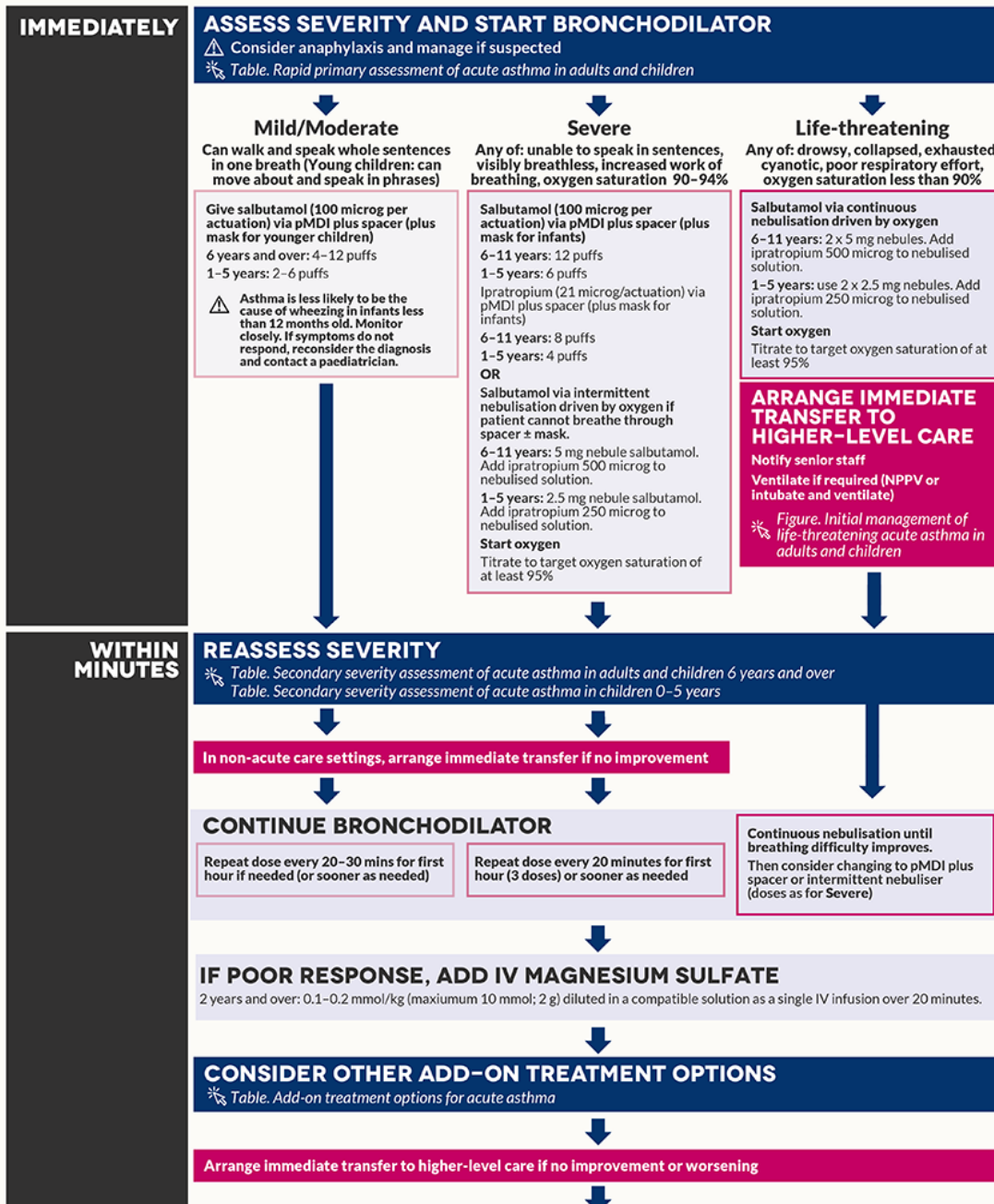


Figure. Managing acute asthma in children (part 2)

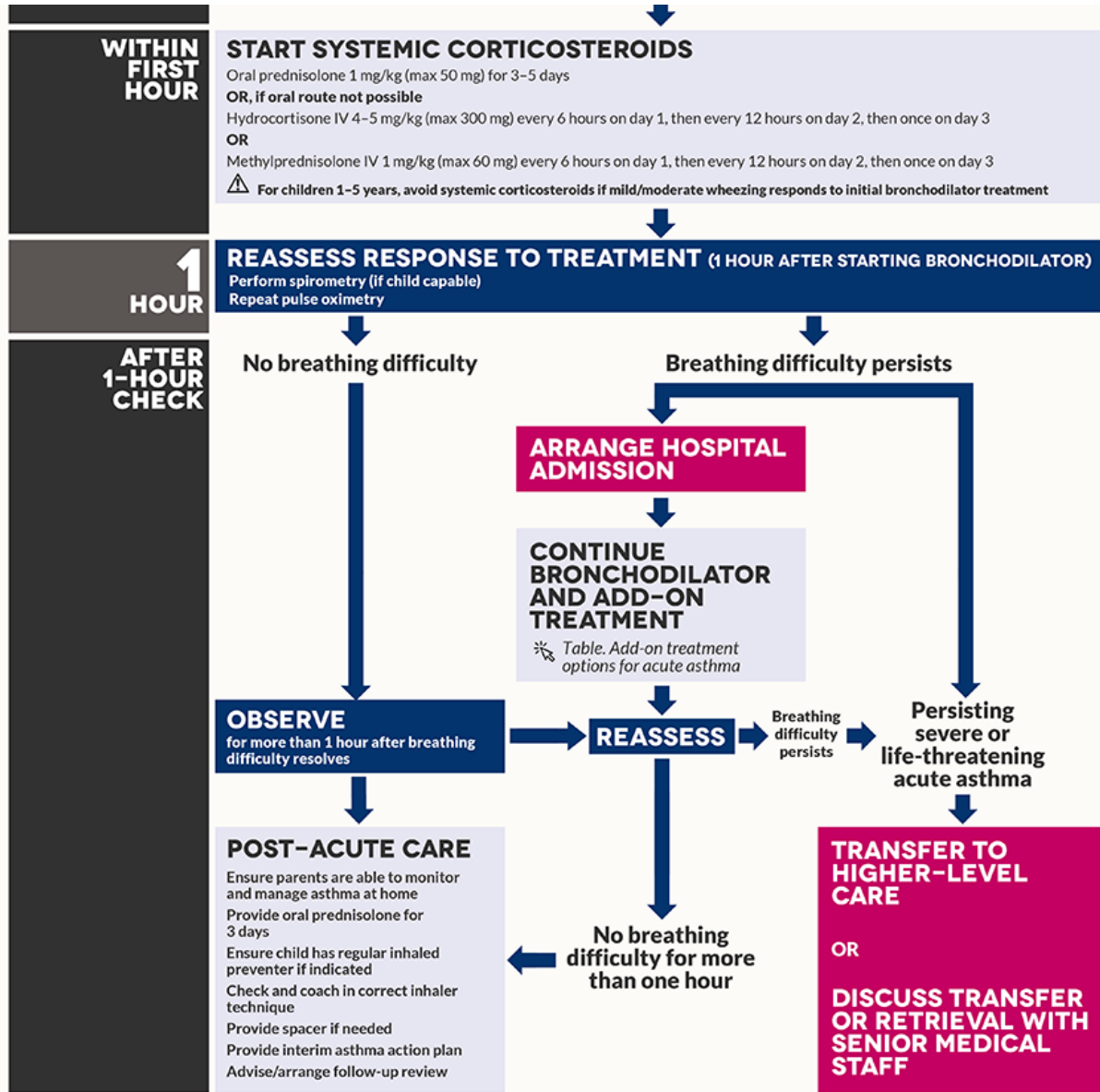


Figure. Initial management of life-threatening acute asthma in adults and children (part 1)

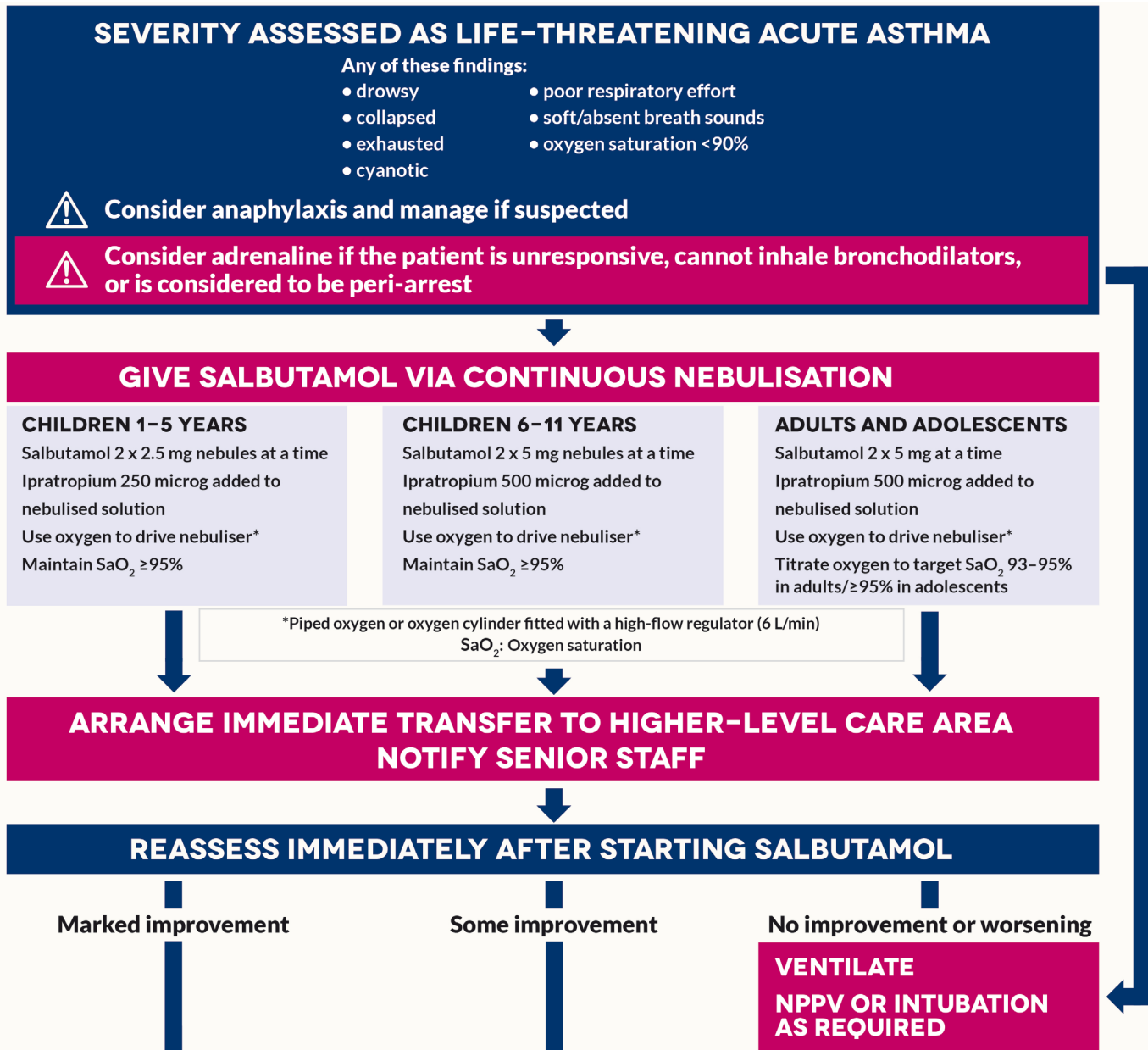
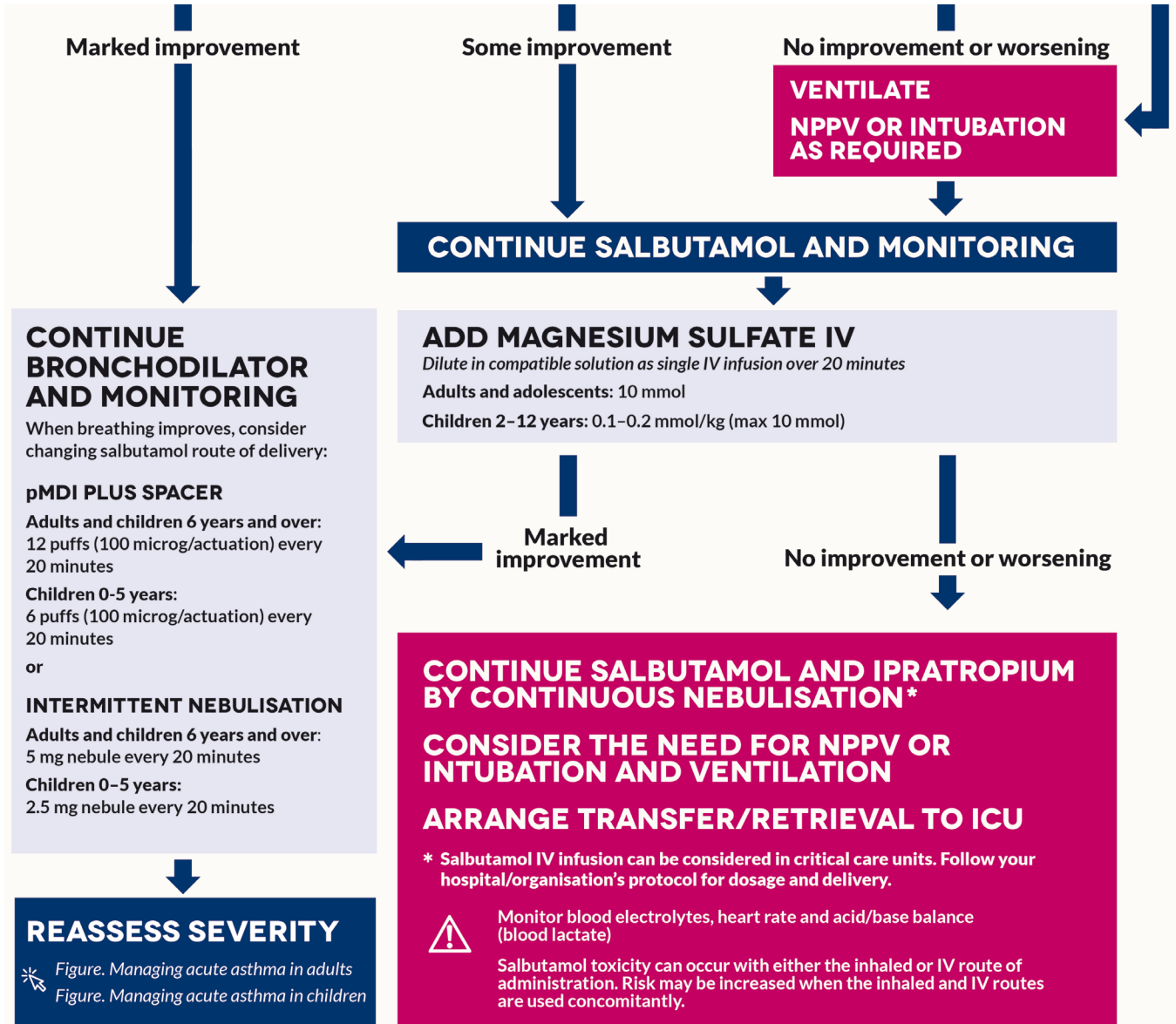


Figure. Initial management of life-threatening acute asthma in adults and children (part 2)



MANAGEMENT CHALLENGES

Table. Troubleshooting checklist

Is the patient taking the medicine correctly?

- Is the person taking the medicine/s?
- Are there any reasons the person may be missing some or all doses? (e.g. cost, psychosocial reasons)
- Is the person's inhaler technique correct?
- Is the type of inhaler device right for the person?

Is the current treatment appropriate?

- Is the type of preventer right for the individual?
- Is the prescribed dose of preventer likely to be effective?

Is the person able to self-manage effectively?

- Is the written asthma action plan up to date and does the person know how to follow it?
- Is the person receiving conflicting advice from other health professionals?
- Is the person unable to manage their asthma due to life events, low health literacy, personal circumstances or other psychosocial factors?

Are the symptoms due to asthma?

- Is the diagnosis correct?
- Are other conditions present?

Is the person exposed to unidentified triggers?

- Does the person smoke?
- Is the person exposed to other people's tobacco smoke or other smoke?
- Does the person know what triggers their asthma symptoms?
- Consider:
 - cigarette smoke
 - allergens (e.g. animals, pollens, workplace materials)
 - cold/dry air
 - indoor and outdoor pollution
 - medicines (including complementary medicines)
 - food chemicals/additives (if person is intolerant)
 - viral respiratory tract infections
 - comorbid medical conditions
 - extreme emotions
 - hormonal changes
 - exercise.

Table. Summary of asthma triggers

| Avoidable triggers | Unavoidable triggers |
|---|--|
| <p>Always avoid</p> <p>Cigarette smoke</p> | <p>Do not avoid</p> <p>Exercise</p> <p>Laughter</p> |
| <p>Avoid or reduce where possible</p> | <p>Manage</p> |
| <p>Allergens (if person is sensitised and relevant avoidance strategies are practical and shown to be effective)</p> <ul style="list-style-type: none"> • Animal allergens (e.g. pets, animals in workplace) • Cockroaches • House dust mite • Moulds • Occupational allergens • Pollens <p>Airborne/environmental irritants</p> <ul style="list-style-type: none"> • Cold/dry air • Fuel combustion (nitrogen dioxide-emitting gas heaters) • Home renovation materials • Household aerosols • Moulds (airborne endotoxins) • Occupational irritants • Outdoor industrial and traffic pollution • Perfumes/scents/incense • Smoke (any, including bushfires, vegetation reduction fires, indoor wood fires) • Thunderstorms in spring and early summer (grass pollen) <p>Certain medicines</p> <ul style="list-style-type: none"> • Aspirin and <u>NSAIDs</u> (in patients with <u>aspirin-exacerbated respiratory disease</u>) • Beta blockers† • Bee products (pollen, propolis, royal jelly) • Echinacea <p>Dietary triggers</p> <ul style="list-style-type: none"> • Food chemicals/additives (if person is intolerant) • Thermal effects (e.g. cold drinks) | <p>Respiratory tract infections</p> <p>Certain medicines</p> <ul style="list-style-type: none"> • Aspirin (when given for purpose of desensitisation)† • Anticholinesterases and cholinergic agents <p>Comorbid medical conditions</p> <ul style="list-style-type: none"> • Allergic rhinitis/rhinosinusitis • Gastro-oesophageal reflux disease • Nasal polyposis • Obesity • <u>Upper airway dysfunction</u> <p>Physiological and psychological changes</p> <ul style="list-style-type: none"> • Extreme emotions • Hormonal changes (e.g. menstrual cycle) • Pregnancy • Sexual activity |

† Requires close specialist supervision. If indicated for acute cardiac events, must be given under specialist supervision and started at low dose.