

Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Full Report 2007

TARGET POPULATION

Eligibility

Inclusion Criterion

Exclusion Criterion

RECOMMENDATIONS

Recommendation

Selecting Initial Therapy

Conditional: 0–4 Years of Age: Initiating Long-Term Control Therapy. The Expert Panel concludes that initiating daily long-term control therapy: and#14; Is recommended for reducing impairment and risk of exacerbations in infants and young children who had four or more episodes of wheezing in the past year that lasted more than 1 day and affected sleep AND who have risk factors for developing persistent asthma: either (1) one of the following: parental history of asthma, a physician diagnosis of atopic dermatitis, or evidence of sensitization to aeroallergens OR (2) two of the following: evidence of sensitization to foods, 4 percent peripheral blood eosinophilia, or wheezing apart from colds (Evidence A).
{Rec_1: Cond_1 }

IF

0–4 Years of Age

four or more episodes of wheezing in the past year that lasted more than 1 day and affected sleep

parental history of asthma

a physician diagnosis of atopic dermatitis

evidence of sensitization to aeroallergen

evidence of sensitization to foods

4 percent peripheral blood eosinophilia

wheezing apart from colds

THEN

initiating daily long-term control therapy: initiating daily long-term control therapy is recommended

Decidable	Vocab
Executable	Vocab

Evidence Quality: (Evidence A)

Strength of Recommendation: "is recommended"

Reason: reducing impairment and risk of exacerbations in infants and young children

Logic:

Recommendation

Selecting Initial Therapy (2)

Conditional: 0–4 Years of Age: Initiating Long-Term Control Therapy. The Expert Panel concludes that initiating daily long-term control therapy: Should be considered for reducing impairment in infants and young children who consistently require symptomatic treatment more than 2 days per week for a period of more than 4 weeks (Evidence D). {Rec_2: Cond_2 }

IF

consistently require symptomatic treatment more than 2 days per week for a period of more than 4 weeks
0–4 Years of Age

THEN

initiating daily long-term control therapy: Should be considered

Decidable	Vocab
Executable	Vocab

Evidence Quality: (Evidence D)

Strength of Recommendation: should be considered

Reason:

Logic:

Recommendation

Selecting Initial Therapy (3)

Conditional: 0–4 Years of Age: Initiating Long-Term Control Therapy. The Expert Panel concludes that initiating daily long-term control therapy: Should be considered for reducing risk in infants and young children who have a second asthma

exacerbation requiring systemic corticosteroids within 6 months (Evidence D). Recognition of these children and treatment with daily low-dose ICS therapy can significantly reduce overall symptom burden and the frequency of exacerbations, even though such treatment will not alter the underlying severity of asthma in later childhood {Rec_3: Cond_3 }

IF

a second asthma exacerbation requiring systemic corticosteroids within 6 months
0–4 Years of Ag

THEN

initiating daily long-term control therapy: Should be considered

Decidable	Vocab
Executable	Vocab

Evidence Quality: (Evidence D)

Strength of Recommendation: should be considered

Reason: for reducing risk

Logic:

Recommendation

Selecting Initial Therapy (4)

Conditional: 0–4 Years of Age: Initiating Long-Term Control Therapy. The Expert Panel concludes that initiating daily long-term control therapy: May be considered for use only during periods of previously documented risk for a child (Evidence D). If daily long-term control therapy is discontinued after the season of increased risk, written asthma action plans indicating specific signs of worsening asthma and actions to take should be reviewed with the caregivers, and a clinic contact should be scheduled 2–6 weeks after discontinuation of therapy to ascertain whether adequate control is maintained satisfactorily (Evidence D). {Rec_4: Cond_4 }

IF

periods of previously documented risk for a child
0–4 Years of Age

THEN

initiating daily long-term control therapy: May be considered

Decidable	Vocab
Executable	Vocab

Evidence Quality: (Evidence D)
Strength of Recommendation: may be considered
Reason:
Logic:

Recommendation

5–11 Years of Age: Initiating Long-Term Control Therapy.

Conditional: 5–11 Years of Age: Initiating Long-Term Control Therapy.
 The Expert Panel recommends daily long-term control therapy for children who have persistent asthma {Rec_5: Cond_5 }

IF
 5–11 Years of Age
 persistent asthma

THEN
 The Expert Panel recommends daily long-term control therapy

Decidable	Vocab
Executable	Vocab

Evidence Quality: (Evidence A)
Strength of Recommendation: The Expert Panel recommends
Reason:
Logic:

Recommendation

Adjusting Therapy

Conditional: The Expert Panel recommends that, if a child is already taking long-term control medication, treatment decisions are based on the level of asthma control that has been achieved: therapy should be stepped up if necessary to achieve control {Rec_6: Cond_6 }

IF
 already taking long-term control medication

THEN

Decidable	Vocab
Executable	Vocab

therapy should be stepped up if necessary to achieve control

Evidence Quality: Evidence
B—extrapolated from
studies in youths and
adults

**Strength of
Recommendation:** The Expert Panel
recommends

Reason:

Logic:

Recommendation

control of the impairment domain is not achieved and maintained

Conditional: The Expert Panel recommends the following actions if control of the impairment domain is not achieved and maintained at any step of care: Patient adherence and technique in using medications correctly should be assessed and addressed as appropriate (Evidence C). {Rec_7: Cond_7 }

IF

if control of the impairment domain is not achieved and maintained

THEN

Patient adherence and technique in using medications correctly should be assessed and addressed as appropriate
Other factors that diminish control of asthma impairment should be addressed as possible reasons for poor response to therapy and targets for intervention (

Decidable	Vocab
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Executable	Vocab
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Evidence Quality: (Evidence C)

**Strength of
Recommendation:** The Expert Panel
recommends

Reason:

Logic:

Conditional: If patient adherence, inhaler technique, and environmental control measures are adequate, and asthma is not well controlled, a step up in treatment may be needed {Rec_7: Cond_8 }

IF
 patient adherence
Value: adequate
 inhaler technique
Value: adequate
 environmental control measures
Value: adequate

Decidable	Vocab

THEN
 a step up in treatment may be needed

Executable	Vocab

Evidence Quality: Evidence
 B—extrapolated

Strength of Recommendation: recommends

Reason:

Logic:

Recommendation

Address the risk domain (0-4 years)

Conditional: The Expert Panel recommends the following actions if control of the risk of exacerbations is not achieved or maintained (Evidence D): 0–4 years of age: If there is a history of one or more exacerbations, review adherence to medications and control of environmental exposures, review the patient’s written asthma action plan to confirm that it includes oral prednisone for patients who have histories of severe exacerbations, and consider stepping up therapy to the next level (Evidence D) {Rec_8: Cond_9 }

IF
 control of the risk of exacerbations is not achieved or maintained (a history of one or more exacerbations)
 0–4 years of age

Decidable	Vocab

THEN
 review adherence to medications and control of environmental exposures
 review the patient’s written asthma action plan to confirm that it includes oral prednisone for patients who have histories of severe exacerbations
 consider stepping up therapy to the next level

Executable	Vocab

(Evidence D)

Evidence Quality:

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Recommendation

Address the risk domain.(5-11 years)

Conditional: The Expert Panel recommends the following actions if control of the risk of exacerbations is not achieved or maintained (Evidence D) 5–11 years of age: If the history of exacerbations suggests poorer control than does the assessment of impairment, the following actions are recommended: reassess the impairment domain, review adherence to medications and control of environmental exposures, review the patient’s written asthma action plan to confirm that it includes oral prednisone for patients who have a history of severe exacerbations, and consider a step up in therapy, especially for children who have reduced lung function {Rec_9: Cond_10 }

IF

5–11 years of age

the history of exacerbations suggests poorer control than does the assessment of impairment

THEN

reassess the impairment domain

review adherence to medications and control of environmental exposures

review the patient’s written asthma action plan to confirm that it includes oral prednisone for patients who have a history of severe exacerbations

consider a step up in therapy, especially for children who have reduced lung function

Decidable	Vocab

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Executable	Vocab

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Evidence Quality:

Strength of Recommendation:

Reason:

Logic:

Recommendation

Address the risk domain with regard to side effects

Conditional: The Expert Panel recommends consideration of alternative and/or adjunctive therapies within the step of care the patient is receiving if the patient experiences troublesome or debilitating side effects. In addition, confirm efforts to control environmental exposures {Rec_10: Cond_11 }

IF
patient experiences troublesome or debilitating side effects

THEN
consideration of alternative and/or adjunctive therapies within the step of care the patient is receiving
confirm efforts to control environmental exposures

Decidable	Vocab
Executable	Vocab

Evidence Quality: (Evidence D)

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Recommendation

Consider referral to an asthma specialist.

Conditional: The Expert Panel recommends referral to an asthma specialist for consultation or comanagement of the patient if (Evidence D): — There are difficulties achieving or maintaining control of asthma. — A child 0–4 years of age requires step 3 care or higher (step 4 care or higher for children 5–11 years of age) to achieve and maintain control or if additional education is indicated to improve the patients’ management skills or adherence. Referral may be considered if a child 0–4 years of age requires step 2 care or a child 5–11 years of age requires step 3 care. — The patient has had an exacerbation requiring hospitalization. — Immunotherapy or other immunomodulators are considered, or additional tests are indicated, to determine the role of allergy. {Rec_11: Cond_12 }

IF
difficulties achieving or maintaining control of asthma

Decidable	Vocab

The patient has had an exacerbation requiring hospitalization.
 Immunotherapy or other immunomodulators are considered, or additional tests are indicated, to determine the role of allergy
THEN
 referral to an asthma specialist for consultation or comanagement of the patient

Executable	Vocab

Evidence Quality: (Evidence D)

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Conditional: A child 0–4 years of age requires step 3 care or higher (step 4 care or higher for children 5–11 years of age) to achieve and maintain control or if additional education is indicated to improve the patients’ management skills or adherence. Referral may be considered if a child 0–4 years of age requires step 2 care or a child 5–11 years of age requires step 3 care {Rec_11: Cond_13 }

IF
 0–4 years of age
 requires step 3 care or higher to achieve and maintain control if additional education is indicated to improve the patients’ management skills or adherence
THEN
 Expert Panel recommends referral to an asthma specialist for consultation or comanagement of the patient

Decidable	Vocab
Executable	Vocab

Evidence Quality: (Evidence D)

Strength of Recommendation: the Expert Panel recommends

Reason:

Logic:

Conditional: A child 0–4 years of age requires step 3 care or higher (step 4 care or higher for children 5–11 years of age) to achieve and maintain control or if additional education is indicated to

improve the patients' management skills or adherence.
 Referral may be considered if a child 0–4 years of age
 requires step 2 care or a child 5–11 years of age requires step
 3 care {Rec_11: Cond_14 }

IF

5–11 years of age

requires step 4 care or higher

additional education is indicated to improve the patients'
 management skills or adherence

THEN

recommends referral to an asthma specialist for consultation
 or comanagement of the patient

Decidable	Vocab
Executable	Vocab

Evidence Quality:

Strength of Recommendation: recommends

Reason:

Logic:

Conditional: Referral may be considered if a child 0–4 years of age
 requires step 2 care or a child 5–11 years of age requires step
 3 care. {Rec_11: Cond_15 }

IF

0–4 years of age

requires step 2 care

THEN

Referral

Decidable	Vocab
Executable	Vocab

Evidence Quality:

Strength of Recommendation: may be considered

Reason:

Logic:

Conditional: Referral may be considered if a child 0–4 years of age
 requires step 2 care or a child 5–11 years of age requires step
 3 care {Rec_11: Cond_16 }

IF
 5–11 years of age
 requires step 3 care
THEN
 Referral may be considered

Decidable	Vocab
Executable	Vocab

Evidence Quality:

Strength of Recommendation: may be considered

Reason:

Logic:

Recommendation

Followup

Imperative: The Expert Panel recommends that regular followup contact is essential (Evidence B).

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

regular followup contact is essential

Executable	Vocab

Evidence Quality: (Evidence B)

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Recommendation

Maintaining control

Conditional: The Expert Panel recommends that once well-controlled asthma is achieved and maintained for at least 3 months, a reduction in pharmacologic therapy—a step down— can be considered helpful to identify the minimum therapy for maintaining well-controlled asthma (Evidence D). {Rec_13: Cond_17 }

IF
 well-controlled asthma is achieved
 well-controlled asthma is maintained for at least 3 months,
THEN
 a reduction in pharmacologic therapy—a step down— can be considered

Decidable	Vocab
Executable	Vocab

Evidence Quality: (Evidence D)
Strength of Recommendation: can be considered
Reason:
Logic:

Recommendation

Pharmacologic Issues for Children 0–4 Years of Age

Conditional: If there is no clear response within 4–6 weeks, the therapy should be discontinued and alternative therapies or alternative diagnoses considered {Rec_14: Cond_18 }

IF
 no clear response within 4–6 weeks
THEN
 therapy should be discontinued
 alternative therapies or alternative diagnoses considered

Decidable	Vocab
Executable	Vocab

Evidence Quality: Evidence D
Strength of Recommendation: The Expert Panel recommends
Reason: treatment of young children is often in the form of a therapeutic trial
Logic:

Conditional: If there is a clear and positive response for at least 3 months, a step down in therapy should be undertaken to the lowest possible doses of medication required to maintain asthma control {Rec_14: Cond_19 }

IF
 a clear and positive response for at least 3 months
THEN
 a step down in therapy should be undertaken

Decidable	Vocab
Executable	Vocab

Evidence Quality: Treatment for young children, especially infants, has not been studied adequately. Recommendations are based on expert opinion, limited data, and extrapolations from studies in older children and adults

Strength of Recommendation:

Reason:

Logic:

Recommendation

Step 1 Care, Children 0–4 Years of Age

Conditional: The Expert Panel recommends the following treatment for intermittent asthma: and#14; SABA taken as needed to treat symptoms is usually sufficient therapy for intermittent asthma (EPR2 1997). If effective in relieving symptoms, intermittent use of SABA can continue on an as-needed basis. Increasing use, however, may indicate more severe or inadequately controlled asthma and thus a need to step up therapy. {Rec_15: Cond_20 }

IF
 intermittent asthma
THEN
 SABA taken as needed to treat symptoms

Decidable	Vocab
Executable	Vocab

Evidence Quality:

Strength of Recommendation: The Expert Panel recommends

Reason: usually sufficient therapy for

intermittent asthma

Logic:

Recommendation

managing exacerbations due to viral respiratory infections

Conditional: If the symptoms are mild, SABA (every 4–6 hours for 24 hours, longer with a physician consult) may be sufficient to control symptoms and improve lung function. {Rec_16: Cond_21 }

IF
(URI) symptoms are mild

THEN
SABA (every 4–6 hours for 24 hours, longer with a physician consult)

Decidable	Vocab
Executable	Vocab

Evidence Quality:

Strength of Recommendation: The Expert Panel recommends

Reason: to control symptoms and improve lung function.

Logic:

Conditional: If this therapy needs to be repeated more frequently than every 6 weeks, consider a step up in long-term care. {Rec_16: Cond_22 }

IF
this therapy (SABA every 4–6 hours for 24 hours, longer with a physician consult)

THEN
consider a step up in long-term care

Decidable	Vocab
Executable	Vocab

Evidence Quality:

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Conditional: If the viral respiratory infection provokes a moderate-to-severe exacerbation, a short course of oral systemic corticosteroids should be considered (1 mg/kg/day prednisone or equivalent for 3–10 days) {Rec_16: Cond_23 }

IF

viral respiratory infection provokes a moderate-to-severe exacerbation,

THEN

a short course of oral systemic corticosteroids should be considered

Decidable	Vocab
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Executable	Vocab
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Evidence Quality:

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Conditional: For those patients who have a history of severe exacerbations with viral respiratory infections, consider initiating oral systemic corticosteroids at the first sign of the infection. {Rec_16: Cond_24 }

IF

history of severe exacerbations with viral respiratory infections,

THEN

consider initiating oral systemic corticosteroids at the first sign of the infection.

Decidable	Vocab
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Executable	Vocab
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Evidence Quality:

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Recommendation

asthma action plan

Conditional: The Expert Panel recommends that a detailed written asthma action plan be developed for those patients who have intermittent asthma and a history of severe exacerbations {Rec_17: Cond_25 }

IF
intermittent asthma
history of severe exacerbations

THEN
develop a detailed written asthma action plan

Decidable	Vocab
Executable	Vocab

Evidence Quality: Evidence B

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Recommendation

PERSISTENT ASTHMA

Conditional: Daily long-term control medication at step 2 or above is recommended for children who had four or more wheezing episodes in 1 year and risk factors for persistent asthma {Rec_18: Cond_26 }

IF
children who had four or more wheezing episodes in 1 year
risk factors for persistent asthma

THEN
Daily long-term control medication at step 2 or above

Decidable	Vocab
Executable	Vocab

Evidence Quality: Evidence A

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Conditional: Consider daily therapy for children who have a second

exacerbation requiring oral systemic corticosteroids in 6 months or children who consistently require symptomatic treatment andgt;2 days a week for andgt; 4 weeks {Rec_18: Cond_27 }

IF

children who have a second exacerbation requiring oral systemic corticosteroids in 6 months
 children who consistently require symptomatic treatment andgt;2 days a week for andgt; 4 weeks

THEN

Consider daily therapy

Decidable	Vocab
Executable	Vocab

Evidence Quality: Evidence D

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Conditional: To gain more rapid control of asthma, a course of oral systemic corticosteroids may be necessary for the patient who has an exacerbation at the time long-term control therapy is started or in patients who have moderate or severe asthma with frequent interference with sleep or normal activity {Rec_18: Cond_28 }

IF

patient has an exacerbation at the time long-term control therapy is started
 moderate or severe asthma with frequent interference with sleep or normal activity

THEN

a course of oral systemic corticosteroids may be necessary

Decidable	Vocab
Executable	Vocab

Evidence Quality:

Strength of Recommendation: The Expert Panel recommends

Reason: To gain more rapid control of asthma,

Logic:

Conditional: If no clear response occurs within 4–6 weeks and medication technique and adherence are satisfactory, the treatment should be discontinued and a change in therapy or alternative diagnoses should be considered. {Rec_18: Cond_29 }

IF

no clear response occurs within 4–6 weeks
medication technique and adherence are satisfactory

THEN

treatment should be discontinued and a change in therapy or alternative diagnoses should be considered

Decidable	Vocab
Executable	Vocab

Evidence Quality: Evidence D

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Conditional: If there is a clear and positive response for at least 3 months, a step down in therapy should be undertaken to the lowest possible doses of medication required to maintain asthma control ({Rec_18: Cond_30 })

IF

a clear and positive response for at least 3 months

THEN

a step down in therapy should be undertaken to the lowest possible doses of medication required to maintain asthma control

Decidable	Vocab
Executable	Vocab

Evidence Quality: Evidence D

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Imperative: SABA should be taken as needed to relieve symptoms

IF

Inclusion Criterion:

THEN **Exclusion Criterion:**
 SABA should be taken as needed to relieve symptoms

Executable	Vocab

Evidence Quality:

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Imperative: Giving daily therapy only during specific periods of previously documented risk for a child may be considered

IF

Inclusion Criterion:
Exclusion Criterion:

THEN
 Giving daily therapy only during specific periods of previously documented risk

Executable	Vocab

Evidence Quality: Evidence D

Strength of Recommendation: The Expert Panel recommends "may be considered"

Reason: it is possible that children who have specifically defined periods of increased risk for symptoms and exacerbations (e.g., during the seasons in which viral respiratory infections are common) may require daily long-term control therapy only during this historically documented period of risk.

Logic:

Recommendation

Step 2 Care, Children 0–4 Years of Age

Conditional: If an alternative treatment is selected and adequate asthma control is not achieved and maintained in 4–6 weeks, then discontinue that treatment and use the preferred medication before stepping up therapy. {Rec_19: Cond_31 }

IF
 alternative treatment is selected
 adequate asthma control is not achieved and maintained in 4–6 weeks

Decidable	Vocab

THEN

discontinue that treatment

use the preferred medication before stepping up therapy

Executable	Vocab

Evidence Quality:

Strength of Recommendation:

recommends

Reason:

Logic:

Conditional: Therefore, it is the opinion of the Expert Panel that low-dose ICS is the preferred daily long-term control therapy for infants and young children who have never before been treated with long-term control therapy. This medication should be prescribed in the form of a therapeutic trial, and response should be monitored carefully. Treatment should be stopped if a clear beneficial effect is not obvious within 4–6 weeks and the patient/family medication technique and adherence are satisfactory. If a clear and positive response exists for at least 3 months (and given the high rates of spontaneous remission of symptoms in this age group), the need for ICS therapy should be reevaluated. A step down to intermittent therapy, as needed for symptoms, may then be considered {Rec_19: Cond_32 }

IF

infants and young children who have never before been treated with long-term control therapy

THEN

low-dose ICS is the preferred daily long-term control therapy

Decidable	Vocab
Executable	Vocab

Evidence Quality:

Evidence D

Strength of Recommendation:

it is the opinion of the Expert Panel

Reason:

At present, few studies of medications have been conducted in children younger than 3 years of age. ICSs have been shown to be effective in long-term clinical

studies with infants and young children (Bisgaard et al. 2004; Guilbert et al. 2006). In contrast, cromolyn has demonstrated inconsistent symptom control in children younger than 5 years of age (Tasche et al. 2000). Montelukast has shown some effectiveness in children 2–5 years of age (Knorr et al. 2001) and, in young children who have a history of exacerbations, can reduce symptoms associated with exacerbations and the amount of ICSs used during exacerbations, although montelukast was not shown to reduce requirements for oral systemic corticosteroid to control exacerbations (Bisgaard et al. 2005).

Logic:

Conditional: A trial of montelukast in children 2 years of age or older can be considered in situations in which inhaled medication delivery is suboptimal due to poor technique or adherence.
{Rec_19: Cond_33 }

IF

2 years of age or older

inhaled medication delivery is suboptimal due to poor technique or adherence

THEN

A trial of montelukast can be considered

Decidable	Vocab
Executable	Vocab

Evidence Quality:

Strength of Recommendation: can be considered

Reason:

Logic:

Imperative: Preferred treatment for step 2 care is daily ICS at a low dose

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

daily ICS at a low dose

Executable	Vocab

Evidence Quality: Evidence A based on studies of individual drug efficacy in this age group; comparator trials are not available

Strength of Recommendation:

Reason:

Logic:

Imperative: Alternative, but not preferred, treatments include (listed in alphabetical order) cromolyn (Evidence B—extrapolated from studies in older children) and montelukast (Evidence A). If an alternative treatment is selected and adequate asthma control is not achieved and maintained in 4–6 weeks, then discontinue that treatment and use the preferred medication before stepping up therapy.

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

cromolyn (Evidence B—extrapolated from studies in older children)
montelukast (Evidence A)

Executable	Vocab

Evidence Quality: EvidenceB, A)

Strength of Recommendation: recommends

Reason:

Logic:

Imperative: Theophylline is not recommended as alternative treatment (EPR2 1997) because of its erratic metabolism during viral infections and febrile illness in children less than 5 years of age and the need to closely monitor and control serum concentrations.

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

Theophylline is not recommended

Executable	Vocab

Evidence Quality:

Strength of Recommendation:

Reason: because of its erratic metabolism during viral infections and febrile illness in children less than 5 years of age and the need to closely monitor and control serum concentrations.

Logic:

Recommendation

Step 3 Care, Children 0–4 Years of Age

Conditional: The Expert Panel recommends increasing the dose of ICS, for children 0–4 years of age whose asthma is not well controlled on low doses of ICS, to ensure that an adequate dose is delivered (due to the inherent difficulty and variability of delivering aerosols) before adding adjunctive therapy {Rec_20: Cond_34 }

IF

children 0–4 years of age
asthma is not well controlled on low doses of ICS

THEN

increasing the dose of ICS before adding adjunctive therapy

Decidable	Vocab
Executable	Vocab

Evidence Quality: Evidence D

Strength of Recommendation: Expert Panel recommends i
to ensure that an

Reason: adequate dose is delivered (due to the inherent difficulty and variability of delivering aerosols)

Logic:

Imperative: Medium-dose ICS is the preferred step 3 treatment

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Medium-dose ICS

Executable	Vocab

Evidence Quality: Evidence D

Strength of Recommendation:

Reason:

Logic:

Recommendation

Step 4 Care, Children 0–4 Years of Age

Imperative: Medium-dose ICS AND either (listed in alphabetical order) LABA or montelukast is the preferred treatment for step 4

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Medium-dose ICS AND LABA

Medium-dose ICS AND montelukast

Executable	Vocab

Evidence Quality: Evidence D

Strength of Recommendation: may be considered

Reason:

Logic:

Imperative: Theophylline is not recommended as add-on therapy

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Theophylline is not recommended

Executable	Vocab

Evidence Quality:

Strength of Recommendation:

recommended

Reason:

No data were found on add-on therapy in children 0–4 years of age whose asthma is not well controlled on medium-dose ICS. In the opinion of the Expert Panel, and extrapolating from studies in older children and adults, adding a noncorticosteroid long-term control medication to the medium dose of ICS may be considered before increasing the dose of ICS to high dose, to avoid the potential risk of side effects with high doses of medication. The LABA DPI preparation is difficult to administer correctly to the majority of children less than 4 years of age; studies are needed to determine if the recently released LABA HFA will be convenient to administer in this age group. Montelukast (an LTRA) in combination with lower doses of an ICS can be considered for add-on therapy in these children. Theophylline is not recommended as add-on therapy due to the erratic metabolism of theophylline during viral infections and febrile illness (See figure 4–4a.), which are common in this age group, and the need for careful monitoring of serum concentration levels

Logic:

Recommendation

Step 5 Care, Children 0–4 Years of Age

Imperative: High-dose ICS AND either LABA or montelukast is the preferred treatment

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

High-dose ICS AND LABA

High-dose ICS AND montelukast

Executable	Vocab

Evidence Quality:

Evidence D

Strength of Recommendation:

Reason:

Logic:

Recommendation

Step 6 Care, Children 0–4 Years of Age

Imperative: High-dose ICS AND either LABA or montelukast AND oral systemic corticosteroids may be given for step 6

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

High-dose ICS AND LABA AND oral systemic corticosteroids
High-dose ICS AND montelukast AND oral systemic corticosteroids

Executable	Vocab

Evidence Quality: Evidence D

Strength of Recommendation:

Reason:

Logic:

Recommendation

Treatment: Special Issues for Children 5–11 Years of Age

Conditional: The Expert Panel recommends that, when initiating daily long-term control therapy for mild or moderate persistent asthma, the choice of medication includes consideration of treatment effectiveness, the domain of particular relevance to the patient’s asthma (impairment, risk, or both), the individual patient’s history of previous response to therapies, the ability of the patient and family to use the medication correctly, anticipated patient and family adherence to the treatment regimen, and cost {Rec_24: Cond_35 }

IF

when initiating daily long-term control therapy for mild or

Decidable	Vocab

moderate persistent asthma,

THEN

the choice of medication includes consideration of treatment effectiveness

the choice of medication includes the domain of particular relevance to the patient's asthma (impairment, risk, or both)

the choice of medication includes consideration of the individual patient's history of previous response to therapies,

the choice of medication includes consideration of the ability of the patient and family to use the medication correctly

the choice of medication includes consideration of anticipated patient and family adherence to the treatment regimen

the choice of medication includes consideration of cost

Executable	Vocab

Evidence Quality: Evidence D

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Imperative: The Expert Panel recommends that the clinician prepare a written asthma action plan for the student's school or childcare setting.

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

clinician prepare a written asthma action plan for the student's school or childcare setting

Executable	Vocab

Evidence Quality: Evidence C

Strength of Recommendation: The Expert Panel recommends

Reason: Nonrandomized studies and observational studies have demonstrated the usefulness of written asthma action plans and peak flow monitoring in schools (Barbot et al. 2006; Borgmeyer et al. 2005; Byrne et al. 2006; Erickson et al. 2006)

Logic:

Imperative: The Expert Panel recommends that physical activity at play or in organized sports is an essential part of a child's life, and

full participation in physical activities should be encouraged

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

full participation in physical activities should be encouraged

Executable	Vocab

Evidence Quality:

Strength of Recommendation:

he Expert Panel recommends

Reason:

Logic:

Recommendation

Step 1 Care, Children 5–11 Years of Age

Conditional: Manage moderate or severe exacerbations due to viral respiratory infections, especially common in children, with a short course of oral systemic corticosteroids. {Rec_25: Cond_36 }

IF

moderate or severe exacerbations due to viral respiratory infections

THEN

short course of oral systemic corticosteroids

Decidable	Vocab

Executable	Vocab

Evidence Quality:

Strength of Recommendation:

Reason:

Logic:

Conditional: Consider initiating systemic corticosteroids at the first sign of infection in children who have a history of severe exacerbations with viral respiratory infections {Rec_25: Cond_37 }

IF

history of severe exacerbations with viral respiratory

Decidable	Vocab

infections

THEN

Consider initiating systemic corticosteroids at the first sign of infection

Executable	Vocab

Evidence Quality: Evidence D

Strength of Recommendation: Consider

Reason:

Logic:

Conditional: Provide a detailed written asthma action plan for those patients who have intermittent asthma and a history of severe exacerbations {Rec_25: Cond_38 }

IF

patients who have intermittent asthma and a history of severe exacerbations

THEN

Provide a detailed written asthma action plan

Decidable	Vocab
Executable	Vocab

Evidence Quality: Evidence B

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Imperative: The Expert Panel recommends the following therapy for intermittent asthma (step 1 care): SABA, taken as needed to treat symptoms, is usually sufficient therapy for intermittent asthma.

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

SABA, taken as needed to treat symptoms

Executable	Vocab

Evidence Quality:

Strength of Recommendation:

Reason:

Logic:

Recommendation

PERSISTENT ASTHMA

Conditional: To gain more rapid control of asthma, consider a course of oral systemic corticosteroids for the patient who has an exacerbation at the time long-term control therapy is started or in patients who have moderate or severe asthma with frequent interference with sleep or normal activity {Rec_26: Cond_39 }

IF

has an exacerbation at the time long-term control therapy is started
patients who have moderate asthma with frequent interference with sleep or normal activity
patients who have .severe asthma with frequent interference with sleep or normal activity

THEN

consider a course of oral systemic corticosteroids

Decidable	Vocab
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Executable	Vocab
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Evidence Quality:

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Conditional: Consider treating patients who had two or more exacerbations requiring oral systemic corticosteroids in the past year the same as patients who have persistent asthma, even in the absence of an impairment level consistent with persistent asthma {Rec_26: Cond_40 }

IF

two or more exacerbations requiring oral systemic corticosteroids in the past year t

THEN

Consider treating as patients who have persistent asthma

Decidable	Vocab
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Executable	Vocab
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Evidence Quality: Evidence D
Strength of Recommendation: The Expert Panel recommend

Reason:

Logic:

Imperative: Use daily long-term control medication.

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Use daily long-term control medication

Executable	Vocab

Evidence Quality: Evidence A

Strength of Recommendation: The Expert Panel recommends

Reason:

Logic:

Imperative: SABA, taken as needed to relieve symptoms, is recommended

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

SABA, taken as needed to relieve symptoms,

Executable	Vocab

Evidence Quality: Evidence A

Strength of Recommendation: The Expert Panel recommend

Reason:

Logic:

Imperative: Giving daily therapy only during specific periods of previously documented risk for a child may be considered

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Giving daily therapy only during specific periods of previously documented risk

Executable	Vocab

Evidence Quality:

Evidence D

Strength of Recommendation:

The Expert Panel recommends may be considered

Reason:

Logic:

Recommendation

Step 2 Care, Children 5–11 Years of Age

Imperative: Daily low-dose ICS is the preferred step 2 treatment

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Daily low-dose ICS

Executable	Vocab

Evidence Quality:

Evidence A

Strength of Recommendation:

Reason:

High-quality evidence demonstrates the effectiveness of ICS as initial therapy for children who have persistent asthma

Logic:

Imperative: Alternative treatments at this step include (listed in alphabetical order) cromolyn, LTRA, nedocromil, and theophylline

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

cromolyn

LTRA

Executable	Vocab

nedocromil

Evidence Quality: Evidence B

Strength of Recommendation:

Reason:

Logic:

Recommendation

Step 3 Care, Children 5–11 Years of Age

Imperative: Low-dose ICS plus the addition of some form of adjunctive therapy or medium-dose ICS are equivalent options in step 3 care, based on extrapolation from studies in adults

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Low-dose ICS plus LABA

Low-dose ICS plus LTRA

Low-dose ICS plus theophylline

Executable	Vocab

Evidence Quality: Evidence B—extrapolation

Strength of Recommendation:

Reason: Two trials demonstrated that children 4–11 years of age who had asthma not completely controlled by ICS achieved improved lung function and symptom control with the addition of LABA compared to placebo (Russell et al. 1995; Zimmerman et al. 2004). FDA approval for the combination in 4- to 11-year-old children, however, is based primarily on safety and extrapolation of efficacy from adolescents and adults (Malone et al. 2005; Van den Berg et al. 2000). To date, studies have not shown a reduction in significant asthma exacerbations from the addition of LABA to ICS treatment in children (Bisgaard 2003). One negative study of LABA in combination with ICS in children who had mild or moderate persistent asthma failed to establish a need in the study participants, at baseline, for more therapy than low-dose ICS, and thus did not sufficiently address the question of combination therapy with LABA (Verberne et al. 1998).

Logic:

Imperative: Increasing the dose of ICS to medium dose

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Executable	Vocab

Evidence Quality:

Strength of Recommendation: the Expert Panel considers increasing the dose of ICS to the medium-dose range or using lower doses of ICS plus adjunctive therapy to be equivalent options

Reason:

Logic:

Recommendation

Step 4 Care, Children 5–11 Years of Age

Conditional: In the opinion of the Expert Panel, if the add-on therapy initially administered does not lead to improvement in asthma control, discontinue it and use a trial of a different add-on therapy before stepping up. {Rec_29: Cond_41 }

IF

add-on therapy initially administered does not lead to improvement in asthma control

THEN

discontinue it and use a trial of a different add-on therapy before stepping up

Decidable	Vocab
Executable	Vocab

Evidence Quality: opinion of the Expert Panel

Strength of Recommendation:

Reason:

Logic:

Imperative: Medium-dose ICS AND LABA is the preferred step 4

treatment

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

Medium-dose ICS AND LABA

Executable	Vocab

Evidence Quality: Evidence B— extrapolated from studies in youths 12 years and adults)

Strength of Recommendation:

Reason:

Logic:

Imperative: Alternative, but not preferred, treatment is medium-dose ICS AND either LTRA or theophylline

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

medium-dose ICS AND either LTRA or theophylline

Executable	Vocab

Evidence Quality: Evidence B—extrapolated from studies in youths 12 years of age and adults

Strength of Recommendation:

Reason: No data specifically address the comparative effects of the various choices of treatments to add on to ICS in children andlt;11 years of age. Based on comparative studies in older children and adults (Evidence A), the preferred add-on treatment is LABA. If the physician has concerns regarding use of LABA, an LTRA can be given a therapeutic trial first. If a trial of LTRA is deemed ineffective, then the LTRA should be discontinued, and theophylline could be added. Theophylline is a less desirable option because of its safety profile and the need to monitor serum concentration levels. Cromolyn has not been demonstrated to be effective as add-on therapy.

Logic:

Recommendation

Step 5 Care, Children 5–11 Years of Age

Imperative: High-dose ICS AND LABA is the preferred step 5 treatment

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

High-dose ICS AND LABA

Executable	Vocab

Evidence Quality: Evidence B—extrapolated

Strength of Recommendation:

Reason:

Logic:

Imperative: Alternative, but not preferred, add-on treatments include LTRA or theophylline

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

add-on treatments LTRA or theophylline

Executable	Vocab

Evidence Quality: Evidence B—extrapolated

Strength of Recommendation:

Reason:

Logic:

Recommendation

Step 6 Care, Children 5–11 Years of Age

Conditional: When well-controlled asthma is achieved, make persistent attempts to reduce oral systemic corticosteroids. High-dose ICS therapy is preferable to oral systemic corticosteroids.
{Rec_31: Cond_42 }

IF

well-controlled asthma is achieved

THEN

Decidable	Vocab
Executable	Vocab

make persistent attempts to reduce oral systemic corticosteroids

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Evidence Quality:

Strength of Recommendation:

Reason:

Logic:

Imperative: High-dose ICS AND LABA AND oral systemic corticosteroids long term is the preferred treatment

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

High-dose ICS AND LABA AND oral systemic corticosteroids

Executable	Vocab
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Evidence Quality: Evidence D

Strength of Recommendation:

Reason:

Logic:

Imperative: Alternative, but not preferred, add-on treatments are either an LTRA or theophylline AND oral systemic corticosteroids

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

LTRA or theophylline AND oral systemic corticosteroids (theophylline AND oral systemic corticosteroids

Executable	Vocab
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Evidence Quality: Evidence D

Strength of Recommendation:

Reason:

Logic:

Imperative: Recommend consultation with an asthma specialist.

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Recommend consultation with an asthma specialist.

Executable	Vocab

Evidence Quality:

Strength of Recommendation:

Reason:

Logic:

Recommendation

PULMONARY FUNCTION TESTING (SPIROMETRY)

Conditional: The Expert Panel recommends that spirometry measurements—FEV1, forced expiratory volume in 6 seconds (FEV6), FVC, FEV1 /FVC—before and after the patient inhales a short-acting bronchodilator should be undertaken for patients in whom the diagnosis of asthma is being considered, including children 5 years of age {Rec_32: Cond_43 }

IF

patients in whom the diagnosis of asthma is being considered
children 5 years of age

THEN

FEV1 before and after the patient inhales a short-acting bronchodilator
forced expiratory volume in 6 seconds (FEV6) before and after the patient inhales a short-acting bronchodilator
FVC before and after the patient inhales a short-acting bronchodilator
FEV1 /FVC before and after the patient inhales a short-acting bronchodilator

Decidable	Vocab
Executable	Vocab

Evidence Quality:

Strength of Recommendation:

Reason: These measurements help to determine whether there is airflow obstruction, its severity, and whether it is reversible over the short term (Bye et al. 1992; Li and O'Connell 1996). (See box 3–2 for further information.) Patients' perception of airflow obstruction is highly variable, and spirometry sometimes reveals obstruction much more severe than would have been estimated from the history and physical examination.

Logic:

Conditional: The Expert Panel recommends that office-based physicians who care for asthma patients should have access to spirometry, which is useful in both diagnosis and periodic monitoring. Spirometry should be performed using equipment and techniques that meet standards developed by the ATS {Rec_32: Cond_44 }

IF
office-based physicians who care for asthma patients
THEN
have access to spirometry

Decidable	Vocab
Executable	Vocab

Evidence Quality:

Strength of Recommendation:

Reason:

Logic:

Conditional: The Expert Panel recommends that when office spirometry shows severe abnormalities, or if questions arise regarding test accuracy or interpretation, further assessment should be performed in a specialized pulmonary function laboratory
{Rec_32: Cond_45 }

IF
office spirometry shows severe abnormalities
questions arise regarding test accuracy or interpretation
THEN
urther assessment should be performed in a specialized pulmonary function laboratory

Decidable	Vocab
Executable	Vocab

Evidence Quality:

Strength of Recommendation:

Reason:

Logic:

Recommendation

CLASSIFY ASTHMA SEVERITY

Imperative: The Expert Panel recommends that clinicians classify asthma severity by using the domains of current impairment and future risk (Evidence B—secondary analyses of clinical trials, and Evidence C—observational studies, for assessing impairment; Evidence C, for distinguishing intermittent versus persistent asthma by risk of exacerbations; Evidence D, for distinguishing different categories of persistent asthma by varying frequencies of exacerbations).

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

classify asthma severity by using the domains of current impairment and future risk

Executable	Vocab

Evidence Quality:

(Evidence B—secondary analyses of clinical trials, and Evidence C—observational studies, for assessing impairment; Evidence C, for distinguishing intermittent versus persistent asthma by risk of exacerbations; Evidence D, for distinguishing different categories of persistent asthma by varying frequencies of exacerbations)

Strength of Recommendation:

recommends

Reason:

Logic:

Imperative: Assessment of severity requires assessing the following components of current impairment: Symptoms — Nighttime awakenings — Need for SABA for quick relief of symptoms — Work/school days missed — Ability to engage in normal daily activities or in desired activities — Quality-of-life assessments Lung function, measured by spirometry: FEV1, FVC (or FEV6), FEV1/FVC (or FEV6 in adults).

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

ASSESS: Nighttime awakenings

ASSESS: Need for SABA for quick relief of symptoms

ASSESS: Work/school days missed

ASSESS: Ability to engage in normal daily activities or in desired activities

ASSESS: Quality-of-life

Executable	Vocab

Evidence Quality:

Strength of Recommendation:

Reason:

Logic:

Recommendation

MEASURES FOR PERIODIC ASSESSMENT AND MONITORING OF ASTHMA CONTROL

Imperative: The Expert Panel recommends that ongoing monitoring of asthma control be performed to determine whether all the goals of therapy are met—that is, reducing both impairment and risk (Evidence B); see figures 3–5 a, b, and c for assessing asthma control for different age groups

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

Monitor asthma control

Executable	Vocab

Evidence Quality: Evidence B

Strength of Recommendation: recommends

Reason: to determine whether all the goals of therapy are met—that is, reducing both impairment and risk

Logic:

Imperative: The Expert Panel recommends that the frequency of visits to a clinician for review of asthma control is a matter of clinical judgment; in general, patients who have intermittent or mild persistent asthma that has been under control for at least 3 months should be seen by a clinician about every 6 months, and patients who have uncontrolled and/or severe persistent asthma and those who need additional supervision to help them follow their treatment plan need to be seen more often

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

Monitor asthma control

Executable	Vocab

Evidence Quality: The assessment measures for control monitor six areas described in this section and are recommended based on the opinion of the Expert Panel and review of the scientific literature.

Strength of Recommendation: recommends

Reason:

Logic:

Recommendation

Monitoring Signs and Symptoms of Asthma

Conditional: The Expert Panel recommends the following: If peak flow monitoring is performed, the written asthma action plan should use the patient's personal best peak flow as the reference value {Rec_35: Cond_46 }

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IF
peak flow monitoring is performed,

THEN
the written asthma action plan should use the patient's
personal best peak flow as the reference value

Decidable	Vocab
Executable	Vocab

Evidence Quality:

**Strength of
Recommendation:**

Reason:

Logic:

Imperative: The Expert Panel recommends that every patient who has asthma should be taught to recognize symptom patterns that indicate inadequate asthma control (Evidence A) (See also "Component 2: Education for a Partnership in Asthma Care."). Either symptom and/or PEF monitoring should be used as a means to determine the need for intervention, including additional medication, in the context of a written asthma action plan.

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

Teach patients to recognize symptom patterns that indicate inadequate asthma control

Executable	Vocab

Evidence Quality: Evidence A

**Strength of
Recommendation:** recommends

Reason:

Logic:

Imperative: The Expert Panel recommends that symptoms and clinical signs of asthma should be assessed at each health care visit through physical examination and appropriate questions

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

Executable	Vocab
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Assess symptoms and clinical signs of asthma at each health care visit

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Evidence Quality:

Strength of Recommendation: recommends

Reason:

Logic:

Imperative: The Expert Panel recommends that the detailed symptoms history should be based on a short (2–4 weeks) recall period

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Base detailed symptom history on a short (2-4 week) recall period

Executable	Vocab
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Evidence Quality:

Strength of Recommendation: recommends

Reason: Patients' detailed recall of symptoms decreases over time; therefore, the clinician may choose to assess over a 2-week, 3-week, or 4-week recall period.

Logic:

Imperative: The Expert Panel recommends that assessment of the patient's symptom history should include at least four key symptom expressions

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Assess: Daytime asthma symptoms (including wheezing, cough, chest tightness, or shortness of breath)

Assess: Nocturnal awakening as a result of asthma symptoms

Assess: Frequency of use of SABA for relief of symptoms

Assess: Inability or difficulty performing normal activities (including exercise) because of asthma symptoms

Executable	Vocab
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Evidence Quality: Evidence B, extrapolation from clinical trials; and Evidence C, from observational studies

Strength of Recommendation: recommends

Reason:

Logic:

Imperative: The Expert Panel recommends that, in addition to assessing symptoms, it is also important to assess pulmonary function periodically (Evidence B, extrapolation from clinical trials; and Evidence C, from observational studies).

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

assess pulmonary function periodically

Executable	Vocab

Evidence Quality: Evidence B, extrapolation from clinical trials; and Evidence C, from observational studies

Strength of Recommendation: recommends

Reason:

Logic:

Imperative: The Expert Panel recommends the following frequencies for spirometry measurements: (1) at the time of initial assessment (Evidence C); (2) after treatment is initiated and symptoms and PEF have stabilized, to document attainment of (near) “normal” airway function; (3) during a period of progressive or prolonged loss of asthma control; and (4) at least every 1–2 years to assess the maintenance of airway function (Evidence B, extrapolation from clinical trials). Spirometry may be indicated more often than every 1–2 years, depending on the clinical severity and response to management (Evidence D). These spirometry measures should be followed over the patient’s lifetime to detect potential for decline and rate of decline of pulmonary function over time (Evidence C).

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Executable	Vocab

Perform spirometry: at the time of initial assessment (Evidence C)

Perform spirometry: after treatment is initiated and symptoms and PEF have stabilized, to document attainment of (near) “normal” airway function;

Perform spirometry: during a period of progressive or prolonged loss of asthma control;

Perform spirometry: at least every 1–2 years to assess the maintenance of airway function (Evidence B, extrapolation from clinical trials)

Evidence Quality: Evidence D

Strength of Recommendation: recommends

Reason:

Logic:

Imperative: Consider long-term daily peak flow monitoring for: — Patients who have moderate or severe persistent asthma (Evidence B). — Patients who have a history of severe exacerbations (Evidence B). — Patients who poorly perceive airflow obstruction and worsening asthma (Evidence D). — Patients who prefer this monitoring method (Evidence D).

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Consider long-term daily peak flow monitoring for: Patients who have moderate or severe persistent asthma (Evidence B)

Consider long-term daily peak flow monitoring for: Patients who have a history of severe exacerbations (Evidence B).

Consider long-term daily peak flow monitoring for: Patients who poorly perceive airflow obstruction and worsening asthma (Evidence D). —

Consider long-term daily peak flow monitoring for: Patients who prefer this monitoring method (Evidence D).

Executable	Vocab

Evidence Quality: B-D

Strength of Recommendation: consider

Reason:

Logic:

Imperative: Provide to all patients a written asthma action plan that includes daily treatment and recognizing and handling worsening asthma, including self-adjustment of medications in response to acute symptoms or changes in PEF measures. Written action plans are particularly recommended for patients who have moderate or severe persistent asthma, a history of severe exacerbations, or poorly controlled asthma (Evidence B)

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

Provide to all patients a written asthma action plan

Executable	Vocab

Evidence Quality: (Evidence B)

Strength of Recommendation: recommends

Reason:

Logic:

Imperative: The Expert Panel recommends that several key areas of quality of life and related loss of physical function should be assessed periodically for each person who has asthma (Evidence C). These include: Any work or school missed because of asthma Any reduction in usual activities (either home/work/school or recreation/exercise) Any disturbances in sleep due to asthma Any change in caregivers' activities due to a child's asthma (for caregivers of children who have asthma)

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

Assess periodically: Any work or school missed because of asthma

Assess periodically: Any reduction in usual activities (either home/work/school or recreation/exercise)

Assess periodically: Any disturbances in sleep due to asthma

Assess periodically: Any change in caregivers' activities due to a child's asthma (for caregivers of children who have asthma)

Executable	Vocab

Evidence Quality: Evidence C
Strength of Recommendation: recommends
Reason:
Logic:

Imperative: The Expert Panel recommends that, during periodic assessments, clinicians should question the patient and evaluate any records of patient self-monitoring (figure 3–7) to detect exacerbations, both those that are self-treated and those treated by other health care providers (Evidence C).

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

Inquire and evaluate: records of patient self-monitoring (figure 3–7) to detect exacerbations,

Executable	Vocab

Evidence Quality: Evidence C
Strength of Recommendation: recommends
Reason:
Logic:

Imperative: The Expert Panel recommends monitoring the following factors at each visit: patient’s adherence to the regimen, inhaler technique, and side effects of medications (Evidence C)

IF

Inclusion Criterion:
Exclusion Criterion:

THEN

Monitor at each visit: patient’s adherence to the regimen
 Monitor at each visit: inhaler technique,
 Monitor at each visit: side effects of medications

Executable	Vocab

Evidence Quality: Evidence C
Strength of Recommendation: recommends

Reason:

Logic:

Imperative: The Expert Panel recommends that health care providers should routinely assess the effectiveness of patient–clinician communication (Evidence D).

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

routinely assess the effectiveness of patient–clinician communication

Executable	Vocab

Evidence Quality: Evidence D

Strength of Recommendation: recommends

Reason:

Logic:

Imperative: The Expert Panel recommends that two aspects of patient satisfaction should be monitored: satisfaction with asthma control and satisfaction with the quality of care (Evidence D)

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Monitor: satisfaction with asthma control
Monitor: satisfaction with the quality of care

Executable	Vocab

Evidence Quality: Evidence D

Strength of Recommendation: recommends

Reason:

Logic:

Recommendation

Referral to an Asthma Specialist for Consultation or Comanagement

Conditional: The Expert Panel recommends referral for consultation or care to a specialist in asthma care (usually, a fellowship-trained allergist or pulmonologist; occasionally, other physicians who have expertise in asthma management, developed through additional training and experience) when (Evidence D): Patient has had a life-threatening asthma exacerbation. Patient is not meeting the goals of asthma therapy after 3–6 months of treatment. An earlier referral or consultation is appropriate if the physician concludes that the patient is unresponsive to therapy. Signs and symptoms are atypical, or there are problems in differential diagnosis. Other conditions complicate asthma or its diagnosis (e.g., sinusitis, nasal polyps, aspergillosis, severe rhinitis, VCD, GERD, COPD). Additional diagnostic testing is indicated (e.g., allergy skin testing, rhinoscopy, complete pulmonary function studies, provocative challenge, bronchoscopy). Patient requires additional education and guidance on complications of therapy, problems with adherence, or allergen avoidance. Patient is being considered for immunotherapy. Patient requires step 4 care or higher (step 3 for children 0–4 years of age). Consider referral if patient requires step 3 care (step 2 for children 0–4 years of age). Patient has required more than two bursts of oral corticosteroids in 1 year or has an exacerbation requiring hospitalization. Patient requires confirmation of a history that suggests that an occupational or environmental inhalant or ingested substance is provoking or contributing to asthma. Depending on the complexities of diagnosis, treatment, or the intervention required in the work environment, it may be appropriate in some cases for the specialist to manage the patient over a period of time or to comanage with the PCP. In addition, patients who have significant psychiatric, psychosocial, or family problems that interfere with their asthma therapy may need referral to an appropriate mental health professional for counseling or treatment. {Rec_36: Cond_47 }

IF

Patient has had a life-threatening asthma exacerbation
 Patient is not meeting the goals of asthma therapy after 3–6 months of treatment. An earlier referral or consultation is appropriate if the physician concludes that the patient is unresponsive to therapy.
 Signs and symptoms are atypical, or there are problems in differential diagnosis.
 Other conditions complicate asthma or its diagnosis (e.g., sinusitis, nasal polyps, aspergillosis, severe rhinitis, VCD,

Decidable	Vocab

GERD, COPD)

Additional diagnostic testing is indicated (e.g., allergy skin testing, rhinoscopy, complete pulmonary function studies, provocative challenge, bronchoscopy)

--	--

Patient requires additional education and guidance on complications of therapy, problems with adherence, or allergen avoidance.

--	--

Patient is being considered for immunotherapy.

--	--

Patient requires step 4 care or higher (step 3 for children 0–4 years of age).

--	--

Consider referral if patient requires step 3 care (step 2 for children 0–4 years of age)

--	--

Patient has required more than two bursts of oral corticosteroids in 1 year or has an exacerbation requiring hospitalization.

--	--

Patient requires confirmation of a history that suggests that an occupational or environmental inhalant or ingested substance is provoking or contributing to asthma.

--	--

patients who have significant psychiatric, psychosocial, or family problems that interfere with their asthma therapy

--	--

THEN

Executable	Vocab
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referral for consultation or care to a specialist in asthma care

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Evidence Quality:

Evidence D

Strength of Recommendation:

recommends

Reason:

Logic:

Imperative: r

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Executable	Vocab
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Evidence Quality:

Strength of Recommendation:

Reason:

Logic:

Recommendation

COST-EFFECTIVENESS

Imperative: The Expert Panel recommends that asthma self-management education that is provided by trained health professionals be considered for policies and reimbursements as an integral part of effective asthma care; the education improves patient outcomes (Evidence A) and can be cost-effective (Evidence B).

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Executable	Vocab

Evidence Quality:

Strength of Recommendation:

Reason:

Logic:

Recommendation

Clinical Decision Supports

Imperative: The Expert Panel recommends that: Prompts encouraging guideline-based care be integrated into system-based interventions focused on improving the overall quality of care rather than used as a single intervention strategy

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Executable	Vocab

Evidence Quality: Evidence B

Strength of Recommendation: recommends

Reason:

Logic:

Imperative: System-based interventions that address multiple dimensions of the organization and delivery of care and clinical decision support be considered to improve and maintain quality of care for patients who have asthma

IF

Inclusion Criterion:

Exclusion Criterion:

THEN

Executable	Vocab

Evidence Quality: Evidence B and C

Strength of Recommendation: recommends

Reason:

Logic: