VERSION 2.0

ABOUT THE HANDBOOK

This PDF is a print-friendly reproduction of the content included in the About the Handbook section of the Australian Asthma Handbook at asthmahandbook.org.au/about

Please note the content of this PDF reflects the Australian Asthma Handbook at publication of Version 2.0 (March 2019). For the most up-to-date content, please visit asthmahandbook.org.au

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ABBREVIATIONS

CFC chlorofluorocarbon
COPD chronic obstructive pulmonary disease
COX cyclo-oxygenase
DXA dual-energy X-ray absorptiometry
ED emergency department
EIB exercise-induced bronchoconstriction
FEV₁ forced expiratory volume over one second
FEV₆ forced expiratory volume over six seconds
FSANZ Food Standards Australia and New Zealand
FVC forced vital capacity
GORD gastro-oesophageal reflux disease
HFA formulated with hydrofluoroalkane propellant
ICS inhaled corticosteroid
ICU intensive care unit
IgE Immunoglobulin E
IL interleukin
IU international units
IV intravenous
LABA long-acting beta₂-adrenergic receptor agonist
LAMA long-acting muscarinic antagonist
LTRA leukotriene receptor antagonist
MBS Medical Benefits Scheme
NHMRC National Health and Medical Research Council
NIPPV non-invasive positive pressure ventilation
NSAIDs nonsteroidal anti-inflammatory drugs
OCS oral corticosteroids
OSA obstructive sleep apnoea
PaCO carbon dioxide partial pressure on blood gas analysis
PaO₂ oxygen partial pressure on blood gas analysis
PBS Pharmaceutical Benefits Scheme
PEF peak expiratory flow
pMDI pressurised metered-dose inhaler or 'puffer'
PPE personal protective equipment
SABA short-acting beta₂-adrenergic receptor agonist
SAMÀ short-acting muscarinic antagonist
SaO₂ oxygen saturation
SpO₂ peripheral capillary oxygen saturation measured by pulse oximetry
TGA Therapeutic Goods Administration

RECOMMENDED CITATION


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DISCLAIMER

The Australian Asthma Handbook has been compiled by the National Asthma Council Australia for use by general practitioners, pharmacists, asthma educators, nurses and other health professionals and healthcare students. The information and treatment protocols contained in the Australian Asthma Handbook are based on current evidence and medical knowledge and practice as at the date of publication and to the best of our knowledge. Although reasonable care has been taken in the preparation of the Australian Asthma Handbook, the National Asthma Council Australia makes no representation or warranty as to the accuracy, completeness, currency or reliability of its contents.

The information and treatment protocols contained in the Australian Asthma Handbook are intended as a general guide only and are not intended to avoid the necessity for the individual examination and assessment of appropriate courses of treatment on a case-by-case basis. To the maximum extent permitted by law, acknowledging that provisions of the Australia Consumer Law may have application and cannot be excluded, the National Asthma Council Australia, and its employees, directors, officers, agents and affiliates exclude liability (including but not limited to liability for any loss, damage or personal injury resulting from negligence) which may arise from use of the Australian Asthma Handbook or from treating asthma according to the guidelines therein.
About the Handbook

Overview

The Australian Asthma Handbook is Australia's national guidelines for asthma management. It provides evidence-based, practical guidance for health professionals diagnosing and managing asthma in adults and children in primary care.

The Handbook is proudly published by Australia's lead authority on asthma, the National Asthma Council Australia.

First published in 1990, initially as the Asthma Management Plan and then as the Asthma Management Handbook, the Handbook was one of the first Australian guidelines addressing the diagnosis and management of a chronic condition. Throughout its eight editions, the Handbook has set the standard for best-practice asthma management in Australia by being comprehensive and user-friendly, and emphasising a team approach to asthma care. This edition continues the new name – the Australian Asthma Handbook – and the same commitment to practical advice for primary care health professionals.

Current version 2.0 was published in March 2019. Version 1.0 was published in March 2014, with minor updates published as version 1.1 (April 2015), version 1.2 (October 2016), and version 1.3 (December 2017).

Content considered during the development of version 2.0 is indicated by a Last reviewed version 2.0 note. This includes the addition of new recommendations, more information topics, tables and figures, as well as the revision of existing advice and information (with or without amendments). Content without a Last reviewed note was added and/or revised during development of versions 1.0–1.3.

In this section

<table>
<thead>
<tr>
<th>Publication information</th>
<th>Recommended citation, copyright and permissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><a href="http://www.asthmahandbook.org.au/about/publication">http://www.asthmahandbook.org.au/about/publication</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preface</th>
<th>A welcome and introduction from the Chair of the Guidelines Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><a href="http://www.asthmahandbook.org.au/about/preface">http://www.asthmahandbook.org.au/about/preface</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Acknowledgements</th>
<th>Contributors, sponsors and endorsing bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><a href="http://www.asthmahandbook.org.au/about/acknowledgements">http://www.asthmahandbook.org.au/about/acknowledgements</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aims and scope</th>
<th>Objectives and scope of the Handbook, including target populations and intended users</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><a href="http://www.asthmahandbook.org.au/about/aims-and-scope">http://www.asthmahandbook.org.au/about/aims-and-scope</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Details of how the Handbook was developed, including systematic review materials and editorial independence statements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><a href="http://www.asthmahandbook.org.au/about/methodology">http://www.asthmahandbook.org.au/about/methodology</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Editions and updates</th>
<th>Summary of key clinical changes and clarifications for each version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><a href="http://www.asthmahandbook.org.au/about/updates">http://www.asthmahandbook.org.au/about/updates</a></td>
</tr>
</tbody>
</table>
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This publication is a new edition of the handbook on asthma management for health professionals published by the National Asthma Council Australia. Previous publications were:

*Asthma Management Plan*, 1990, National Asthma Campaign

*Asthma Management Handbook* 1993, National Asthma Campaign

*Asthma Management Handbook* 1996, National Asthma Campaign

*Asthma Management Handbook* 1998, National Asthma Campaign

*Asthma Management Handbook* 2002, National Asthma Council

*Asthma Management Handbook* 2006, National Asthma Council Australia

*Australian Asthma Handbook* v1.0, 2014, National Asthma Council Australia

*Australian Asthma Handbook* v1.1, 2015, National Asthma Council Australia

*Australian Asthma Handbook* v1.2, 2016, National Asthma Council Australia

*Australian Asthma Handbook* v1.3, 2017, National Asthma Council Australia

A handbook for pharmacists, the *Pharmacists’ Asthma Management Handbook*, was also published in 1994.
Preface

This eighth edition of the clinical treatment guidelines for asthma, the Australian Asthma Handbook v2.0, formerly the Asthma Management Handbook, is a purpose-built, fully searchable website rather than a printed document, and still provides downloadable and accessible print-friendly alternatives.

The Australian Asthma Handbook provides evidence-based practical guidance to primary care health professionals on the diagnosis and management of asthma in adults and children, and provides a benchmark for the standard of care for people with asthma.

This online format is designed to enable more frequent updates to the Handbook so that it remains at the forefront of asthma management, nationally and internationally. As such, minor updates were published as Version 1.1 in April 2015, Version 1.2 in October 2016, and Version 1.3 in December 2017.

Version 2.0 is the first major update since 2014 and it covers updates in information and advice in the diagnosis and management of paediatric asthma, and new recommendations in acute asthma, severe asthma, and primary prevention. It still holds to the previous editions’ commitment to providing practical advice for primary health care practitioners to support them in providing the best possible care for people with asthma.

The latest edition of the Handbook was informed by ongoing consultation with primary care health professionals and developed with a wide multidisciplinary network of honorary contributors. Led by the multidisciplinary Guidelines Committee, these contributors consisted of five topic Working Groups and numerous individual consultants, reviewers, expert readers and website user testers. Overall this Handbook revision involved more than 50 experts from general practice, nursing, pharmacy, asthma education, respiratory medicine and science, allergy, emergency medicine, and scientific research.

Many thanks go to my fellow Guidelines Committee members, the topic Working Groups and other honorary contributors, the dedicated National Asthma Council Australia staff and medical writer, and to all our supporters who have worked unstintingly to give Australia such excellent, relevant and practical asthma guidelines.

Professor Amanda Barnard
Chair
Guidelines Committee

February 2019
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# People

## In this section

- Guidelines Committee
- Secretariat
- Reviewers
- Working groups
## Guidelines Committee members

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Membership Start</th>
<th>Biography</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Founding member</td>
<td>Professor Amanda Barnard is Associate Dean, Rural Clinical School and Indigenous Health at the Australian National University Medical School. Amanda has practiced as a General Practitioner in both rural and urban areas, and currently continues her clinical work in Braidwood, a small town in NSW. She has a long term interest in asthma and respiratory disease in primary care, being a foundation member of the General Practitioners in Asthma Group of the National Asthma Council Australia. She has written and researched in the area, and is currently a member of the National Monitoring of Asthma and Other Chronic Respiratory Conditions Advisory Group and the General Practice Advisory Group of the Lung Foundation Australia. An awarded teacher and educator, Amanda currently serves on a number of state and national bodies with education, training, rural workforce and health system briefs, and tries to bring a rigorous primary care perspective to her work on them.</td>
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<td><strong>Dr Ian Almond</strong></td>
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<td>Member since 2017</td>
<td>Dr Ian Almond is a General Practitioner based near Hobart, Tasmania. Ian qualified at the Middlesex Hospital in London, served in the British Army, and worked in general practice, screening medicine and occupational health before moving to Tasmania in 2004. Ian was a Board member for the Asthma Foundation of Tasmania for 8 years, has been a part-time respiratory Research Fellow at the Menzies Institute for Medical Research, and is an active member of the state RACGP Board and examiner. He has supervised OTDs and registrars. Ian is a life member of the RCGP in the UK.</td>
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<td><strong>Ms Naomi Fenton</strong></td>
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<td>Ms Naomi Fenton is a Registered Nurse and endorsed Nurse Practitioner currently employed in the public and private sectors. Naomi’s scope of practice includes respiratory and allergy nursing. Naomi has post registration and post graduate qualifications and clinical experience in a variety of specialty nursing fields. Naomi works across the acute, outpatient and community settings and has a strong commitment to evidence-based practice and care delivery across the sectors and settings. Naomi is dedicated to health promotion in her local community in line with her scope of practice.</td>
</tr>
</tbody>
</table>

**Statement of interest**

- **Professor Amanda Barnard**: I have been a member of the Lung Foundation Australia GP Advisory Group, Education Sub-committee Member for IPCRG and Mild Asthma Advisory Board member for AstraZeneca.
- **Dr Ian Almond**: I have no conflicts of interest to declare.
- **Ms Naomi Fenton**: I have attended meetings funded by AstraZeneca.
Dr Jenny Gowan
Accredited pharmacist
Founding member

Dr Jenny Gowan, a practicing pharmacist, is a Teaching Associate in the Faculty of Pharmacy and Pharmaceutical Sciences, Monash University. She is a member of the Expert Group for Therapeutic Guidelines, Respiratory, and an Editorial Board Member of the AUS-DI Australian Drug Information and SHPA 'Don't Rush to Crush' publications. She is an accredited consultant pharmacist, and conducts her own company focussing on medication reviews in the home and Aged Care Facilities, plus education, training and consultation. Jenny has published over 350 papers and educational articles, and enjoys working in a multidisciplinary environment with general practitioners, nurses, pharmacists and allied health professionals. In 2013 she was awarded the Australian Pharmacist of the Year gold medal by the Pharmaceutical Society of Australia and in 2016 the AACP-MIMs Australian Consultant Pharmacist of the Year.

Statement of interest
I have attended an advisory meeting funded by AstraZeneca. I have done lectures for Teva.

Professor Adam Jaffé
Paediatric respiratory physician
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Professor Adam Jaffé BSc (Hons) MBBS MD FRCP FRCPCH FRACP FThorSoc is the John Beveridge Professor of Paediatrics, Head, School of Women's and Children's Health at UNSW and Associate Director of Research for the Sydney Children's Hospitals Network (Randwick). He is also a Paediatric Respiratory Consultant at the Sydney Children's Hospital, Randwick. Professor Jaffé was appointed to Consultant in Respiratory Research at Great Ormond Street Hospital for Children, London and headed up Respiratory Medicine Research at the Institute of Child Health London before moving to Sydney in 2006. His interests lie in the areas of asthma, cystic fibrosis, childhood respiratory infections and rare "orphan" lung diseases. His research career centres around translational research specifically aimed at improving child health outcomes. Professor Jaffé has published in excess of 170 peer reviewed publications and 18 book chapters, and has been associated with more than $12 million in grant awards including 2 current NHMRC grants as Chief Investigator.

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I have attended meetings sponsored by GlaxoSmithKline.

Professor Helen Reddel
Adult respiratory physician
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Professor Helen Reddel is a respiratory physician primarily working in primary care research and guidelines relating to asthma and COPD. Prof. Reddel is a Research Leader at the Woolcock Institute of Medical Research at University of Sydney, Chair of the Science Committee of the Global Initiative for Asthma (GINA), and Clinical Adviser for the Australian Centre for Airways disease Monitoring (ACAM). Prof. Reddel's current research focusses on practical strategies to improve the management of asthma and COPD through better guidelines, diagnosis, assessment, prescribing, adherence and inhaler technique; collaborative approaches to the management of airways disease with pharmacists, practice nurses and general practitioners; and population level monitoring of asthma and COPD. Prof. Reddel has a strong focus on the patient perspective and on improving communication between patients and health professionals. She has been closely involved in major revisions of Australian and international asthma guidelines.

Statement of interest
I have provided independent expert advice on advisory/data safety monitoring boards for AstraZeneca, GlaxoSmithKline, Merck, Novartis, Boehringer-Ingelheim and Sanofi Genzyme. I am a member of AstraZeneca's steering committee for clinician-initiated pharma-funded research study. I have consulted for AstraZeneca and GlaxoSmithKline. I have provided independent medical education for AstraZeneca, GlaxoSmithKline, Novartis, Boehringer-Ingelheim, Teva and Mundipharma. I have attended meetings funded by AstraZeneca, GlaxoSmithKline, Novartis, Boehringer-Ingelheim and Teva. I have received grants for investigator-sponsored research from AstraZeneca and GlaxoSmithKline.
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**Special acknowledgement: Professor Peter van Asperen**

Professor Peter van Asperen was a founding member of the Guidelines Committee, providing the paediatric respiratory physician perspective for Versions 1.0 and 1.1. He also co-chaired the paediatric working group alongside Professor Adam Jaffé.

Professor van Asperen was a highly respected paediatric respiratory physician who had a long relationship with the National Asthma Council Australia as a trusted colleague and advisor for more than 20 years. He was Macintosh Professor of Paediatric Respiratory Medicine & Acting Associate Dean, The Children's Hospital at Westmead (CHW) Clinical School, Sydney Medical School, University of Sydney and Senior Staff Respiratory Physician in the Department of Respiratory Medicine at CHW. He had an active clinical and research interest in childhood asthma and children with recurrent and persistent cough. He published over 160 papers as well as two books for families of children and young people with asthma. He was on the Board of the Asthma Foundation of NSW from 2002–2010. He was
Professor van Asperen passed away in 2015. Alongside his clinical acumen, Peter’s kindness and generosity will be long remembered, as well as his commitment to education, mentoring and good medicine. Indeed, he insisted on being involved in the Handbook version 1.1 update despite his own health situation. We are indebted to him for his contribution.

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- Version 1.0
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Endorsement

The Australian Asthma Handbook is endorsed by:

The Australian Primary Health Care Nurses Association (APNA)

The Pharmaceutical Society of Australia (PSA)

The Royal Australian College of General Practitioners (RACGP)

The Society of Hospital Pharmacists of Australia (SHPA)
Aims and scope

Objectives

The Australian Asthma Handbook aims to improve health outcomes and quality of life for people with asthma by providing clear guidance for the health professionals involved in their care. It gives evidence-based, practical guidance to primary care health professionals on the most effective strategies in the diagnosis and management of asthma in adults and children.

The Handbook informs clinical decisions using a patient-centred approach and establishes a benchmark for the standard of care for people with asthma.

Scope

The Australian Asthma Handbook includes all aspects of the diagnosis and management of asthma within a primary care chronic disease management framework, with a particular emphasis on practicality and accessibility.

While specific advice is provided on identifying high risk and difficult-to-treat asthma, including referral criteria, advice on the management of asthma in specialist settings is outside the scope of the Handbook.

Guidance is provided on the management of asthma and comorbid conditions with an emphasis on differential diagnosis, interaction or overlap with asthma, and specific asthma management considerations. Users are directed to the current national treatment guidelines for the comorbid condition where possible.

Recognising the limited access to high-level acute care services for immediate treatment of patients with acute asthma, particularly in rural and remote areas, the Handbook also includes guidance on acute asthma management applicable to a range of clinical settings.

Target populations

The Handbook’s target population is all people with asthma or suspected asthma, regardless of age. Special considerations are included for certain populations, such as:

- adolescents
- pregnant women
- older adults
- Aboriginal and Torres Strait Islander peoples
- people from culturally and linguistically diverse backgrounds.

Advice is also provided on managing wheezing in young children where the diagnosis of asthma is uncertain.

Intended users

The Handbook has been developed for use by Australian:

- general practitioners
- community pharmacists
- asthma and respiratory educators
- primary healthcare/practice nurses
- Aboriginal and Torres Strait Islander health workers and practitioners.

The Handbook is also intended as a practical reference for other related health professionals who may treat people with asthma occasionally. These include health professionals working in acute care settings, specialists from non-respiratory disciplines, and clinicians with an interest in comorbid conditions.

Healthcare administrators, and healthcare students, are also encouraged to use the Handbook as their guide to current best-practice asthma care in Australia.
Methodology

Overview

Development of each major edition of the Australian Asthma Handbook involves:

- seeking advice on a sound methodological but practical framework for gathering evidence
- surveying intended readers to identify topics on which readers need guidance and gauge preferences on usability and format
- identifying areas in the previous edition that had become outdated
- setting the scope in the form of a comprehensive set of clinical questions
- stratifying the clinical questions according to clinical relevance, relevant existing evidence or guidance, and the degree to which amenable to structured evidence synthesis
- collecting evidence to answer the clinical questions using a range of methods suitable for the status and type of clinical question
- formulating recommendations and drafting supporting commentary through topic working groups
- ensuring consistency across all topics through Guideline Committee deliberation
- soliciting review by invited independent expert reviewers and interest groups
- finalising the Handbook in consideration of the review feedback.

In this section

- Framework
- Roles and responsibilities
- Scoping and review
- Developing recommendations
- Supporting materials
- Review and finalisation

Developing Version 1
Considerations and additional stages in the development of Version 1.0
http://www.asthmahandbook.org.au/about/methodology/developing-version-1

Developing Versions 1.1-1.3
Considerations and timelines for development of the minor updates versions 1.1, 1.2 and 1.3
http://www.asthmahandbook.org.au/about/methodology/developing-versions-1-1-3

Developing Version 2
Considerations for the development of Version 2.0

Editorial independence
Maintenance of editorial independence during development of the Handbook, including processes used to manage potential conflicts of
interest

http://www.asthmahandbook.org.au/about/methodology/editorial-independence
Framework

Overall approach

The Australian Asthma Handbook is recognised as the national treatment guidelines for asthma and has been published by the National Asthma Council Australia since 1990. As experienced guideline developers, we follow current best practice in guideline development methodology, taking into account our target users’ needs and expectations, our contributors’ capabilities and availability, and our organisation’s limited resources. We use the Appraisal of Guidelines for Research and Evaluation (AGREE II) instrument as a benchmark for our guideline development process and reporting.1 We also refer to the NHMRC standards for clinical practice guidelines,2 including the NHMRC system for grading evidence-based recommendations.3

Guiding principles

Multidisciplinary contributor and user involvement

We have a multidisciplinary approach in developing the Australian Asthma Handbook to ensure the advice remains relevant and implementable by the target users.

Effective asthma management involves the whole primary care team, working with the person and also their family or carer where appropriate. Therefore, the whole primary care team is represented in the multidisciplinary working groups and overarching Guidelines Committee, which is chaired by a general practitioner. The needs of target users from a range of disciplines are canvassed in the initial user survey for each edition.

Patient-centred approach

We recognise that each person with asthma has a unique set of medical, psychosocial and cultural factors that may influence their health outcomes. We provide advice within the established primary care chronic disease management framework with an holistic approach to treatment and self-management considerations.

Structured and transparent methodology

We use a structured and transparent methodology to formulate the advice. The recommendations are developed using standardised methods, including structured literature review, consideration of selected evidence, adaptation of existing guidance, and consensus based on best-available evidence and clinical experience.

We implemented an icon system throughout the Handbook to indicate the method used to develop each recommendation. Clicking on the icon reveals more detail on the type and scope of evidence considered, where relevant, and links through to the cited references.

Focus on clear and practical advice

Consideration of the practicality and accessibility of the recommendations was fundamental to the development of the Handbook. For example, all referral advice takes into account access and gives alternatives, all use of devices gives options for practices without those devices and all medicines not reimbursed by the PBS are explicitly flagged. This is supported by the use of plain language for all recommendations and supporting materials.

The Handbook includes a wide range of recommendations relevant to primary care health professionals. To facilitate implementation of the guidelines into everyday clinical practice, the key recommendations are summarised as as practical figures: flow-charts for diagnosis, stepped ziggurats for management and treatment algorithms for acute asthma.

Optimisation for online publication

Publishing the full Australian Asthma Handbook as a purpose-built website rather than a printed document allowed us to exploit the advantages of online publishing, such as providing active cross-references and avoiding unnecessary overlap or repetition. The most important information (the recommendations) is the most prominent, underpinned by supporting materials at deeper layers. Hyperlinks to cited references and external resources are provided wherever possible.

A modular approach means that the same recommendation, figure, table or more information topic can appear consistently on multiple relevant webpages.


Roles and responsibilities

Guidelines Committee

An honorary Guidelines Committee oversees the Handbook’s development. The Committee’s roles are:

- to guide development of the clinical questions that formed the scope of the handbook
- to identify clinical questions for systematic review
- to advise on the needs of target readers (mainly primary care health professionals)
- to advise on the composition and membership of the working groups
- to advise on research and interpretation of clinical evidence
- to guide the development of recommendations and commentary.

Working groups

For each major edition, we convened multidisciplinary working groups for specific topics. The working groups’ roles were:

- to review and finalise the clinical questions for their topic area
- to select high-priority clinical questions for structured literature searches
- to formulate recommendations
- (if group's topic included a systematic review) to synthesise evidence from systematic review, formulate evidence-based recommendations, and grade the recommendations
- to guide the secretariat in drafting commentary and review drafts.

For some topics, clinical expert consultants provided advice to the working group. For topics that involved a systematic review, a methodology consultant provided advice to the working group on evidence synthesis and the development of evidence-based recommendations.

The Guidelines Committee acted as the working group for topics that applied across the Handbook, such as the definition of asthma.

Expert reviewers

For each major edition, expert reviewers were engaged at both the beginning and end of the development process.

Preliminary review

Before development commenced, expert reviewers conducted a preliminary review of the previous edition to identify key areas for revision. Content expert reviewers assessed currency of the recommendations and information, while primary care health professionals assessed feasibility of implementation and gaps in the guidance.

Independent expert review

Independent expert reviewers were appointed to review the near-final draft. Their involvement was confirmed before commencement and they did not participate in the development process, so as to ensure that they could provide independent review.
Scoping and review

Prior to development of each version of the Australian Asthma Handbook, a scoping exercise is undertaken to determine the priority areas for revision or inclusion.

Scoping is led by the multidisciplinary Guidelines Committee. Additionally, for version 1.0 selected experts provided an assessment against the previous edition of the Handbook, the Asthma Management Handbook 2006.

Primary care experts advise on whether the section covered key clinical issues for primary care health professionals, and identify any gaps or areas in which more guidance is needed. Specialist experts advise on the currency of factual information and recommendations, and identify areas where there has been substantial changes in opinion and/or new evidence.

Before each major edition, a user survey is conducted to gain a broader understanding of the needs of the target audience, which includes general practitioners, practice nurses and pharmacists. Questions cover both clinical content and practical publication issues.
Developing recommendations

Evidence gathering

For each of the high-priority questions identified, the nominated researcher (medical writer or working group member) develops a search strategy and runs searches in PubMed.

The following standard limits are applied: English language, Humans, publication date 1990 (or last search date) –present, limited to systematic reviews, meta-analyses or randomised controlled trials. For aetiology clinical questions, publication type is extended to include cohort studies.

Search findings are summarised in a report to the working group, which identifies the reference, year, country, type of study (study design), intervention and comparator, population, study description, outcome measures, results and comments on study quality or conclusions.

If a high-quality systematic review (e.g. a Cochrane review) is published after the search but during guideline development, the working group considers whether it alters interpretation of the body of evidence on which a recommendation was based.

Recommendation development

Working groups develop recommendations according to a range of methods, depending on the category of clinical question:

- For ‘high-priority’ clinical questions for which structured literature searches are conducted, the working group develop recommendations based on this evidence.
- For clinical questions for which the working group has identified sufficient existing evidence and does not run formal literature searches, the working group adapts or adopts recommendations in existing guidelines, or formulates recommendations based on the findings of published systematic reviews.
- For clinical questions subject to structured literature searches or systematic review, but where insufficient evidence is identified, the working group develops consensus-based recommendations.
- For other clinical questions, the working group develops consensus recommendations.

Recommendations are revised over time by working group members in teleconferences and face-to-face meetings. Selected working group members check consistency between topic sections. All recommendations are reviewed by the Guidelines Committee.

An icon system is used throughout the Handbook to indicate the method used to develop each recommendation. The methodology details and, where relevant, key evidence considered for that recommendation is viewable by clicking the icon under the recommendation.

In this section

<table>
<thead>
<tr>
<th>Recommendation types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick guide to the recommendation type icons and their meanings</td>
</tr>
</tbody>
</table>

http://www.asthmahandbook.org.au/about/methodology/recommendations/types
## Recommendation types

<table>
<thead>
<tr>
<th>Icon</th>
<th>Type</th>
<th>Method</th>
</tr>
</thead>
</table>
| ![A]  | Evidence-based recommendation  
Grade A  
Body of evidence can be trusted to guide practice  
Grade B  
Body of evidence can be trusted to guide practice in most situations  
Grade C  
Body of evidence provides some support for recommendation but care should be taken in its application  
Grade D  
Body of evidence is weak and recommendation must be applied with caution | Systematic literature review  
Grading of recommendation according to National Health and Medical Research Council (NHMRC) grades A to D |
<p>| ![B]  | Based on selected evidence | Based on a literature review and formulated by multidisciplinary working group |
| ![C]  | Consensus recommendation following inconclusive literature search | Based on clinical experience and expert opinion after literature review yielded insufficient evidence for an evidence-based |</p>
<table>
<thead>
<tr>
<th>Icon</th>
<th>Version 1.0-1.3 (old)</th>
<th>Version 2.0 onwards</th>
<th>Type</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Icon" /></td>
<td><img src="image2" alt="Icon" /></td>
<td></td>
<td>Adapted from existing guidance</td>
<td>Based on reliable clinical practice guideline(s) or position statement(s)</td>
</tr>
<tr>
<td><img src="image3" alt="Icon" /></td>
<td><img src="image4" alt="Icon" /></td>
<td>Consensus recommendation (with reference to named sources)</td>
<td>Based on clinical experience and expert opinion (informed by evidence, where available), with particular reference to named source(s)</td>
<td></td>
</tr>
<tr>
<td><img src="image5" alt="Icon" /></td>
<td><img src="image6" alt="Icon" /></td>
<td>Consensus recommendation</td>
<td>Based on clinical experience and expert opinion (informed by evidence, where available)</td>
<td></td>
</tr>
</tbody>
</table>
Development of supporting materials

Overviews, figures and tables

An overview for each of the main sections is drafted to provide context for the section’s key advice. In addition, the key recommendations are summarised as practical figures: flow-charts for diagnosis, stepped ziggurats for management and treatment algorithms for acute asthma. These figures are developed by the working groups and also undergo close review by the Guidelines Committee before finalisation.

Where necessary, explanatory or supporting tables are drafted with the working group. Tables are also used to summarise key points and to highlight recommended actions for relevant clinical situations.

More information topics

Supporting commentary for the recommendations is drafted based on the key references. Each working group reviews the commentary several times during development. For topics that appear in more than one section, the most relevant working group takes primary responsibility for the drafts.

During review stages, each working group member provides comments on the drafts. The secretariat collates the comments. Where working group members’ suggested amendments are inconsistent, the working group reaches consensus by teleconference or polls conducted by email. Remaining issues are directed to the Guidelines Committee for a final decision.
Review and finalisation

Guidelines Committee review

In addition to monitoring development of content by working groups during the development process, the Guideline Committee reviews the full draft of the Handbook before each update is finalised.

The main remit of this review is to ensure consistency across sections, also noting gaps or unnecessary duplication, as well as checking all content section-by-section.

Stakeholder review

For each major edition, selected external stakeholder organisations are invited to review the draft Handbook and submit comment. The invitation includes log-in details for the Handbook website and a submission form. The stakeholders are given a month to review the Handbook and make their submission.

Around 25 organisations are invited to review. These include:

- National Asthma Council Australia member bodies
- Colleges/associations of relevant health professions
- Other stakeholder organisations including patient advocacy organisation Asthma Australia
- Pharmaceutical companies with a respiratory interest

Table. Stakeholder bodies invited to review the draft Handbook v2.0

<table>
<thead>
<tr>
<th>Member organisations and other health bodies:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma Australia</td>
</tr>
<tr>
<td>Asthma Foundation NT</td>
</tr>
<tr>
<td>Asthma WA</td>
</tr>
<tr>
<td>Australasian College of Emergency Medicine</td>
</tr>
<tr>
<td>Australasian Society of Clinical Immunology and Allergy</td>
</tr>
<tr>
<td>Australian and New Zealand Society of Respiratory Science</td>
</tr>
<tr>
<td>Australian College of Nursing</td>
</tr>
<tr>
<td>Australian College of Rural and Remote Medicine</td>
</tr>
<tr>
<td>Australian Primary Care Nurses Association</td>
</tr>
<tr>
<td>Centre of Excellence in Severe Asthma</td>
</tr>
<tr>
<td>Consumers Health Forum of Australia</td>
</tr>
<tr>
<td>Generic and Biosimilar Medicines Association</td>
</tr>
<tr>
<td>Lung Foundation Australia</td>
</tr>
<tr>
<td>Lung Health Research Centre</td>
</tr>
<tr>
<td>Medicines Australia</td>
</tr>
<tr>
<td>National Aboriginal Community Controlled Health Organisation</td>
</tr>
<tr>
<td>NPS MedicineWise</td>
</tr>
<tr>
<td>Pharmaceutical Society of Australia</td>
</tr>
<tr>
<td>Pharmacy Guild of Australia</td>
</tr>
<tr>
<td>Royal Australian College of General Practitioners</td>
</tr>
<tr>
<td>Society of Hospital Pharmacists Australia</td>
</tr>
<tr>
<td>Thoracic Society of Australia and New Zealand</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pharmaceutical companies:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Menarini Australia</td>
</tr>
<tr>
<td>AstraZeneca Australia</td>
</tr>
<tr>
<td>Boehringer Ingelheim</td>
</tr>
</tbody>
</table>
Each submission is considered by the Secretariat and Guidelines Committee during the finalisation phase of the Handbook’s development.

**External expert review**

For each major edition, independent experts are asked to review the full draft Handbook online during the consultation period.

No reviewers had been involved in the development of the draft Handbook.

**Finalisation**

All feedback received during the review phase is aggregated by the Secretariat for the Guidelines Committee. The Guidelines Committee consider and resolve all issues prior to finalising and approving the final content for publication.
Development of Version 1

Development of Version 1.0 followed our standard methodological approach. In addition, a thorough preliminary review and scoping exercise was undertaken in reference to the last full edition, published in 2006, and the evolution to a primarily online publication. Five high-priority questions were selected for systematic review.

We convened 17 multidisciplinary working groups covering all the topic areas of the Handbook. User testing of the new website was also conducted prior to publication.

Development work commenced in 2010 and continued until February 2014.

The *Australian Asthma Handbook* Version 1.0 was published online on 4 March 2014, alongside the accompanying printed *Australian Asthma Handbook: Quick Reference Guide* Version 1.

In this section

- Preliminary review
- Scoping
- Systematic reviews
Preliminary review

User survey

Planning for the new edition began with a short online survey of users of the previous edition in July 2010. A personalised invitation to complete the survey was emailed to all members of the Royal Australian College of General Practitioners (approximately 22,000 members).

The survey was also advertised in the National Asthma Council Australia's email newsletter for health professionals and the member newsletters of relevant professional associations:

- Australian Asthma and Respiratory Educators Association
- Pharmaceutical Society of Australia
- Pharmacy Guild of Australia
- Royal Australian College of General Practitioners (as a reminder)
- Thoracic Society of Australia and New Zealand

There were 1071 respondents, of whom 760 (71%) were GPs.

Nearly all (98%) of respondents who were aware of the previous edition said it was somewhat or very relevant to their practice. Regarding potential additional features, 61% agreed with clinical decision pathways and 69% agreed with quick reference to key practice points.

Other comments emphasised that the Handbook should be simple, concise and practical.

When asked about print publication format (in addition to the planned full online version), only 18% indicated that no print version was needed. For those wanting a printed version, the clear format preference was for a summary of the key practice points, tables and figures.

Expert assessment

The National Asthma Council Australia invited selected experts to review the previous edition of the handbook, the Asthma Management Handbook 2006.

Each clinical topic area was reviewed by at least two reviewers:

- a primary care clinician (e.g. GP)
- a specialist clinician or other expert with a special interest in the clinical area

The preliminary expert review phase was completed in early 2011.

Primary care reviewers advised on whether the section covered key clinical issues for primary care health professionals, and identified any gaps or areas in which more guidance was needed.

Specialist reviewers advised on the currency of factual information and recommendations, and identified areas where there had been substantial changes in opinion and/or new evidence.
Formulating clinical questions

The Guidelines Committee agreed on a comprehensive list of over 350 clinical questions, based on the content of the Asthma Management Handbook 2006, the advice of the expert reviewers and the user survey results.

Each working group confirmed the scope of their section at the initial contributor workshop held in August 2011 and subsequent teleconferences. For each topic area, the working group reviewed and refined the clinical questions. The agreed list of clinical questions formed the scope of the Handbook.

Selecting clinical questions for systematic review

The Guideline committee selected clinical questions for systematic review, which fulfilled the following criteria:

- relevant to primary care (i.e. a topic on which primary care health professionals or patients need guidance, based on the experience of Guidelines Committee members)
- likely to influence practice
- likely to improve outcomes for people with asthma (e.g. improve clinical outcomes or provide patients with more reliable advice on their choices).

Assigning status to remaining clinical questions

Each working group assigned a status for each of the clinical questions within their section, according to one of the following categories:

- high-priority questions for limited (non-systematic) structured literature searches
- questions for which sufficient evidence has already been identified
- other.

<table>
<thead>
<tr>
<th>Category</th>
<th>Considerations</th>
<th>Action</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-priority</td>
<td>Questions for which a structured literature search warranted due to clinical relevance and genuine uncertainty on interpretation of current evidence</td>
<td>Researcher (medical writer or volunteer working group member) conducts structured literature search and provides evidence report (search strategy, evidence table)</td>
<td>Recommendations based on selected evidence</td>
</tr>
<tr>
<td>Sufficient existing evidence</td>
<td>Clinical questions for which reliable evidence-based guidance exists (e.g. Cochrane reviews, other recent reviews internationally recognised clinical practice guidelines, systematic reviews undertaken by other guideline groups), and for which additional literature searches are unlikely to influence the working group's guidance</td>
<td>Medical writer prepares summary of sources identified by working group</td>
<td>Recommendations adapted from existing guidance or Recommendations based on selected evidence</td>
</tr>
</tbody>
</table>

Table. Categories applied to non-systematic review clinical questions by working groups
<table>
<thead>
<tr>
<th>Category</th>
<th>Considerations</th>
<th>Action</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>Questions for which a formal literature search is unlikely to affect guidance and on which it is appropriate to base guidance on subjective opinion</td>
<td>Working group develops consensus recommendations based on clinical experience and identified evidence</td>
<td>Consensus recommendations</td>
</tr>
</tbody>
</table>

Asset ID: 90
# Systematic reviews and evidence-based recommendations

## Overview

For version 1.0, five clinical questions were selected for systematic review based on the following criteria:

- relevant to primary care (i.e. a topic on which primary care health professionals or patients need guidance, based on the experience of Guidelines Committee members)
- likely to influence practice
- likely to improve outcomes for people with asthma (e.g. improve clinical outcomes or provide patients with more reliable advice on their choices).

## In this section

<table>
<thead>
<tr>
<th><strong>Literature searches</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Search strategies and findings for literature searches for systematic reviews</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Graded recommendations</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods used for developing graded recommendations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Clinical questions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical questions for systematic review</td>
</tr>
</tbody>
</table>
Literature searches for systematic reviews

For each of the clinical questions, the research assistant:

- identified the relevant population(s), intervention(s) (or exposure), comparator(s) and outcome(s)
- developed a search strategy, in consultation with a clinical expert from the relevant working group
- ran literature searches in multiple databases (Cochrane Database of Systematic Reviews, MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, Database of Abstracts of Reviews of Effects)
- applied the inclusion and exclusion criteria.

For each study identified, the research assistant assessed the level of evidence using NHMRC levels of evidence and appraised the methodological quality using criteria developed a priori according to study design. Each study was allocated a risk of bias rating using a template developed by the Monash Centre for Health Research and Implementation for systematic reviews and randomised control trials and the Newcastle-Ottawa Scale for cohort studies.

Search findings were summarised in a report to the working group, which identified the reference, year, country, type of study (study design and evidence level), intervention and comparator, population, study description, outcome measures, results and comments on study quality or conclusions. If one or more systematic reviews were identified for a clinical question, the research assistant flagged individual studies identified by the Australian Asthma Handbook literature searches that had been included in those systematic reviews.

The research assistant updated the searches before each working group met to formulate recommendations based on the systematic review.

References


Methods used for developing graded recommendations

For each of the systematic reviews, the research assistant and secretariat prepared evidence reports for the working group, with advice from the methodologist.

The working group met in person to interpret the evidence and develop evidence-based recommendations. For each recommendation, the working group identified the relevant body of evidence (e.g. the full set of studies in the evidence report, or a selection where a recommendation was based on a sub-population or a specific intervention).

The working group graded each recommendation using the NHMRC system for grading a recommendation.¹

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**Table. National Health and Medical Research Council (NHMRC) body of evidence matrix**

<table>
<thead>
<tr>
<th>Component</th>
<th>A Excellent</th>
<th>B Good</th>
<th>C Satisfactory</th>
<th>D Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence base</td>
<td>One or more level I studies with a low risk of bias or several level II studies with a low risk of bias</td>
<td>One or two level II studies with a low risk of bias or a SR/several level III studies with a low risk of bias</td>
<td>One or two level III studies with a low risk of bias, or level I or II studies with a moderate risk of bias</td>
<td>Level IV studies, or level I to III studies/SRs with a high risk of bias</td>
</tr>
<tr>
<td>Consistency</td>
<td>All studies consistent</td>
<td>Most studies consistent and inconsistency may be explained</td>
<td>Some inconsistency reflecting genuine uncertainty around clinical question</td>
<td>Evidence is inconsistent</td>
</tr>
<tr>
<td>Clinical impact</td>
<td>Very large</td>
<td>Substantial</td>
<td>Moderate</td>
<td>Slight or restricted</td>
</tr>
<tr>
<td>Generalisability</td>
<td>Population/s studied in body of evidence are the same as the target population for the guideline</td>
<td>Population/s studied in the body of evidence are similar to the target population for the guideline</td>
<td>Population/s studied in body of evidence differ to target population for guideline but it is clinically sensible to apply this evidence to target population</td>
<td>Population/s studied in body of evidence differ to target population and hard to judge whether it is sensible to generalise to target population</td>
</tr>
<tr>
<td>Applicability</td>
<td>Directly applicable to Australian healthcare context</td>
<td>Applicable to Australian healthcare context with few</td>
<td>Probably applicable to Australian healthcare context with some</td>
<td>Not applicable to Australian healthcare context</td>
</tr>
<tr>
<td>Component</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
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<tr>
<td></td>
<td>Excellent</td>
<td></td>
<td>Good</td>
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<tr>
<td></td>
<td>caveats</td>
<td></td>
<td>caveats</td>
<td></td>
</tr>
</tbody>
</table>

SR, systematic review; several, more than two studies.

Source
National Health and Medical Research Council (NHMRC), *NHMRC additional levels of evidence and grades for recommendations for developers of guidelines*. NHMRC, Canberra, 2009.

Asset ID: 92

The methodologist and research assistant gave specific advice on how to score the 'consistency' and 'evidence base' domains. Advice was also given to help score the remaining domains.

The working groups finalised the recommendation grades over a series of face-to-face meetings and teleconferences, supplemented by online surveys to streamline the process.

References

Clinical questions for systematic review

Systematic review of allergen avoidance strategies and asthma outcomes
Clinical question for literature search:
Is allergen avoidance effective in improving asthma control? Which allergen avoidance strategies are most effective in controlling symptoms of asthma?
Recommendations based on this body of evidence:
► See Considering allergen avoidance where feasible

Systematic review of GORD treatment and asthma outcomes
Clinical question for literature search:
Does GORD treatment/therapy (H2-receptor antagonists, proton pump inhibitors, anti-reflux surgery, acid suppressive therapy) improve asthma control in people with asthma (adults/children) who have a clinical diagnosis of GORD?
Recommendations based on this body of evidence:
► See Gastro-oesophageal reflux disease and asthma

Systematic review of physical activity and asthma outcomes
Clinical question for literature search:
Does planned physical activity (e.g. structured physical activity programs, exercise training/intervention such as swimming, running, cycling) improve asthma outcomes (e.g. lung function, asthma control, quality of life, effect on exercise-induced bronchoconstriction), compared with no planned physical activity (e.g. usual clinical care, treatment regimens that do not included planned physical activity) in children and adults with asthma?
Recommendations based on this body of evidence:
► See Physical activity, sport and asthma

Systematic review of asthma treatment and pregnancy outcomes
Clinical question for literature search:
What are the effects of (1) asthma and (2) asthma treatment on pregnancy outcomes?
For example:
● Does effective asthma control improve pregnancy outcomes [maternal, foetal] in women with asthma?
● Does poorly controlled asthma [evidenced by exacerbations, acute asthma episodes, emergency visits] affect pregnancy outcomes in women with asthma?
● Does asthma treatment affect pregnancy outcomes [maternal, foetal] in women with asthma?
Recommendations based on this body of evidence:
► See Asthma in pregnant women

Systematic review of weight loss and asthma outcomes
Clinical question for literature search:
Does weight loss improve asthma control in overweight/obese patients with asthma?
● Does a weight loss intervention or program (e.g. diet, exercise, physical activity) improve asthma outcomes in obese/overweight patients (adults/children) with asthma, compared with usual care?
● Does surgically induced weight loss (e.g. gastric bypass, gastric banding, bariatric surgery) improve asthma outcomes in obese patients with asthma, compared with usual care?
Recommendations based on this body of evidence:

▶ See Obesity and asthma
Development of minor updates versions 1.1-1.3

Considerations

Development of the minor updates (versions 1.1, 1.2 and 1.3) followed the principles outlined under our methodology framework.

In addition to the preliminary review, in considering priorities for review in development of each minor update, the Guidelines Committee took into account:

- user feedback following publication of previous versions, including clarifications and corrections
- addition of new asthma medicines to the Pharmaceutical Benefits Scheme.

Due to the limited scope of the review, the Guidelines Committee acted as the working group for most topics. A small number of contributors past versions of the Handbook were also recalled to assist with specific revisions. For content based on our related information papers, expertise from each paper’s working group was also incorporated.

Publication

Version 1.1
The development work was undertaken between July 2014 and March 2015.

Version 1.2
The development work was undertaken between February 2016 and September 2016.

Version 1.3
The development work was undertaken between March 2017 and December 2017.
The Australian Asthma Handbook Version 1.3 was published online on 5 December 2017, alongside the accompanying printed Australian Asthma Handbook: Quick Reference Guide Version 1.3.
Development of Version 2

Development of Version 2.0 followed the standard methodological approach. Specific timelines and processes for this edition are highlighted below.

Publication

The development work was undertaken between July 2017 and February 2019.
The Australian Asthma Handbook Version 2.0 was published online on 8 March 2019, alongside the patient brochure: My Asthma Guide 2.0.

Roles and responsibilities

The preliminary review was conducted by the Guidelines Committee.
We convened five multidisciplinary working groups covering: acute asthma, diagnosis and management of paediatric asthma, primary prevention of asthma, severe asthma and management challenges. Expertise from contributors to related information papers was also incorporated.
Editorial independence

Statements of interest

Declaration of interest

All contributors involved in development of the new edition were asked to sign a letter agreement that outlined their roles and responsibilities in the Handbook’s development. This covered the contributors’ agreement to disclose possible conflicts of interest, as well as their obligations in relation to authorship, confidentiality and use of copyright material.

Contributors completed a detailed statement of interest form. This was requested at the start of their period of involvement and contributors were asked to provide an update if this subsequently changed. These detailed forms were held on file by the Secretariat.

Prose descriptions of the statements of interest for Guideline Committee members were obtained for publication.

► See: Guidelines Committee

Managing potential conflicts of interest

All statement of interest forms were reviewed by the Secretariat for potential conflicts. The stated policy was to exclude any contributor with connections to the tobacco industry; however, no potential contributors had any such interests. Many primary care contributors had no interests to declare.

Our approach was based on transparency. Contributors were asked to verbally summarise their interests at the initial meeting of each working group and the Guideline Committee, and to provide an update if these had changed. The Secretariat ensured the verbal summaries matched the statements held on record. Members of the Secretariat also stated their interests.

The Committee and working groups developed recommendations and considered evidence using a consensus model. Any potential conflicts were managed by the respective working group Chairs within the discussion process. Further steps would have been to exclude the conflicted contributor from voting on finalisation of the recommendation or to involve the Guidelines Committee Chair in resolving the issue; however, these steps were not needed.

Financial support

The National Asthma Council Australia self-funded the majority of the development costs of the Australian Asthma Handbook. The remainder of the development costs was funded by unrestricted sponsorship. The National Asthma Council Australia’s funding sources are sponsorship from the pharmaceutical companies in asthma, government program funding, donations and its cause-related marketing program, Sensitive Choice.

Strict editorial independence was maintained by the secretariat, Guidelines Committee and all contributors in developing the content. The views and interests of the National Asthma Council Australia and its funders, including the Handbook sponsors, have not influenced the content of the guidelines.

► See: Sponsors
Updating the Handbook

Each version of the *Australian Asthma Handbook* builds on the guidance and evidence base of the preceding editions. The key clinical changes and clarifications for each version are summarised here.

Version 1.0 was a complete revision of the entire content of the Handbook. Subsequent versions consist of targeted updates with specific areas of focus.

In this section

<table>
<thead>
<tr>
<th>Version 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version 1.3</td>
</tr>
<tr>
<td>Version 1.2</td>
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<td>Version 1.1</td>
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<tr>
<td>Version 1.0</td>
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</table>

**Future updates**

Protocol for future updates of the Australian Asthma Handbook

Highlights of Version 2.0 update


Table. Australian Asthma Handbook sections fully revised at Version 2.0
Please view and print this figure separately: http://www.asthmahandbook.org.au/table/show/124

Table. Australian Asthma Handbook Version 2.0 amendments to sections not fully revised
Please view and print this figure separately: http://www.asthmahandbook.org.au/table/show/125

Summary of key clinical changes and clarifications

Highlights of the version 2.0 Australian Asthma Handbook include:

Major update of evidence and advice on:
- managing asthma in children
- acute asthma
- management challenges (previously known as troubleshooting)
- primary prevention

Amendments to include latest evidence-based recommendations.

Update on latest treatment options for patients with severe asthma
Amendments to reflect the National Asthma Council Australia’s 2018 information paper on Monoclonal antibody therapy for severe asthma.

Update of advice on inhaler technique for people with asthma or COPD
Amendments to reflect the National Asthma Council Australia’s 2018 information paper on Inhaler technique for people with asthma and COPD.

Other minor amendments
Various minor amendments and corrections to improve clarity.
### Table. Australian Asthma Handbook sections fully revised at Version 2.0

**Managing acute asthma in clinical settings**

**Managing asthma in children**

**Management challenges**

**Severe asthma in adults and adolescents**

**Primary prevention of asthma**

#### Section: Managing acute asthma in clinical settings

<table>
<thead>
<tr>
<th>Topic</th>
<th>Change</th>
<th>Rationale</th>
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<tbody>
<tr>
<td><strong>Key differences from V1.3</strong></td>
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</tbody>
</table>
| **Infants < 12 months**       | New advice: *Wheezing infants younger than 12 months old should not be treated for acute asthma. Acute wheezing in this age group is most commonly due to acute viral bronchiolitis.*  
Replaces V1.3 statement: *In children under 12 months old, asthma is less likely to be the cause of wheezing than other conditions (e.g. bronchiolitis, pneumonia)*  
New recommendation: *Advice should be obtained from a paediatric respiratory physician or paediatrician before administering short-acting beta<sub>2</sub> agonists, systemic corticosteroids or inhaled corticosteroids to an infant.*  
Replacement of age category 0–5 years with 1–5 years. | To avoid potential harm due to inappropriate treatment in infants under 12 months                                                                 |
| **Ipratropium bromide**       | New recommendation for routine use of ipratropium in addition to salbutamol for patients with severe or life-threatening acute asthma                                                                 | Supported by current clinical evidence                                                              |
| **Prednisolone in children**  | Loading doses no longer recommended. Recommended dose: 1 mg/kg (maximum 50 mg) orally each morning for 3 days  
Replaces V1.3 recommendation of a single starting dose of 2 mg/kg (maximum 50 mg) orally, then 1 mg/kg each morning for 2 days (total 3 days) | To reduce systemic corticosteroid exposure in children; conventional loading doses not well supported by current clinical evidence |
| **Oral dexamethasone**         | New recommendation for oral dexamethasone as an alternative to oral prednisolone in adults and children.                                                                                               | Supported by current clinical evidence, well tolerated and can avoid need to dispense corticosteroids |

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**Managing acute asthma in clinical settings**

**Managing asthma in children**

**Management challenges**

**Severe asthma in adults and adolescents**

**Primary prevention of asthma**

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**Topic Change Rationale**

**Key differences from V1.3**

- **Infants < 12 months**:
  - New advice: Wheezing infants younger than 12 months old should not be treated for acute asthma. Acute wheezing in this age group is most commonly due to acute viral bronchiolitis.
  - Replaces V1.3 statement: In children under 12 months old, asthma is less likely to be the cause of wheezing than other conditions (e.g. bronchiolitis, pneumonia).
  - New recommendation: Advice should be obtained from a paediatric respiratory physician or paediatrician before administering short-acting beta<sub>2</sub> agonists, systemic corticosteroids or inhaled corticosteroids to an infant.
  - Replacement of age category 0–5 years with 1–5 years.

- **Ipratropium bromide**:
  - New recommendation for routine use of ipratropium in addition to salbutamol for patients with severe or life-threatening acute asthma.

- **Prednisolone in children**:
  - Loading doses no longer recommended. Recommended dose: 1 mg/kg (maximum 50 mg) orally each morning for 3 days.
  - Replaces V1.3 recommendation of a single starting dose of 2 mg/kg (maximum 50 mg) orally, then 1 mg/kg each morning for 2 days (total 3 days).

- **Oral dexamethasone**:
  - New recommendation for oral dexamethasone as an alternative to oral prednisolone in adults and children.
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<tr>
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<tbody>
<tr>
<td><strong>Key differences from V1.3</strong></td>
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</tr>
<tr>
<td><strong>Parenteral systemic corticosteroid doses</strong></td>
<td>Loading doses no longer recommended for hydrocortisone and methylprednisolone in children. Recommended doses:</td>
<td>To reduce systemic corticosteroid exposure in children; conventional loading doses not well supported by current clinical evidence</td>
</tr>
<tr>
<td></td>
<td>- hydrocortisone IV 4 mg/kg (maximum 100 mg) every 6 hours on day 1 then reduce (every 12 hours on day 2, once daily on day 3 and, if needed, once daily on days 4–5) or switch to oral prednisolone</td>
<td></td>
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<tr>
<td></td>
<td>- methylprednisolone IV 1 mg/kg (maximum 60 mg) every 6 hours on day 1 then reduce (every 12 hours on day 2, once daily on day 3 and, if needed, once daily on days 4–5) or switch to oral prednisolone.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replaces V1.3 recommendation for hydrocortisone IV initial dose 8–10 mg/kg (maximum 300 mg) or methylprednisolone IV initial dose 2 mg/kg (maximum 60 mg)</td>
<td></td>
</tr>
<tr>
<td><strong>Hospital admission</strong></td>
<td>Revision of criteria for admission to include risk factors for poor outcomes (in addition to clinical status at assessment after treatment):</td>
<td>To encourage more comprehensive risk assessment and reduce risk of life-threatening relapse within days after discharge</td>
</tr>
<tr>
<td></td>
<td>- hypoxia at presentation</td>
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<td></td>
<td>- a history of ICU admission for asthma</td>
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<td></td>
<td>- presentation for acute asthma within the past 4 weeks</td>
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<td>- frequent presentations for acute asthma (e.g. several over previous year)</td>
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<td>- high recent use of beta₂ agonists</td>
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<td>- patient cannot be monitored adequately at home or cannot easily return to hospital if needed</td>
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<td></td>
<td>- confirmed food allergy [children]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- other risk factors for adverse outcomes [list provided]</td>
<td></td>
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<tr>
<td><strong>Other changes (selected)</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Anaphylaxis</strong></td>
<td>Addition of specific recommendation on identifying and managing anaphylaxis:</td>
<td>To prompt clinicians to consider anaphylaxis and to provide explicit clinical advice aligned with ASCIA guidance</td>
</tr>
<tr>
<td></td>
<td>Identify anaphylaxis and manage it according to national guidelines or your organisation’s protocols.</td>
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<td></td>
<td>Anaphylaxis should be suspected in a patient with sudden-onset asthma-like symptoms and either of the following:</td>
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<td>- features of anaphylaxis (e.g. urticaria or angioedema)</td>
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<td></td>
<td>- a history of allergy to food, insects or medicines.</td>
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<tr>
<td></td>
<td>If anaphylaxis is suspected or cannot be excluded, give adrenaline.</td>
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<tr>
<td></td>
<td>If adrenaline is indicated, administer before salbutamol.</td>
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</table>
### Top Change Rationale

#### Key differences from V1.3

Note: Anaphylaxis is defined as (either of):

- Any acute onset illness with typical skin features (urticarial rash or erythema/flushing and/or angioedema) plus involvement of respiratory symptoms and/or cardiovascular symptoms and/or persistent severe gastrointestinal symptoms
- Any acute onset of hypotension or bronchospasm or upper airway obstruction where anaphylaxis is considered possible (even if typical skin features not present).

Expanded from V1.3 recommendation:

*Identify and manage anaphylaxis according to national guidelines or your organisation's protocols. Give adrenaline if anaphylaxis is suspected or cannot be excluded.*

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<th>Topic</th>
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<tr>
<td><strong>Adrenaline</strong></td>
<td>Addition of recommendation to consider immediate use if patient is unresponsive, cannot inhale bronchodilators, or is considered to be peri-arrest, with advice on routes of delivery and doses</td>
<td>To clarify role of adrenaline and acknowledge the need for guidance in pre-hospital emergencies</td>
</tr>
</tbody>
</table>
| **Inhaled corticosteroids**| Expansion of recommendation to prescribe inhaled corticosteroids at discharge (if indicated) to reduce future risk of flare-ups: At discharge, check if the patient has a preventer that contains an inhaled corticosteroid:  
  - If the person is already using (or has been prescribed) inhaled corticosteroids, check adherence and inhaler technique, and instruct the patient or parent/carer to continue their inhaled corticosteroid.  
  - For adults and older adolescents with asthma who have not been prescribed inhaled corticosteroids, prescribe an inhaled corticosteroid at a low dose, demonstrate correct inhaler technique, and arrange review of treatment at comprehensive follow-up.  
  - For children younger than 12 years with asthma who are not currently taking a preventer, consider whether preventer treatment is indicated and arrange review of treatment at comprehensive follow-up.  
  
*Note: Regular low-dose inhaled corticosteroid treatment is indicated for all adults and adolescents over 12 years who have had an asthma flare-up in the previous 12 months.*  
Expanded from V1.3 recommendations:  
*For adults who have not been prescribed inhaled corticosteroids, prescribe...* | To emphasise role of inhaled corticosteroids and promote opportunistic longer-term risk reduction |
### Key differences from V1.3

**inhaled corticosteroid and arrange comprehensive assessment in 2–4 weeks to review the treatment regimen (e.g. refer to person’s GP or arrange specialist assessment)**

*For children not currently taking a preventer, consider whether preventer treatment is indicated. Arrange a follow-up appointment in 2–4 weeks to review the treatment regimen (e.g. refer to child’s GP or arrange specialist assessment)*

**Discharge checklist**

Revision of discharge recommendations, with addition of comprehensive checklist that includes advising patient or carer to make an appointment with their usual GP within 3 days for post-acute assessment and a second appointment for review of asthma at 2–4 weeks

Replaces V1.3 recommendation to advise patient or carer to make an appointment with their usual GP within 2–4 weeks (or earlier if necessary)

To promote effective transition to primary care, reduce risk of relapse and reduce risk of future severe flare-ups

**Discharge checklist**

Addition of templates for discharge plans (interim asthma action plans) for children and adults

To support acute care staff to provide adequate instructions at discharge to reduce risk of relapse

### Section: Managing asthma in children

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<tbody>
<tr>
<td>Key differences from V1.3</td>
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</table>
| **Infants < 12 months** | New advice: Wheezing infants aged less than 12 months old should not be treated for asthma. Wheezing in this age group is most commonly due to acute viral bronchiolitis or to small and/or floppy airways.  
Advice should be obtained from a paediatric respiratory physician or paediatrician before administering short-acting beta₂ agonists, systemic corticosteroids or inhaled corticosteroids to an infant under 12 months.  
Children with clinically significant wheezing that necessitates hospitalisation or occurs frequently (e.g. more than once per 6 weeks) should be referred to a paediatric respiratory physician or paediatrician.  
Removal of treatment recommendations for children under 12 months, with clarification that diagnosis and management of asthma in infants is not recommended within primary care. Recommendation against use of short-acting beta₂ agonists in infants under 6 months extended to all | To avoid potential harm due to inappropriate treatment and encourage referral to specialists for this age group  
For consistency with current bronchiolitis management guidelines |
### Key differences from V1.3

<table>
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<th>Rationale</th>
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</table>
| children under 12 months  
Replacement of age category 0–5 years with 1–5 years. | To simplify terminology and integrate assessment with treatment to make clinical guidance easier to follow |
| Term ‘multiple-trigger wheeze’ no longer used  
A single classification system based on frequency of symptoms and severity of flare-ups (Classification of preschool wheeze and indications for preventer treatment in children aged 1–5) replaces previous separate classification systems for (1) wheezing patterns children aged 0–5 years not taking regular preventer (where asthma diagnosis uncertain) and (2) asthma patterns in children aged 0–5 years not taking regular preventer | |
| Loading doses no longer recommended  
Recommended dose: 1 mg/kg (maximum 50 mg) orally each morning for 3 days  
Replaces V1.3 recommendation of a single starting dose of 2 mg/kg (maximum 50 mg) orally, then 1 mg/kg each morning for 2 days (total 3 days) | To reduce systemic corticosteroid exposure in children; conventional loading doses not well supported by current clinical evidence |

### Other changes (selected)

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<thead>
<tr>
<th>Topic</th>
<th>Change</th>
<th>Rationale</th>
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<tbody>
<tr>
<td>Risk-factors for flare-ups</td>
<td>Addition of new table: Risk factors for life-threatening asthma flare-ups in children</td>
<td>To promote comprehensive risk assessment</td>
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</tbody>
</table>
| Stepping down (when to consider) | Addition of recommendation against attempt to step down regular preventer treatment at the start of the preschool year or during the child’s peak asthma season  
Recommendation to consider stepping down when asthma symptoms have been well controlled for at least 6 months (increase from 3 months in V1.3) | To minimise risk of flare-ups |
| Stepping down (options) | Simplification of recommendations for stepping down when current regimen is inhaled corticosteroid plus long-acting beta_2 agonist  
Current recommendation: halve dose or replace with low-dose inhaled corticosteroid only  
Revised from V1.3 recommendation with three additional options (low-dose inhaled corticosteroid plus montelukast, montelukast, a cromone) | Based on updated evidence and simplified for easier implementation |
<p>| Cromones | Removal of sodium cromoglycate and nedocromil from main recommendations for preventer therapy (retained as options) | To reflect reduced practical role in |</p>
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<th>Topic</th>
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<tr>
<td><strong>Key differences from V1.3</strong></td>
<td></td>
<td>current practice</td>
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<tr>
<td>Montelukast</td>
<td>Update of evidence for efficacy, update of evidence for behavioural and/or neuropsychiatric adverse effects.</td>
<td>Update</td>
</tr>
<tr>
<td>Tiotropium</td>
<td>Addition of information on tiotropium following TGA approval for use in children aged 6 years and over</td>
<td>To acknowledge regulatory update</td>
</tr>
<tr>
<td><strong>Inhaled corticosteroids</strong></td>
<td>Update of evidence for efficacy of increasing the dose at the onset of flare-ups, adverse effects</td>
<td>Update</td>
</tr>
<tr>
<td><strong>Inhaled corticosteroid–long-acting beta₂ agonist combinations</strong></td>
<td>Update of evidence for efficacy and adverse effects in children up to age 12</td>
<td>Update</td>
</tr>
<tr>
<td>Oral corticosteroids</td>
<td>Update of evidence on short courses of oral corticosteroids to manage flare-ups at home or primary care (as distinct from use in acute care settings)</td>
<td>Update</td>
</tr>
<tr>
<td><strong>Back-to-school care</strong></td>
<td>Addition of advice on asthma management at the beginning of the school year</td>
<td>To provide practical advice</td>
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Section: Management challenges

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<th>Topic</th>
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<th>Rationale</th>
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<tr>
<td><strong>Key differences from V1.3</strong></td>
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<tr>
<td><strong>Structure</strong></td>
<td>Replaces former Troubleshooting section with revised structure</td>
<td>To integrate better with new section on Severe asthma in adults and adolescents</td>
</tr>
<tr>
<td><strong>Patient/person-centred care</strong></td>
<td>Revision of whole section to emphasise a patient-centred approach to caring for a child or adult with asthma that is not well controlled despite preventer treatment</td>
<td>To promote person-centred care</td>
</tr>
<tr>
<td><strong>Living with asthma</strong></td>
<td>Addition of evidence on lived experience of asthma</td>
<td>To foster empathy with patients</td>
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<tr>
<td><strong>Other changes (selected)</strong></td>
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<tr>
<td><strong>Key differences from V1.3</strong></td>
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<tr>
<td><strong>Cost of asthma medicines</strong></td>
<td>Addition of information about costs of asthma medicines and strategies for minimising costs to patients</td>
<td>To provide practical advice to reduce financial burden on patients</td>
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**Section: Severe asthma in adults and adolescents**

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</table>
| **Definition** | Severe asthma defined as: *asthma that remains uncontrolled despite regular treatment with high-dose inhaled corticosteroids plus long-acting beta$_2$ agonist or with maintenance oral corticosteroids, or asthma that requires this level of treatment (Step 4) to prevent it becoming uncontrolled*  
Revised from V1.3 definition: *Good control requires (or cannot be achieved despite) regular high dose of inhaled corticosteroid plus long-acting beta$_2$ agonist* | To align more precisely with international consensus |
| **Scope of guidance** | Replacement of single web page (Managing severe, high-risk and difficult-to-control asthma in adults) with more detailed guidance on each aspect:  
- Identifying severe asthma in adults and adolescents  
- Non-pharmacological strategies and general care  
- Add-on treatments  
- Monoclonal antibody therapy | Significantly expanded breadth and depth of guidance from primary care perspective |
| **Identifying severe asthma** | Addition of detailed information on steps for identifying severe asthma in adults and adolescents, including:  
- ruling out common problems (including poor inhaler technique and suboptimal adherence  
- reviewing the diagnosis  
- considering contribution of comorbidity to symptoms/asthma control  
- establishing level of short-acting beta$_2$ agonist use  
- considering triggers  
- considering aspirin-exacerbated respiratory disease  
- optimising treatment | To delineate difficult-to-treat asthma and severe asthma and promote comprehensive, systematic assessment |
<p>| <strong>Monoclonal antibody therapy</strong> | Advice on providing ongoing care during monoclonal antibody therapy, with update of evidence on efficacy, including newly introduce | To update for TGA-approved indications |</p>
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<tbody>
<tr>
<td><strong>Key differences from V1.3</strong></td>
<td>benralizumab</td>
<td>and PBS listings revised 1 December 2018 and provide guidance for primary care staff who administer maintenance doses</td>
</tr>
<tr>
<td><strong>Other changes (selected)</strong></td>
<td><strong>Differential diagnosis</strong></td>
<td>Addition of table: <strong>Differential diagnosis of severe asthma in adults</strong> listing alternative diagnoses according to prominent clinical feature</td>
</tr>
<tr>
<td></td>
<td><strong>Investigations for severe asthma</strong></td>
<td>Update on tests required for PBS subsidy, and utility of tests for predicting response to therapy</td>
</tr>
</tbody>
</table>
| | **Non-pharmacological strategies** | Addition of advice on non-pharmacological strategies and general care in the management of severe asthma, including:  
- evidence and information on active Cycle of Breathing technique  
- more detailed information and advice on monitoring and managing adverse effects of oral corticosteroids  
- addition of evidence on air temperature control  
- update of evidence for bronchial thermoplasty | To reduce risk associate with systemic corticosteroids by dose minimising requirement |
| | **Add-on treatment** | Addition of advice on add-on treatments in the management of severe asthma, with update of evidence for efficacy of various treatment options including:  
- tiotropium  
- oral corticosteroids  
- azithromycin  
- monoclonal antibody therapy | To promote rational prescribing, give and overview of available treatments, and clarify the roles of primary care prescribers and specialists |
### Key differences from V1.3

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<tbody>
<tr>
<td><strong>Lived experience of severe asthma</strong></td>
<td>Addition of evidence from Australian research on lived experience of severe asthma</td>
<td>To foster empathy with patients</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td>Addition of links to Centre of Excellence in Severe Asthma's Severe asthma toolkit</td>
<td>To link primary care providers to the national centre</td>
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</table>

### Section: Primary prevention of asthma

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<tr>
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<tbody>
<tr>
<td><strong>Prenatal antibiotics</strong></td>
<td>New recommendation: <em>Prescribe antibiotics for pregnant women as indicated and where a clinical benefit is likely, but avoid unnecessary use.</em></td>
<td>To reflect emerging evidence for importance of microbial diversity in immune system development</td>
</tr>
<tr>
<td><strong>Prenatal diet</strong></td>
<td>New recommendation: <em>Advise pregnant and breastfeeding women to aim for a healthy, balanced diet rich in fibre, vegetables and fruit, for general benefits and possible protection against wheeze in children, although healthy eating is not proven to prevent asthma and allergies in children.</em></td>
<td>To reflect evidence for protective effects of fruits and vegetables against wheezing</td>
</tr>
</tbody>
</table>
| **Prenatal vitamin D**                   | Revision of recommendation: *Advise pregnant women and women planning pregnancy to follow current national guidelines for Vitamin D supplementation.*  
*Note: Current RANZCOG guidelines for vitamin and mineral supplementation during pregnancy recommend vitamin D supplementation for all pregnant women and blood level testing is recommended for those who may be vitamin D-deficient.*  
Revised from V1.3 recommendation against vitamin D supplementation as a strategy for reducing asthma risk in offspring | To reflect evidence for possible protective effect of adequate vitamin D and acknowledge national guidelines |
<p>| <strong>Antibiotics, proton pump inhibitors and antacids</strong> | New recommendation: <em>Prescribe antibiotics, proton pump inhibitors or antacids for children as indicated and where a clinical benefit is likely, but avoid unnecessary use.</em> | To reflect evidence of possible association with increased risk of developing asthma |</p>
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<tbody>
<tr>
<td><strong>Key differences from V1.3</strong></td>
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</tr>
<tr>
<td><strong>Specific allergen immunotherapy</strong></td>
<td>New recommendation:</td>
<td>To reflect evidence for possible short-term reductions in the risk developing asthma and possible longer-term control of asthma symptoms</td>
</tr>
<tr>
<td></td>
<td><em>Consider specific allergen immunotherapy in children with allergic rhinitis who have a history of proven, clinically important sensitisation to a particular allergen that cannot feasibly be avoided and for which for specific allergen immunotherapy is available.</em></td>
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<tr>
<td><strong>Work-related asthma</strong></td>
<td>New recommendation:</td>
<td>To emphasise the need for specialist assessment for work-related asthma</td>
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<tr>
<td></td>
<td><em>If a patient who is exposed to occupational sensitisers or irritants develops new-onset rhinitis and/or respiratory symptoms, offer urgent referral to a specialist (e.g. respiratory physician, occupational physician or allergist) with experience in investigating and managing work-related asthma.</em></td>
<td></td>
</tr>
<tr>
<td><strong>Other changes (selected)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Risk and protective factors</strong></td>
<td>Addition of table: <a href="#">Risk and protective factors for developing asthma</a></td>
<td>To provide easy-to-read summary</td>
</tr>
<tr>
<td></td>
<td>Update of all evidence</td>
<td></td>
</tr>
</tbody>
</table>

Asset ID: 124
Table. Australian Asthma Handbook Version 2.0 amendments to sections not fully revised

<table>
<thead>
<tr>
<th>Topic</th>
<th>Places(s) in text</th>
<th>Amendment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organisation of information</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosis in children</td>
<td><em>Diagnosing asthma in children</em></td>
<td>Restructure to separate recommendations into subsections for children aged 1–5 years and children aged 6 years and over</td>
<td>Restructured to reflect different approach to, and certainty of, asthma diagnosis in these age groups</td>
</tr>
<tr>
<td>Preschool children</td>
<td><em>Diagnosing asthma in children</em>&lt;br&gt;<em>Managing asthma in children</em></td>
<td>Revision of subsection headings to delete any references to children aged 0–12 months</td>
<td>Restructured to emphasise the low probability of asthma in infants and for consistency with national guidelines for management of bronchiolitis</td>
</tr>
<tr>
<td>Stepping up and down in adults</td>
<td><em>Stepped approach to adjusting asthma medication in adults</em></td>
<td>Revision of figure to emphasise that a very small proportion of patients should manage asthma with as-needed relievers alone</td>
<td>Amended to emphasise that regular inhaled corticosteroid preventer treatment is indicated for most adults and older adolescents</td>
</tr>
<tr>
<td>Adolescents</td>
<td><em>Managing asthma in adolescents</em></td>
<td>Structure amended to provide access to guidance on asthma in adolescents within main navigation menu on management</td>
<td>Restructured to draw users’ attention to separate guidance on asthma in adolescents</td>
</tr>
<tr>
<td><strong>Medicines</strong></td>
<td></td>
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</tr>
<tr>
<td>Fluticasone furoate</td>
<td><em>Table. Long-acting bronchodilators for asthma–COPD overlap</em></td>
<td>Note indicating discard-by intervals for inhalers</td>
<td>Amended to alert prescribers that these inhalers have shorter discard-by date than most</td>
</tr>
<tr>
<td>Montelukast</td>
<td><em>Prescribing other preventers for adults</em>&lt;br&gt;<em>Managing exercise-induced bronchoconstriction in adults</em>&lt;br&gt;More Information Topic: <em>Montelukast for adults and</em></td>
<td>Addition of note on potential behavioural and/or neuropsychiatric adverse effect with link to TGA alert</td>
<td>Amended to reflect updated safety information</td>
</tr>
<tr>
<td>Topic</td>
<td>Places(s) in text</td>
<td>Amendment</td>
<td>Rationale</td>
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<td>adolescents: psychiatric effects</td>
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<tr>
<td><strong>Oral H1 antihistamines in preschool children</strong></td>
<td>Managing allergic rhinitis in children with asthma</td>
<td>Addition of statement on long-term safety profile of cetirizine and confirming that antihistamines can be taken long term</td>
<td>Amended to provide information on a question commonly asked by parents</td>
</tr>
</tbody>
</table>
| **Short-acting beta2 agonists** | Table. Risk factors for adverse asthma outcomes in adults and adolescents Table. Management of risk factors for adverse asthma outcomes in adults More Information Topic: Over-use of short-acting beta2 agonists | Addition of statements on over-use of short-acting beta2 agonists:  
- Dispensing of 3 or more canisters in a year (average 1.6 puffs per day) is associated with increased risk of flare-ups.  
- Dispensing 12 or more canisters in a year (average 6.6 puffs per day) is associated with increased risk of asthma death. | Amended to reflect updated evidence and to emphasise risk |
| **Inhalers** | | | |
| **Inhaler technique** | Choosing an inhaler device to suit the individual Training patients in inhaler technique More Information Topics:  
- Correct use of inhaler devices  
- Administration of inhaled medicines in children 5 years and under  
- Administration of inhaled medicines in children: 6 years and over  
- Choosing inhaler devices for older adults | Update of evidence and recommendations for inhaler device choice and technique | Amended to reflect information and advice in updated NAC information paper Inhaler technique in people with asthma or COPD |
<p>| <strong>Inhaler devices</strong> | Table. Types of inhaler devices for delivering asthma and COPD medicines | Update of table | Amended to remove devices no longer available and to include new devices: DuoResp Spiromax (budesonide) |</p>
<table>
<thead>
<tr>
<th>Topic</th>
<th>Places(s) in text</th>
<th>Amendment</th>
<th>Rationale</th>
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<td>plus formoterol)</td>
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<td></td>
<td></td>
<td><em>Fluair Inhaler</em> (fluticasone propionate)</td>
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<td><em>SalplusF metered dose Inhaler</em> (fluticasone propionate plus salmeterol)</td>
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<td></td>
<td><em>Trelegy Ellipta</em> (fluticasone furoate plus umeclidinium bromide plus vilanterol trifenate)</td>
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<tr>
<td><strong>Thunderstorm asthma</strong></td>
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<tr>
<td><strong>Advice for prevention of thunderstorm asthma</strong></td>
<td><em>Considering allergen avoidance where feasible</em>&lt;br&gt;<em>Preventing thunderstorm asthma</em></td>
<td>Blanket advice for at-risk people to avoid being outdoors before and during springtime thunderstorms amended with advice to check pollen counts and avoid thunderstorms only on high-pollen days&lt;br&gt; Addition of links to pollen count advice for regions where available&lt;br&gt; Update of published evidence</td>
<td>Amended to reflect updated evidence and guidance on prevention</td>
</tr>
</tbody>
</table>
Highlights of Version 1.3 update


Table. Australian Asthma Handbook Version 1.3 amendments
Please view and print this figure separately: http://www.asthmahandbook.org.au/table/show/110

Summary of key clinical changes and clarifications

Highlights of the version 1.3 Australian Asthma Handbook include:

*Update of advice on the prevention and management of thunderstorm asthma*
Amendments to reflect the National Asthma Council’s 2017 information paper on *Epidemic thunderstorm asthma*, including a new Thunderstorm asthma page to give the topic more prominence.

*Update of advice on managing allergic rhinitis in people with asthma*
Amendments to reflect the National Asthma Council’s 2017 information paper on *Managing allergic rhinitis in people with asthma*, including new ‘More information’ topics and management flowcharts. Also, restructure of the Allergic rhinitis page to clarify advice for different age groups.

*Interim advice for treatment for asthma–COPD overlap*
Amendments to reflect the National Asthma Council and Lung Foundation Australia’s 2017 information paper on *Asthma–COPD overlap*, including emphasis that patients with asthma–COPD overlap should be identified and treated differently from people with COPD or asthma alone.

*Other minor amendments*
Various minor amendments and corrections to improve clarity.
Highlights of Version 1.2 update


**Table. Australian Asthma Handbook Version 1.2 clinical amendments**

**Table. Australian Asthma Handbook Version 1.2 minor amendments**
Please view and print this figure separately: [http://www.asthmahandbook.org.au/table/show/100](http://www.asthmahandbook.org.au/table/show/100)

**Table. Australian Asthma Handbook Version 1.2 clinical amendments (additional amendments published March 2017)**

Summary of key clinical changes and clarifications

**Clarification of long-term use of low-dose ICS in adults**
Amendments to clarify advice that long-term (including lifetime) low-dose ICS treatment may be needed, and to provide more detailed guidance on what is meant by low-dose for ICS in adults. Also, to emphasise that the purpose of long-term low-dose ICS is to reduce future risk rather than to treat current symptoms.

**Emphasis on written asthma action plans**
Restructured website menus to give more prominence to the central recommendation that every patient should have a personalised written asthma action plan.

**Update of advice on inhaler technique**
Amendments to reflect the National Asthma Council’s 2016 information paper on *Inhaler technique for people with asthma or COPD*, and to clarify advice on priming new spacers.

**Inclusion of new treatment options**
Amendments and additions to incorporate new medications and/or indications for fluticasone furoate, mepolizumab, omalizumab and tiotropium, and to incorporate new specific allergen immunotherapy preparations.

**Inclusion of advice on e-cigarettes**
Additions to incorporate use of e-cigarettes and provide interim consensus advice until more evidence becomes available.

**Other minor amendments**
Other minor amendments, including:

- Simplification of oxygen therapy advice in acute asthma
- Clarification of information on asthma control questionnaires
- Update in terminology for coexisting asthma and COPD
- Update of infant feeding and allergy prevention advice to reflect new ASCIA guidelines
- Increased prominence of warnings about potential adverse psychiatric effects of montelukast in children
- Various spelling and terminology updates
Highlights of Version 1.1 update

Version 1.1 of the Australian Asthma Handbook, published April 2015, is a minor update to the full edition published as version 1.0 in March 2014.

Table. Australian Asthma Handbook Version 1.1 clinical amendments
Please view and print this figure separately: http://www.asthmahandbook.org.au/table/show/96

Table. Australian Asthma Handbook Version 1.1 minor amendments
Please view and print this figure separately: http://www.asthmahandbook.org.au/table/show/97

Summary of key clinical changes and clarifications

Inclusion of new combination medicine
Amendments to explain the role and use of fluticasone furoate/vilanterol combination (introduced in late 2014) which, unlike previously available ICS/LABA combinations, is not available in a low dose formulation

Emphasis on long-term use of low-dose ICS in adults
Amendments to explain the aim of continuing low-dose ICS treatment long term in adults with a confirmed asthma diagnosis and to provide explicit advice against cessation without a significant clinical reason

Clarification that low-dose ICS should not be continued indefinitely in children
Amendments to clarify that low-dose ICS should not be continued indefinitely in children and to distinguish between the use of ICS and that of other preventers in children

Clarification of risk factors for developing asthma
Amendments to clarify the status of risk factors for developing asthma that have been identified in population studies and to emphasise that these cannot be used as interventions as they have not been shown to prevent asthma

Modification of acute management protocols
Amendments to accommodate transfer protocols for higher-level care from a wider range of clinical settings, and to clarify management of acute asthma that is initially assessed as mild/moderate or severe but does not improve after initial bronchodilator treatment

Other minor clarifications
Other minor clarifications include:

- Various amendments to clarify the role of FEV₁/FVC in diagnosis in adults and to correct under-emphasis on this parameter in the previous version
- Recommendations regarding cromones in children amended to provide practical dosage information
- Advice regarding healthy eating for asthma amended to clarify intake of which foods high in saturated fats should be minimised
- Practical dosage information added for magnesium sulfate and IV salbutamol in severe and life-threatening acute asthma, including acknowledgement of the scarce evidence, lack of clinical consensus and limited roles for their use
Version 1.0

In this section

Highlights
What's new, updated or featured in the new edition
http://www.asthmahandbook.org.au/about/updates/version1_0/highlights

Errata
A record of amendments made to the Australian Asthma Handbook Quick Reference Guide Version 1.0
http://www.asthmahandbook.org.au/about/updates/version1_0/errata
Version 1.0 highlights

Key changes from the 2006 edition

Table. Comparison between Asthma Management Handbook 2006 and Australian Asthma Handbook 2014
Please view and print this figure separately: http://www.asthmahandbook.org.au/table/show/93

Other highlights of the 2014 edition

New diagnostic algorithms for adults and children
Clear diagnostic pathways for differential diagnosis of asthma, supported by detailed information on wheeze in young children

Updated stepped medical management
Fully updated approach for stepping up and stepping down asthma medicines, including where and how the new combination therapy products fit into the prescribing framework

Focus on inhaler technique and adherence
Emphasis on checking for inadequate adherence and incorrect inhaler technique before changing treatment, as these are common causes of poor asthma control

New acute asthma protocols
Practical management protocols for acute asthma covering the continuum of care from presentation through to recovery or hospital admission, based on the latest evidence for each treatment and designed for use across a wide range of care settings

Review of pregnancy and asthma evidence
Translation of the latest evidence on asthma management in pregnant women into practical recommendations, emphasising that all health professionals should give women the clear message that poorly controlled asthma can harm babies

Recognition of impact of preventive care activities
Explanation of how preventive care activities can benefit asthma, including that for people who are overweight, losing as little as 5–10 kg can significantly improve their asthma and that physical activity in people with asthma improves cardiopulmonary fitness and quality of life
## Version 1.0 Errata

### Major amendments (clinical corrections)

<table>
<thead>
<tr>
<th>Page</th>
<th>Change in text</th>
<th>Rationale and correction(s)</th>
<th>Date</th>
</tr>
</thead>
</table>
| Giving bronchodilator treatment according to severity and age | **Recommendation:** For patients with life-threatening asthma, deliver salbutamol via continuous nebulisation driven by oxygen until breathing improves, then consider changing to a pressurised metered-dose inhaler plus spacer or intermittent nebuliser.  
**Changed from:** For patients with life-threatening asthma, consider using continuous nebulisation until dyspnoea improves, then change to pressurised metered-dose inhaler plus spacer or intermittent nebuliser.  
**Wording amended for clarity:** Addition of ‘driven by oxygen’  
**Rearrangement of word order** | Wording amended for clarity: Addition of ‘driven by oxygen’  
Rearrangement of word order | 22 May 2014 |
| Giving bronchodilator treatment according to severity and age | **Recommendation:** To deliver intermittent nebulised bronchodilators in a patient receiving oxygen therapy, use an air-driven compressor nebuliser and administer oxygen by nasal cannulae. Titrate to oxygen saturation target of 92–95% in adults or at least 95% in children.  
**Changed from:** To deliver nebulised bronchodilators in a patient receiving oxygen therapy, use an air-driven compressor nebuliser and administer oxygen by nasal cannulae. Titrate to oxygen saturation target of 92–95% in adults or at least 95% in children.  
**Wording amended to distinguish between intermittent and continuous nebulisation:** Insertion of ‘intermittent’ | Wording amended to distinguish between intermittent and continuous nebulisation: Insertion of ‘intermittent’ | 22 May 2014 |
| Figure. Managing life-threatening acute asthma in adults and children | **Instruction:** ADULTS AND ADOLESCENTS  
Salbutamol 2 x 5 mg nebules at a time  
Use oxygen to drive nebuliser*  
Titrate oxygen to target SaO2 ≥ 92%  
**Wording amended to correct and clarify delivery method:**  
Replacement of ‘air’ with ‘oxygen’  
Deletion of ‘give oxygen via venturi’ | Wording amended to correct and clarify delivery method:  
Replacement of ‘air’ with ‘oxygen’  
Deletion of ‘give oxygen via venturi’ | 22 May 2014 |
Confidentiality note

The following information is provided solely for the purpose of this exercise and should not be used for any other purpose.

Minor amendments

Minor errors (e.g. typographical errors) in the current version of the Handbook are corrected in the online publication as soon as identified. Any amendments that could affect the intent or meaning of the text will be flagged accordingly.

Amendments that relate to content in the Quick Reference Guide will be listed in the Errata below.

Quick Reference Guide Version 1.0 Errata

A small number of typographical errors have been identified since the Quick Reference Guide was printed. These errors have been corrected in the online version. If you have a printed version, please amend your copy accordingly.
<table>
<thead>
<tr>
<th>Page</th>
<th>Location</th>
<th>Correction</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Figure D. Stepped approach to adjusting asthma medication in children</td>
<td>Spelling mistake in steps. Text should read: 'montelukast'</td>
<td>4 March 2014</td>
</tr>
<tr>
<td>17</td>
<td>Figure D. Stepped approach to adjusting asthma medication in children</td>
<td>Incorrect text in second step. Label should read: 'SOME CHILDREN Regular preventer'</td>
<td>3 April 2014</td>
</tr>
<tr>
<td>20</td>
<td>Table R. Reviewing and adjusting preventer treatment for children aged 6 years and over</td>
<td>Text omitted in heading of final column. Heading should read: 'No or partial response'</td>
<td>4 March 2014</td>
</tr>
<tr>
<td>26–27</td>
<td>Figure F. Managing acute asthma in children</td>
<td>Incorrect text in box Provide post-acute care. First line should apply to parent (or carer) Second line should read: 'Provide oral prednisolone for 3–5 days.'</td>
<td>28 March 2014</td>
</tr>
</tbody>
</table>
**Future updates and revision**

The *Australian Asthma Handbook* (and its predecessor the *Asthma Management Handbook*) has set the standard for asthma diagnosis and management in primary care for nearly 30 years. Each edition is a snapshot of contemporary evidence and best-practice guidance.

With support from the National Asthma Council Australia secretariat, the Handbook’s Guidelines Committee oversees amendments, updates and revision of the Handbook and monitors developments in guidelines methodology that may be applicable to the Handbook. As each version is published, the Committee considers priorities and procedures for the next.

Version 2.0 of the Handbook had a strong paediatric focus. It is anticipated that the next major edition will thus have an adult focus.
Implementation

Dissemination

Dissemination and implementation of the *Australian Asthma Handbook* is an ongoing focus of the National Asthma Council Australia. Dissemination of the guidelines includes both physical distribution of the printed resources and promotion of the online Handbook.

See: [Download the Handbook](#)

Regular promotional activities for the guidelines are directed towards members of colleges and associations of relevant health professions, for example at national conferences, and other stakeholder organisations.

Dissemination and implementation of the guidelines are both addressed by the National Asthma Council Australia’s long-standing health professional asthma and respiratory education program, Asthma Best Practice for Professionals (formerly known as A-Team workshops). Funded by the Australian Government Department of Health, the program involves peer-led workshops held with primary Healthcare Networks in rural, regional and urban locations around Australia and reaches many thousands of primary care health professionals. The education program content is regularly revised to include the latest recommendations from the Handbook.

Go to: National Asthma Council Australia’s [Asthma and respiratory education program](#)

Implementation principles

Consideration of the practicality and accessibility of the recommendations was fundamental to the development of the Handbook, as this is a key driver of implementation. For example, all referral advice takes into account access and gives alternatives, all use of devices (e.g. spirometers) gives options for practices without those devices and all medicines not reimbursed by the PBS are explicitly flagged. This is supported by the use of plain language for all recommendations and a clear information hierarchy for the complex online Handbook.

The Handbook includes a wide range of recommendations relevant to primary care health professionals. To facilitate implementation of the guidelines into everyday clinical practice, the core recommendations are summarised as figures in the Diagnosis, Management and Acute Asthma sections.

Health system priorities

From a broader health system perspective, the key points for implementation are:

- Confirm the diagnosis of asthma before starting treatment
- Before considering stepping up treatment, check symptoms are due to asthma, inhaler technique is correct, and adherence is adequate
- When asthma is stable and well controlled for more than 3 months, consider stepping down treatment
- For every person with asthma, develop an individualised written asthma action plan that is appropriate for their treatment regimen, asthma severity, culture, language, literacy level, and ability to self-manage
- For those who smoke, advise quitting and support them to quit. Advise women not to smoke while pregnant, and support them to quit
- For a pregnant woman with asthma, prescribe preventers, if indicated, just as for other adults, aiming to maintain the best possible asthma control and to avoid asthma flare-ups
- Advise patients that having asthma does not prevent them doing physical activity, including exercise training. Recommend physical training to adults and children with asthma, as part of overall asthma management, for its beneficial effect on quality of life.
Disclaimer

The Australian Asthma Handbook has been compiled by the National Asthma Council Australia for use by general practitioners, pharmacists, asthma educators, nurses and other health professionals and healthcare students. The information and treatment protocols contained in the Australian Asthma Handbook are based on current evidence and medical knowledge and practice as at the date of publication and to the best of our knowledge. Although reasonable care has been taken in the preparation of the Australian Asthma Handbook, the National Asthma Council Australia makes no representation or warranty as to the accuracy, completeness, currency or reliability of its contents.

The information and treatment protocols contained in the Australian Asthma Handbook are intended as a general guide only and are not intended to avoid the necessity for the individual examination and assessment of appropriate courses of treatment on a case-by-case basis. To the maximum extent permitted by law, acknowledging that provisions of the Australia Consumer Law may have application and cannot be excluded, the National Asthma Council Australia, and its employees, directors, officers, agents and affiliates exclude liability (including but not limited to liability for any loss, damage or personal injury resulting from negligence) which may arise from use of the Australian Asthma Handbook or from treating asthma according to the guidelines therein.
Site map

- Home
- Diagnosis
  - Adults
  - Adolescents
  - Children
- Management
  - Adults
  - Adolescents
  - Children
  - Written asthma action plans
  - Adherence
  - Inhaler devices and technique
- Acute asthma
  - Clinical management
  - First aid
- Clinical issues
  - Management challenges
  - Allergies
  - Thunderstorm asthma
  - Comorbidities
  - Complementary therapies
  - COPD
  - Exercise
  - Food
  - Smoking
  - Triggers
  - Work-related asthma
- Populations
  - Adolescents and young adults
  - Pregnant women
  - Older adults
  - Aboriginal and Torres Strait Islander peoples
  - Culturally and linguistically diverse communities
- Prevention
  - Primary prevention
  - Preventive care
- Resources
  - Medicines guide
  - Tools
  - Patient resources
  - Definitions
- Download or print
  - Complete Handbook
  - Key figures and tables
- About the Handbook
  - Publication information
  - Preface