Asthma: an inflammatory disorder

GP Workshop 2013
Dr Cherri Ryan
Approximately 10% of Australians have asthma
An estimated 411 people died of asthma in Australia in 2009
Asthma is associated with poorer quality of life
– impacted by disease severity and level of control
People with asthma are 3 x more likely to have days away from work/school
Definition of asthma...

- Asthma is a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role. The chronic inflammation causes an associated increase in airway hyperresponsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly a night or in the early morning. These episodes are usually associated with widespread but variable airflow obstruction that is often reversible either spontaneously or with treatment.

GINA handbook
Asthma: 3 key features

• Inflammation and hypersensitivity
  – Inflammatory cells involved may differ, but presence of inflammation remains a consistent feature

• Mucus production

• Bronchoconstriction
Airways

Normal airway or asthma well managed

• pink
• open
• muscles relaxed
Airways during asthma

- The lining of the airways becomes red, swollen and sensitive and may produce extra mucus.
- The muscles around the airways tighten.
Early and Late Phase Asthma Response

• EARLY
  – up to 6 hours after exposure to irritant/allergen
  – mediators released

• LATE
  – approx 12 hours after exposure, lasts up to 24 hours
  – mediators released
  – symptoms can be worse than in the early phase
Inflammation Flow chart
Inflammation, remodelling & altered neural control are responsible for recurrent exacerbations of asthma and more permanent airflow obstruction.
Airway remodeling

- A process leading to changes in connective tissue deposition and altered airway structures

- Increased size and number of smooth muscle fibres = increased potential for bronchoconstriction
- Subbasement membrane thickening
- Increase in mucus and plugs
- Shedding of epithelium
- Mucosal swelling
- Infiltration of eosinophils, neutrophils, mast cells
- Increase in vascular permeability
Altered neural control

- Irritant produces reflex bronchoconstriction by stimulating sensory receptors in the airways.
- In asthma, bronchoconstriction occurs at a lower level of provocation and more intensely.
Chronic nature of asthma

- Asthma is a chronic disease where most patients only experience symptoms intermittently or periodically
  - complex medication regimens and administration routes
  - prn medications require ability to interpret symptoms and confidence to manage
  - many patients take prescribed medications only during exacerbations
# Challenges of Chronic Conditions

<table>
<thead>
<tr>
<th>Acute disease</th>
<th>Chronic Illness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrupt onset</td>
<td>Usually gradual onset</td>
</tr>
<tr>
<td>Limited duration</td>
<td>Lengthy, indefinite duration</td>
</tr>
<tr>
<td>Often single cause</td>
<td>Usually multiple causes and changes overtime</td>
</tr>
<tr>
<td>Usually accurate diagnosis and prognosis</td>
<td>Often uncertain diagnosis and prognosis</td>
</tr>
<tr>
<td>Usually effective intervention</td>
<td>Intervention often indecisive; adverse effects common</td>
</tr>
<tr>
<td>Minimal uncertainty</td>
<td>Pervasive uncertainty</td>
</tr>
<tr>
<td>Professional knowledgeable and patients inexperienced</td>
<td>Professionals and patients have complementary knowledge</td>
</tr>
</tbody>
</table>
What is self-management?

Engaging in activities and practices that sustain and promote health and well-being by:

- Participating in decisions
- Building and sustaining partnerships
- Managing the impact of functioning, emotions and relationships
- Monitoring and managing the signs and symptoms

Characteristics of successful self-managers

1. Have knowledge of their condition
2. Follow a treatment plan agreed with a health professional
3. Actively share in the decision making with health professionals
4. Monitor and manage signs and symptoms of their condition
5. Manage the impact of the condition on their physical, emotional and social life
6. Adopt lifestyles that promote health

Flinders Human Behaviour & Health Research Unit Website: Flinders Model of Chronic Condition Self Management, Six Principles of Self Management
Characteristics of successful self-management support

- Person-centred approach
- Collaborative definition of problems
- Targeting, goal setting and planning
- Information, skills development
- Ongoing support and follow up

Update on asthma medications

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Aims of drug treatment

• Improve quality of life
• Control symptoms
• Achieve and maintain best lung function
• No side effects (or minimal)
• Prevent airway remodelling

• Pattern, severity and level of asthma control determines medication regimen
Medications

Reliever

USE AS NEEDED
Use to relax airway muscle

Preventer

USE DAILY
Reduce mucous & inflammation

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# Current Asthma Medications

<table>
<thead>
<tr>
<th>Relievers</th>
<th>Preventers</th>
<th>Rescue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-acting beta-agonists (SABA)</td>
<td>Long-acting beta-agonists (LABA)</td>
<td>Inhaled Corticosteroids</td>
</tr>
<tr>
<td><strong>salbutamol</strong></td>
<td><strong>eformoterol</strong></td>
<td><strong>beclomethasone</strong></td>
</tr>
<tr>
<td><strong>terbutaline</strong></td>
<td><strong>salmeterol</strong></td>
<td><strong>budesonide</strong></td>
</tr>
<tr>
<td><strong>ciclesonide</strong></td>
<td><strong>fluticasone</strong></td>
<td></td>
</tr>
</tbody>
</table>

## Combination Medications

- salmeterol + fliaxotide
- eformoterol + budesonide

## Other

**Theophylline**

**Ipratropium**

**Tiotropium**

<table>
<thead>
<tr>
<th>Anti-immunoglobulin therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>omalizumab</strong></td>
</tr>
</tbody>
</table>

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Asthma Foundation Queensland © 2013
Blue Relievers
- Short Acting Beta-Agonists
Short acting beta-agonists

• *salbutamol* or *terbutaline*
• beta-2 receptors in airway smooth muscle
• Relieve acute symptoms, or before exercise
• puffer, turbuhaler, autohaler, nebuliser
  – (NO role for oral – slow onset and high SEs)
• Onset of action – 4 minutes
• Duration of action – up to 4 hours
• Age – infant to elderly
Relievers:
Key patient statements

• BLUE
• Relaxes muscles that have tightened around airways
• Works in 3 – 4 minutes
• Lasts 3 – 4 hours
• Carry at all times and use if needed
• Common side effects – racy heart, shaky hands
• If increased need see your Asthma Action Plan
• Does not reduce swelling/sensitivity of airways

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Long acting relievers

- Level 1 evidence supports safety and efficacy of long-acting beta-agonists when used in conjunction with inhaled corticosteroids
- Therefore LABAs will be covered later in this presentation under combination medications.
Preventers
Preventers

• Non steroidal
  – Singulair, Intal forte, Tilade

• Inhaled corticosteroids (ICS)
  – Qvar, Pulmicort, Flixotide, Alvesco

• Combination
  – Seretide, Symbicort
Preventers – Oral non steroid

- *Montelukast sodium*
- Tablet / chewable tablet, once daily
- Leukotriene receptor antagonist
- Onset – may see benefit after 1\textsuperscript{st} dose
- A first line preventer in children over 2 years
- Prevention of Exercise Induced Asthma in people >6yo
- TGA approved for allergic rhinitis in adults and children
- Common side effects - headache, stomach upset
  - Uncommon: neuropsychiatric disturbance
Singulair: key patient statements

• A preventer medication, therefore take every day even when well
• Very specific action in the inflammatory process – won’t work for everybody
• May be effective from first dose, but trial for up to a month
• Not a first aid or rescue medication
• Common side effects – headache, abdominal discomfort (rare - neuropsychiatric)
Preventers - Inhaled non-steroid

- **Sodium Cromoglycate**
  - Intal Forte (puffer)

- **Nedocromil sodium**
  - Tilade (puffer)

- Not commonly prescribed
- Less effective than ICS
- Role in EIA (and COPD)
- Side effects – cough, bitter taste
Preventers - Inhaled corticosteroid (ICS)
Preventers - ICS

Indications for use

• Recommended if using blue reliever or symptomatic 3 or more times/week
• Affect the synthesis & release of mediators in the inflammatory process
• Reduce inflammation and mucus production
• Back-titration important - once symptom control & best lung function achieved → reduce to minimum doses required to maintain effect
Preventers – ICS: Alvesco

• **Alvesco (Ciclesonide)** – 80 & 160mcg
  – Dose range 80 – 320mcg (equivalent to FP)
  – New – 18+ with severe asthma up to 640 mcg (320 bd)
  – 120 doses per MDI

• Once daily dose - ↑ adherence
• Lung activated – less risk of side effects
• Available for > 6 year olds
Preventers – ICS: Flixotide

• Flixotide (*Fluticasone*) (FP)
• Potency twice BUD & equivalent to BDP HFA
• Flixotide top strength (500 Accuhaler and 250 puffer) is available only as original plus one repeat from the PBS
• 2 devices:
  – Puffer – 50, 125 & 250mcg
  – 120 doses per MDI
  – Accuhaler – 100, 250 & 500mcg
  – 60 doses per device
Preventers – ICS: Pulmicort

- Pulimcort (*Budesonide*) (BUD)
- Safety profile in pregnancy
- Turbuhaler – 100, 200 & 400mcg
  - 200 doses per device
Preventers – ICS: Qvar

- **Qvar (Beclomethasone) (BDP HFA)**
- 2 devices:
  - Autohaler – 50mcg & 100mcg
  - 200 doses per device
  - Puffer – 50mcg & 100mcg
  - 200 doses per MDI
ICS: Key patient statements

- Preventer - take every day even when well
- Reduce redness, swelling and sensitivity of the airways, dry up excess mucus
- Does not work quickly (takes 7-10 days to show good effect, up to one month to be working optimally)
- Regular review with GP to determine minimum dose that will keep you well
ICS: Key patient statements

• Possible local side effects:
  – Hoarse voice
  – Oropharyngeal thrush
  – Sore throat
• Rinse, gargle & spit
• Consider device change – puffer & spacer
• Systemic side effects rare
  – Generally require long-term high doses plus oral
Low, medium and high *daily* doses

Table 1. ICS dose equivalents: what is meant by low, medium and high daily doses?

<table>
<thead>
<tr>
<th>Dose level</th>
<th>CIC*</th>
<th>BDP–HFA**</th>
<th>FP**</th>
<th>BUD**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>80–160 mcg</td>
<td>100–200 mcg</td>
<td>100–200 mcg</td>
<td>200–400 mcg</td>
</tr>
<tr>
<td>Medium</td>
<td>160–320 mcg</td>
<td>200–400 mcg</td>
<td>200–400 mcg</td>
<td>400–800 mcg</td>
</tr>
<tr>
<td>High</td>
<td>320 mcg and above</td>
<td>Over 400 mcg</td>
<td>Over 400 mcg</td>
<td>Over 800 mcg</td>
</tr>
</tbody>
</table>

ICS: inhaled corticosteroid; LABA: long-acting beta<sub>2</sub> agonist; CIC: ciclesonide; BDP–HFA: beclomethasone dipropionate; FP: fluticasone propionate; BUD: budesonide

- Asthma Management Handbook 2006, National Asthma Council
ICS daily doses
- benefit vs side effects

Dose - response curve for inhaled corticosteroids

Clinical effect

Daily dose of inhaled steroid (FP ug)

0 50 100 200 400 600 800 1000

90% max

Clinical Benefit

Adverse effect


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Step up step down approach
Steps made at interval of 6-12 wks

- Adapted from Powell H, Gibson PG, 2003 and Douglass JA, Reddel HK, 2005
Preventers - Combination medications

Flixotide + Serevent = Seretide

Pulmicort + Oxis = Symbicort
Long acting relievers (LABAs)

- **Eformoterol** (Oxis- turbuhaler; Foradile)
  - onset 1-3mins, duration 12hrs
- **Salmeterol** (Serevent), accuhaler
  - onset 30mins, duration 12hrs
- Long-acting beta-2 agonists bind to beta-2 receptors
- For symptoms despite effective ICS treatment
- Safety profile when used in conjunction with an ICS
- If no benefit after one month – withdraw
- Limited evidence for efficacy in children <12yo
  - 4 years of age for salmeterol
  - 12 years of age for eformoterol
LABAs: Key patient statements

- Relax airway muscles for 12 hours
- Generally **GREEN** in colour
- Always take with preventer medication
- Possible common side effects
  - Palpitations (racy heart)
  - Muscular tremor (shaky hands)
  - Headache
Combination: Indications for use

- Poor asthma control despite ICS  
  – rule out poor technique and non-adherence
- Adding LABA to ICS improves lung function and symptoms and reduces exacerbations
- Patient may use lower doses of ICS
- Patients still require SABA for symptoms during an exacerbation
- Should not be prescribed as initial therapy
Seretide

• Seretide = Flixotide & Serevent
  - Puffer – 50/25, 125/25, 250/25mcg
  - 120 doses per MDI
  - Accuhaler – 100/50, 250/50, 500/50mcg
  - 60 doses per device

• Indicated in children 4 and over
• Fixed dosing regimen only
Symbicort

- Symbicort = Pulmicort & Oxis
- Turbuhaler
  - 100/6 mcg - 120 doses per device
  - 200/6 mcg - 120 doses per device
  - 400/12 mcg - 60 doses per device
- Fixed dosing regimen (all strengths)
- or “SMART” (100/6 or 200/6 only)
Symbicort Maintenance & Reliever Therapy (SMART)

One inhaler device – used as:

**Preventer:**
- Symbicort Turbuhaler 100/6 mcg or 200/6 mcg only
- 1-2 inhalations twice daily or 2 inhalations once daily

**Reliever:**
- As needed in response to symptoms
- No more than 6 inhalations should be taken on any single occasion
- Total daily dose of 12 should not be exceeded. If requiring 12, make same day contact with doctor/ED
Opportunity for early intervention?

Preventers - anti-immunoglobulin

- **Omalizumab**
- Subcutaneous, once every 2-4 weeks
- Under specialist advice
- Monoclonal antibody to IgE
- Blocks allergen-induced inflammatory cascade early in process – reducing release of histamine, leukotrienes, cytokines and other mediators
- Indicated in people >12 yo, with allergic asthma, that is poorly controlled despite high dose ICS or frequent oral steroids
- Possible increased risk of malignancy
Rescue Medications
Rescue medications -
Oral Corticosteroids

- *prednisolone, prednisone, panafcortelone*
  - oral syrup or tablets (also parenteral)
- Effective rescue medication for acute asthma
- Commence at onset of moderate to severe exacerbation as per AAP
- **Dose** - oral, once daily
  - Adult – 40-60mg/day (for 7-10 days)
  - Child – 1mg/kg/day (for 3-5 days)
  - No need to taper if short course
Rescue meds: Key patient statements

- Effect usually begins at 3-4 hrs
- Effect may take up to 48 hours
- Start as soon as signs of an exacerbation (see your AAP)
- Continue to take your regular preventer medication
- Possible short-term side effects:
  - Hunger
  - Mood swings/sleeplessness
  - Fluid retention, Weight gain
- Reassure that long-term use side effects do not occur short-term
Is this poorly controlled asthma?

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Assessing asthma control

1. Acute asthma severity
   – acute asthma symptoms right now
   – mild, moderate, severe, life-threatening
   – determines acute management

2. Background level of asthma control
   – how well controlled usually and any changes
   – determines day-to-day asthma management

Both factors influence the Asthma Action Plan
<table>
<thead>
<tr>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaks in sentences</td>
<td>Shortened sentences</td>
<td>Word or two per breath</td>
</tr>
<tr>
<td>Mild cough</td>
<td>Persistent cough</td>
<td>Cough may or may not be present</td>
</tr>
<tr>
<td>Possible soft wheeze</td>
<td>Possible loud wheeze</td>
<td>Wheeze may be absent</td>
</tr>
<tr>
<td>Minor difficulty breathing</td>
<td>Obvious difficulty breathing</td>
<td>Gasping for breath</td>
</tr>
<tr>
<td>Minimal chest tightness</td>
<td>May complain of tightness, sore tummy</td>
<td>Gasping for breath, Unable to take breath</td>
</tr>
<tr>
<td>Vital signs normal</td>
<td>Tachycardia likely</td>
<td>Tachycardia, pulsus paradoxus, hypotension, collapse</td>
</tr>
<tr>
<td>?HR up due to meds</td>
<td>BP normal</td>
<td></td>
</tr>
</tbody>
</table>
Assessing background asthma control

<table>
<thead>
<tr>
<th>Well controlled</th>
<th>Getting worse</th>
<th>Severe</th>
<th>Life threatening</th>
</tr>
</thead>
</table>

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### Good control vs poor control

<table>
<thead>
<tr>
<th>Good control</th>
<th>Poor control</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No regular symptoms day or night</td>
<td>• Frequent symptoms day or night</td>
</tr>
<tr>
<td>• Minimal reliever medication &lt;3x/week</td>
<td>• Needing reliever medication &gt;3x/week</td>
</tr>
<tr>
<td>• No exacerbations (or rare and mild)</td>
<td>• Regular exacerbations (may be severe)</td>
</tr>
<tr>
<td>• No limitation of physical activity</td>
<td>• Limitation of physical activity due to asthma</td>
</tr>
<tr>
<td>• Optimal lung function</td>
<td>• Reduced lung function</td>
</tr>
</tbody>
</table>

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What are some of the reasons why a person may have poorly controlled asthma?
Some reasons for poor asthma control

- Non-adherence
- Poor delivery device technique
- Asthma medication inadequate for level of asthma severity
- Inflamed upper airways
- Regular exposure to trigger
- Comorbidities
- Incorrect diagnosis (e.g., COPD, fibrosis, congenital, etc)
- Other
Challenges across age span

• See sheet in your workshop material identifying some issues that may influence asthma management across different age groups
Influences on adherence

• Patient health beliefs
• Attitudes to medications
• Difficulties with inhaler devices
• Cost of medication/delivery device
• Denial
• Underestimation of severity
• Quality of interactions with health professionals
Asthma preventer use irregular

- Only 16% of patients prescribed an asthma preventer medication for the first time go on to use them regularly
  - 6/10 ‘first time’ users do not fill another prescription for two years
  - 22% of scripts only filled sporadically

Source: PBS data from more than 352,000 asthma patients from 2004 to 2005.
“People often have difficulty taking or remembering to take their asthma medication everyday, how do you find it?”
Measures of lung function

• Peak flow meters
  – Results are variable, effort dependent and differ between instruments
  – Can be useful for poor symptom perceivers
  – Can be used at home but must establish baseline

• Spirometry
  – Accurate, reproducible results
  – Effort-dependent, but can detect if effort inadequate
  – Results require interpretation, not for home use
Spirometers

- Measure how effectively and how quickly the lungs can be emptied (and sometimes filled)
- Spirometers are usually either:

Volume Displacement

Flow-sensing
Role of spirometry

• Adequate training in performance and interpretation of spirometry essential for accuracy
• Can generally be conducted from 7 years old and above
• Useful for asthma diagnosis, in conjunction with clinical picture
• Useful for assessment of severity and response to medications
• Recommended twice per year as part of assessment in Asthma Cycle of Care
Asthma Action Plans
Who do they help?
How do they help?

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Asthma Action Plans: who are they for?

- Every person with asthma
- Parents and carers of people with asthma
- For institutions and work places that may need to administer first aid for the person with asthma
  - Schools, child care centres, sporting clubs, etc
- Doctors
Asthma Action Plans: How do they help?

- Reduces reliever medication use
- Reduces urgent visits to the doctor
- Reduces the number of days off work/school
- Decreases the number of hospitalisations
- Improves lung function
Asthma Action Plans: How do they help?

- Important tool in effective asthma self-management
- Help self (or carer) to assess asthma severity
- Step by step guide to management & first aid
- Reminder of management decisions made between doctor and patient
- Provides institutions with vital information for first aid management and planning
How are AAPs useful to GPs?

- Educational tool – patient self-management education
- Written and visual resource for patients to take home
- Record of management decisions made between patient and doctor
- Communication document between doctors and schools, etc.
Asthma action plan - plain English

My Asthma Action Plan

Well Controlled
- Able to do normal activities
- Needing blue reliever less than three times/week

Worsening
- Cough or chest tightness wakes me up
- Needing blue reliever more than three times/week

Severe
- Waking most nights and mornings with coughing or chest tightness
- Needing blue reliever at least every three hours

Life threatening asthma and 4 step asthma first aid plan – turn over

Always carry your blue reliever with you.
For more information on asthma call 1800 645 130

See doctor as soon as you can

Name: ___________________________
Doctor’s Name: ___________________
Doctor’s Signature: ___________________
Doctor’s Phone No.: ________________
Life-threatening asthma
Call 000 immediately and begin asthma first aid

1. Relax, sit up.
   - If no spacer is available, use a blue reliever puffer on its own.

2. Take 4 puffs of a blue reliever puffer (one puff at a time), through a spacer device*. Take four breaths from the spacer after each puff.

3. Wait 4 minutes.

4. If little or no improvement, repeat steps 2 and 3.
   If still no improvement, call an ambulance immediately (Dial 000). Repeat steps 2 and 3 until ambulance arrives.
Asthma action plan

When my asthma is well controlled:
- No regular wheeze, cough or chest tightness at night, on waking or during the day
- Able to take part in normal physical activity without wheeze, cough or chest tightness
- Need reliever medication less than three times a week (except if it is used before exercise)
- Peak Flow® above

What should I do?
- Continue my usual treatment as follows:
  - Preventer
  - Reliever
  - Combination Medication

Always carry my reliever puffer.

When my asthma is getting worse:
- At the first sign of worsening asthma symptoms associated with:
  - Waking from sleep due to coughing, wheezing or chest tightness
  - Using reliever puffer more than 2 times a week (not including before exercise)
  - Peak Flow® between

What should I do?
- Increase my treatment as follows:
  - See my doctor to talk about my asthma getting worse

And if it is getting worse:
- See my doctor for advice

When my asthma is severe:
- Need reliever puffer every 3 hours or more often
- Increasing wheezing, coughing, chest tightness
- Difficultly with normal activity
  - Waking each night and most mornings with wheezing, coughing or chest tightness
  - Feel that asthma is out of control
  - Peak Flow® between

What should I do?
- Start oral prednisolone (or other steroid) and increase my treatment as follows
- And if it is severe:
  - See your doctor immediately after a serious asthma attack

How to recognise LIFE-THREATENING ASTHMA:
- Dial 000 for an ambulance and/or 112 from a mobile phone if you have any of the following danger signs:
  - Asthma symptoms becoming extreme
  - Difficulty breathing
  - Have or no improvement from reliever puffer
  - Sputum blue
  - And follow the Asthma First Aid Plan below while waiting for ambulance to arrive.

A severe asthma attack is also indicated by:
- Symptoms getting worse quickly
- Severe shortness of breath or difficulty in speaking
- You’re wheezing or breath sounds are not clear
  - Peak Flow® below

Should any of these occur, follow the Asthma First Aid Plan below:

Asthma First Aid Plan

1. Sit upright and stay calm.
2. Take 4 separate puffs of a reliever puffer (one puff at a time) via a spacer device, do not use the puffer on its own if you don’t have a spacer. Take 4 breaths from the spacer after each puff.
3. Wait 4 minutes if there is no improvement, take another 4 puffs.
4. If this is not helpful, CALL AN AMBULANCE IMMEDIATELY (DIAL 000 and/or 112 from mobile phones) and state you are having an asthma attack. Keep taking 4 puffs every 4 minutes until the ambulance arrives.

*Not recommended for children under 12 years.

Name: ___________________________ Date: ___________ Peak Flow®: ___________ New Doctor’s Appointment: ___________

Pre: ___________ Post: ___________
Short wind action plan

ASThma ACTION PLAN
Name: 
Doctor: 

Feel Good
• no short wind
• no cough
• no whistle breathing

Short Wind
• tight chest
• whistle breathing (wheeze)
• short wind when walking or playing

My medication:

4 puffs when needed
Always carry your blue puffer with you and use it when you have short wind

My medication:

Short Wind Danger Plan
• sit up
• have 4 puffs of blue puffer and wait a short time
• send someone to health clinic for help
• if you still have bad short wind, take 4 more puffs
• keep using the blue puffer until you feel better or the health worker comes

Dr Comments:

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Symbicort SMART action plan

My Symbicort® Asthma Action Plan
Symbicort® Maintenance And Reliever Therapy

Normal mode

- **MY SYMBOICORT ASTHMA TREATMENT IS:**
  - [ ] Symbicort 100/6 µg OR
  - [ ] Symbicort 200/6 µg

- **MY REGULAR TREATMENT EVERY DAY:**
  - Take [ ] inhalation(s) in the morning
  - [ ] inhalation(s) in the evening, every day

- **RELEIVER:**
  - Use Symbicort 1 inhalation whenever needed for relief of my asthma symptoms
  - I should always carry my Symbicort Turbuhaler

- **MY ASTHMA IS STABLE IF:**
  - I can take part in normal physical activity without asthma symptoms
  - AND
  - I do not wake up at night or in the morning because of asthma

- **OTHER INSTRUCTIONS:**
  - 

Asthma flare-up

- **IF OVER A PERIOD OF 2–3 DAYS:**
  - My asthma symptoms are getting worse OR not improving OR
  - I am using more than 6 Symbicort reliever inhalations a day,
  - I should:
    - [ ] Continue to use my regular everyday treatment
    - PLUS 1 Inhalation Symbicort whenever needed to relieve symptoms
    - [ ] Start a course of prednisolone
    - [ ] Contact my doctor

  - **COUSE OF PREDNISOLONE TABLETS:**
    - Take 2 x 25 mg or [ ] mg prednisolone tablets per day for [ ] days OR

  - **IF I NEED MORE THAN 12 SYMBOICORT INHALATIONS (TOTAL) IN ANY DAY,**
    - I must see my doctor or go to hospital the same day

Asthma emergency

- **SIGN OF AN ASTHMA EMERGENCY:**
  - Symptoms getting worse quickly
  - Extreme difficulty breathing or speaking
  - Little or no improvement from Symbicort reliever inhalations.

- **IF I HAVE ANY OF THE ABOVE DANGER SIGNS, I SHOULD DIAL 000 FOR AN AMBULANCE AND SAY I AM HAVING A SEVERE ASTHMA ATTACK.**

- **WHILE I AM WAITING FOR THE AMBULANCE START MY ASTHMA FIRST AID PLAN:**
  - Sit upright and stay calm
  - Take 1 inhalation of Symbicort. Wait 1–3 minutes. If there is no improvement take another inhalation of Symbicort (up to a maximum of 6 inhalations).
  - If only Ventolin® is available, take 4 puffs as often as needed until help arrives
  - Start a course of prednisolone tablets (as directed) while waiting for the ambulance
  - Even if my symptoms appear to settle quickly, I should see my doctor immediately after a serious asthma attack
Where to find asthma action plans

www.asthmaaustralia.org.au

About Asthma

Resources

Tools + Asthma Action Plans
Asthma Delivery Devices

Is it enough to “see one, do one, teach one”?

GP Workshop 2013
Dr Cherri Ryan
The importance of delivery device technique

- Incorrect delivery device technique is common
- The risk of misusing inhalers is particularly high in older and more debilitated patients
- Patients are unlikely to use inhalers correctly without clear instruction and a physical demonstration


Asthma Foundation Queensland © 2013
Risks of incorrect use

• Incorrect use of delivery devices for ICS has been associated with:
  • increased reliever use
  • increased use of emergency medical services,
  • worsening asthma
  • higher rates of asthma instability (GP assessed)

• *These outcomes are most pronounced among patients with poor inspiration–actuation coordination.*

Is it enough to “see one, do one, teach one”?

• No

• For doctors and patients, correct delivery device technique needs:
  – practice
  – identification and correction of errors
  – regular review

Asthma Foundation Queensland © 2013
When teaching delivery device technique

- Choose device appropriate to patient’s ability
- Use clear demonstration techniques and explanations
- Observe patient performing the skill
- Identify any errors in technique
- Explain errors and assist with correction
- Plan review
Choosing delivery devices

<table>
<thead>
<tr>
<th>Device</th>
<th>Age</th>
<th>Some factors in choosing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puffer and spacer</td>
<td>4yo - elderly</td>
<td>Spacer provides better lung deposition, size, cleaning</td>
</tr>
<tr>
<td>Puffer, spacer &amp; facemask</td>
<td>Infant - 4yo</td>
<td>Various spacers and masks, cleaning</td>
</tr>
<tr>
<td>Puffer alone</td>
<td>&gt;7yo</td>
<td>Must coordinate breath and puff, cleaning, recommend with spacer</td>
</tr>
<tr>
<td>Turbuhaler</td>
<td>8yrs - elderly</td>
<td>Compact, dexterity, visual counter</td>
</tr>
<tr>
<td>Accuhaler</td>
<td>8yrs - elderly</td>
<td>Compact, dexterity, visual counter</td>
</tr>
<tr>
<td>Autohaler</td>
<td>8yrs - elderly</td>
<td>Breath activated, dexterity</td>
</tr>
<tr>
<td>Nebulisers</td>
<td>Infant - elderly</td>
<td>Not recommended for home, spacer+puffer as effective, requires maintenance, may delay presentation</td>
</tr>
</tbody>
</table>
Puffer & Spacer

Why use a spacer?

• reduces side effects
• is easier to use than a puffer alone and
• allows up to 4 times more medication to be breathed in than using a puffer alone (25 - 40% of medication is absorbed into lungs).¹

Drug Deposition: puffer versus puffer and spacer
Delivery devices

• Delivery device correct technique is crucial
• Demonstration is required
• Maintenance and cleaning
• Common errors important to recognise and be able to correct
• OHS – e.g. patient sitting down to avoid light-headedness if practicing technique; using placebos
Managing asthma: a practice based commitment

2013 GP Workshop
Dr Cherri Ryan
Asthma Cycle of Care

• At least 2 asthma consultations within 12 months

• Visits need to include:
  – diagnosis, assessment of severity and control
  – Review patient’s use of, and access to, asthma related medication and devices
  – develop individualised written AAP
  – provide patient self-management education
  – a planned review within 12 months
Who should undertake the Asthma Cycle of Care?

Individuals with moderate to severe asthma:

• Symptoms on most days
• Using reliever more than 3 times/week
• Using regular preventer medication
• Exacerbation requiring hospital attendance
Other MBS Chronic Disease Management items

• For patients with asthma alone, can use Asthma Cycle of Care or another CDM item
  – but not both in same 12 months

• For patients with asthma and complex medical needs, can use the Asthma Cycle of Care and may provide team-based care using CDM items
  – eg GP Management Plan, Team Care Arrangements
A practice-based commitment

• In your practice, who interacts with people with asthma?
  – receptionists, nurses, GPs, Locums, cleaners, other patients

• What are some of the key risks in these interactions?
  – Inappropriate triage
  – Appointment allocation or refusal
  – First aid
First Aid in your practice

GP Workshop 2013
Dr Cherri Ryan
Who can administer blue reliever in the community?

- Each state is governed by its own Regulation surrounding the administration of blue reliever in the community
- Refer to your relevant state based Regulation
When to call an ambulance...

Call emergency assistance immediately (Dial 000) if:

• You are not sure the person is experiencing asthma
• The person is experiencing signs of a severe asthma attack

And then commence asthma first aid

• Blue reliever medication is unlikely to harm, even if the person does not have asthma.
Asthma First Aid  Step 1

- **Sit** person upright
- Be calm and reassuring
- **Do not** leave person alone
Asthma First Aid

Step 2

Give 4 puffs of blue reliever puffer medication

- Use a spacer if there is one
- **Shake** puffer
- Put **1 puff** into spacer
- Take **4 breaths** from spacer

**Repeat** until **4 puffs** have been taken

**Remember:** **Shake, 1 puff, 4 breaths**
Asthma First Aid  

Step 3

• Wait 4 minutes

• If there is no improvement, give 4 more puffs as above
Asthma First Aid

Step 4

If there is still no improvement, call emergency assistance (DIAL 000)*

• Say ambulance and that someone is having an asthma attack
• Keep giving 4 puffs every 4 minutes until emergency assistance arrives

* Or 112 on mobile phone
Practice-based opportunities

• Consider opportunities to improve care across the whole practice for people with asthma, e.g.
  – First aid training and policies
  – Triage processes
  – Planned reviews
  – Education
  – Supporting self-management strategies
  – Other
Asthma - to the future

2013 GP Workshop
Dr Cherri Ryan
The past - what we thought we knew

Medical advice given to patients by doctors in Qld in the 1960s and early 70s:

“Though asthma is a distressing complaint... it is not so serious as many people think... Also, it leads parents to fuss unduly over an asthmatic child. The child “catches” this anxiety, which in itself can provoke an attack. Real danger from asthma is rare... Worries of various kinds can often start attacks... Don’t overdo sympathy. Avoid talking about asthma in the child’s hearing, and try hard not to be too sympathetic.”

Management advice at the time included – postural drainage, relaxation and breathing exercises. For severe attacks - injection of adrenaline used, oral ephedrine +/- phenobarbitone for palpitations.


By 1976 The Asthma Foundation Qld had published a booklet entitled ‘Todays’ Management of Asthma’ recognising that asthma involved sensitive inflammed airways, the link with atopy and allergy, cigarette smoke, etc. However, treatment as we know it today was still in its infancy as aerosol forms of Ventolin, Bricanyl and Becotide had just been released. The mainstay was still breathing exercises, intal spin-caps, oral ephedrine, theophylline and steroids.
Asthma was declared a National Health Priority Area in 1999

Aims include

- Improving quality of life
- Suppressing inflammatory processes in asthma
- Minimising and managing symptoms
- Early recognition of changes in level of asthma control and adjustments to management
- Prevention of airway remodelling
- Addressing allergy and other triggers
- Prevention if possible (research directions)
• The Cochrane Review, *Interventions for helping patients to follow prescriptions for medications* suggests that improving the effectiveness of adherence strategies may have a far greater impact on people’s health than improvements in medical treatments.
The future...

- Research and development
- Utilise technology and communication devices (e.g. smart phones), online services, apps, e.g.
  - Asthma Action Plans
  - Reminders
  - Medical histories
  - Emergency contacts and plans
  - Education
  - Social support
  - Raising Awareness
  - Communicating environmental risks
  - Research
  - Symptom monitoring
  - ?other

Asthma Foundation Queensland © 2013
Current Asthma Australia grant recipients

RAMP - Reminder Asthma Management Program

• Evaluate a reminder management approach designed to improve asthma control in 6 – 16 year old children with asthma.

• Dr Scott Burgess and Assoc Prof Carolyn Dakin
Vitamin D links to childhood development of asthma and allergy

- Investigate whether inadequate Vitamin D during infancy promotes development of persistent wheeze and/or asthma
- Will focus on two major risk factors: respiratory infection and allergic sensitisation
Current Asthma Australia grant recipients

Anti-Smoking Asthma Program (ASAP) for high schools - a pilot study

- Involves peer led education program to improve asthma outcomes and prevent tobacco smoking in Aboriginal and Torres Strait Islander and disadvantaged young people.
Staying up to date

- Recommendations for best-practice asthma management have changed over the last 50 years and are *likely to change* in the future.

  - Asthma Australia
  - National Asthma Council - Asthma Management Handbook
  - Australian Institute of Health and Welfare
  - Global Initiative for Asthma
    - [www.ginasthma.org](http://www.ginasthma.org)
  - NHMRC, Medical literature, conferences, etc