# Asthma Action Plan in Adults

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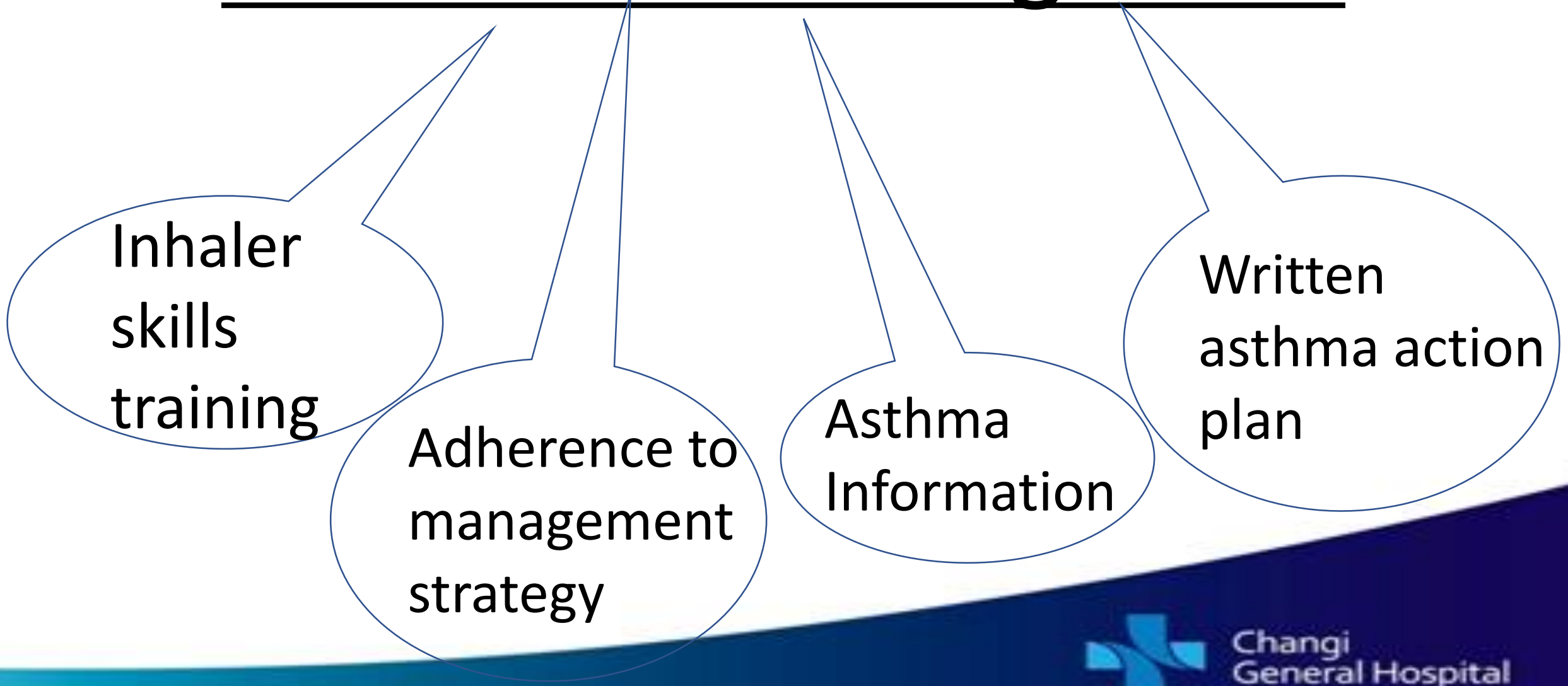
Changi General Hospital

- No conflicts of interest

# Asthma self-management

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# Topics

- What is an AAP?
- Why use an AAP?
- How to prescribe an AAP

- Special considerations when prescribing an AAP
- Barriers and how to overcome them

# What?

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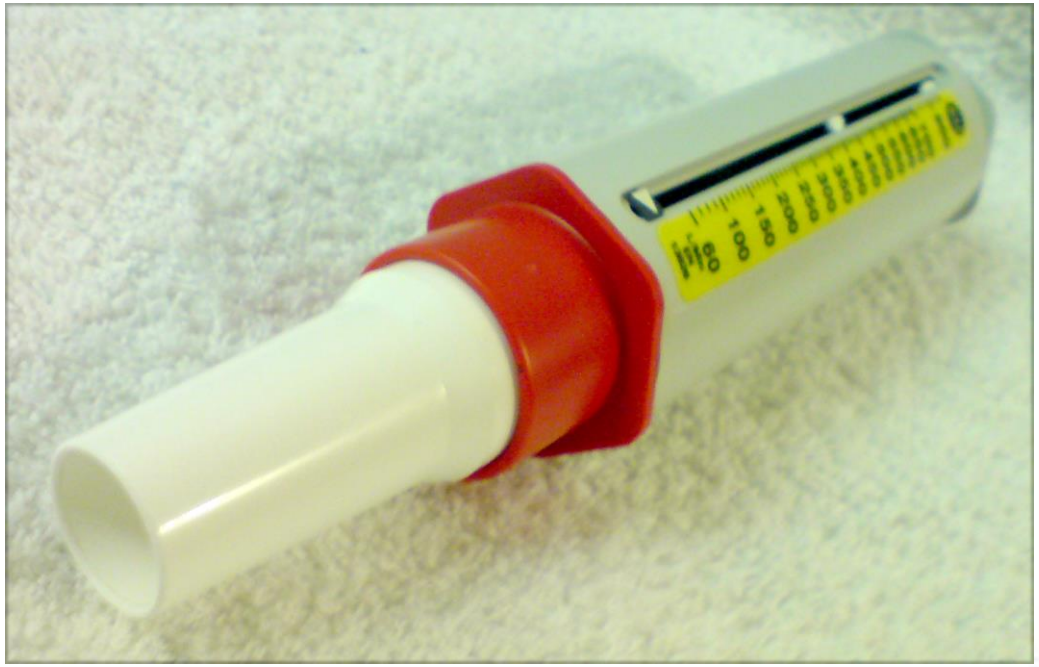
- Physician – prescribed
- Varies therapy depending on

±



- End-user actually using it

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# WRITTEN ASTHMA ACTION PLAN (WAAP)

## EVERY DAY ASTHMA CARE

My personal best peak flow is: _____

### PREVENTER INHALER

**I need to take my preventer inhaler <u>every day</u> even when I feel well.**

My preventer inhaler is:
(insert name/colour)
I should take ____puff(s) in the morning and
____puff(s) at night

### RELIEVER INHALER

I take my reliever inhaler ***only if I need***.
My reliever inhaler is:
(insert name/colour)

I should take ____puff(s) of my reliever inhaler if any of these things happen:

- I'm wheezing
- My chest feels tight
- I'm finding it hard to breathe
- I'm coughing.

**Other medicines** I should take for my asthma every day: (free text)

With this daily routine I should expect/aim to have no symptoms.

## WHEN I FEEL WORSE

- My symptoms are coming back (wheeze, tightness in my chest, breathlessness, cough)
- I am waking up at night
- My symptoms are interfering with my usual day-to-day activities (e.g. at work, exercising, housechores)
- I am using my reliever inhaler ____ times a week or more
- If I am told to monitor my peak flow and it drops to below _____

### Preventer inhaler

☐ If I have <u>not</u> been using my preventer inhaler, **start using it regularly again.**

☐ Increase my preventer inhaler to ___ puffs ___ times a day for 2 weeks.

### Reliever inhaler

☐ Ventolin MDI: up to ___ puffs every ___ hours

☐ Symbicort: 1 puff as needed up to a total 12 puffs/day

### Standby prednisolone

☐ If I have been given standby prednisolone (steroid) tablets to keep at home: take ___ mg of prednisolone immediately and every morning for 5 days

If I do not improve within 24 hours, I should visit a doctor for further advice.

Alternatively, I may also contact the asthma nurse (at _____within office hours) for further advice before seeing a doctor

## IN AN ASTHMA ATTACK

- My reliever inhaler is not helping or I need it more than every ____ hours
- I find it difficult to walk or talk
- I find it difficult to breathe
- I'm wheezing a lot or I have a very tight chest or I'm coughing a lot
- If I am told to monitor my peak flow and it drops to below _____

**THIS IS AN EMERGENCY. PLEASE TAKE THE FOLLOWING ACTION NOW:**

1. Sit up straight. Try to keep calm.
2. Take 2 puffs of my reliever inhaler every 5minutes up to a maximum of 10 puffs
3. If I do not feel better after 10 puffs, or if I feel worse at any point in time, I need to get to the nearest doctor or hospital.
4. Call 995 for an ambulance if needed.

Affix Patient's Sticker

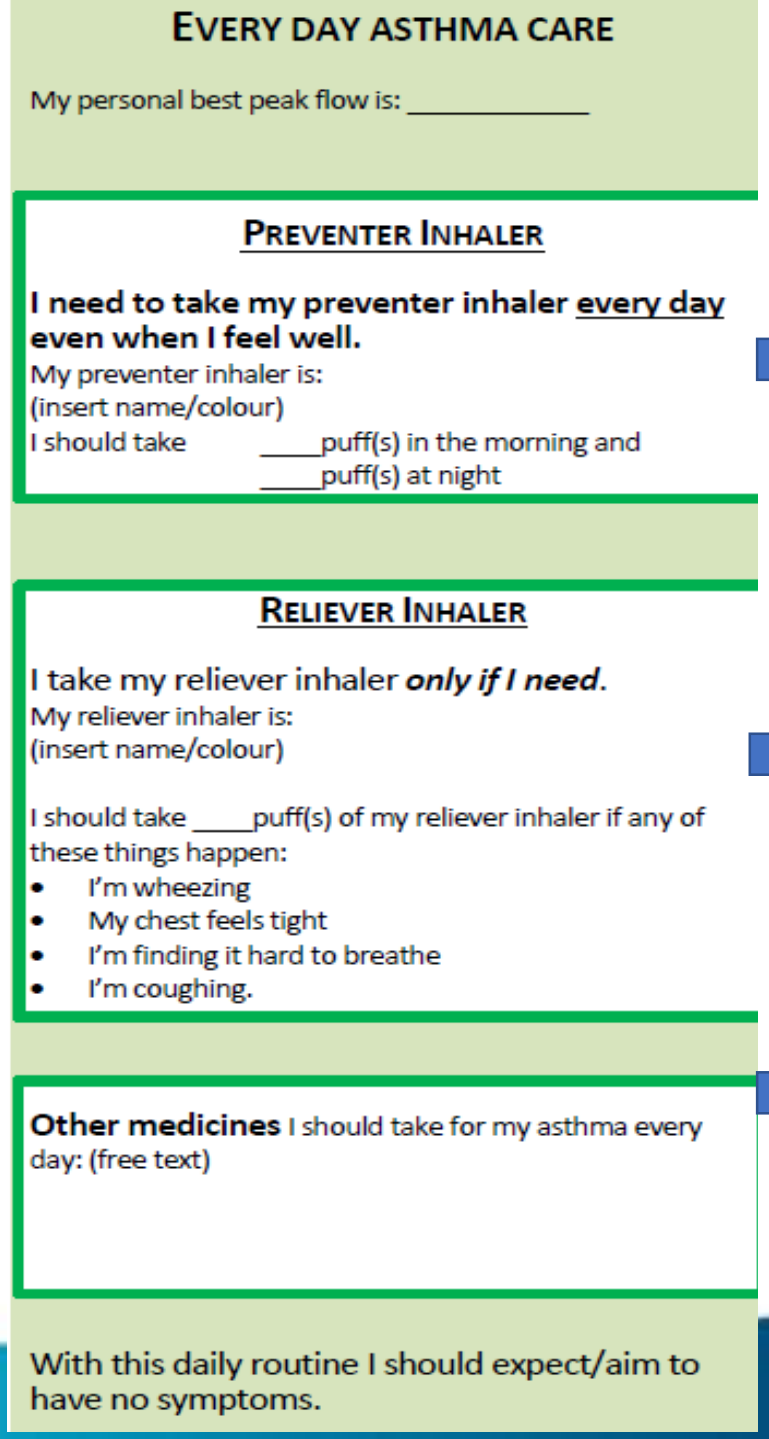
Date WAAP given to patient:

Asthma nurse :

Primary respiratory physician:

Effective Date : 14 May 2018

# The Green Zone



EVERY DAY ASTHMA CARE

My personal best peak flow is: _____

PREVENTER INHALER

**I need to take my preventer inhaler every day even when I feel well.**
My preventer inhaler is:
(insert name/colour)
I should take ____puff(s) in the morning and
____puff(s) at night

RELIEVER INHALER

I take my reliever inhaler ***only if I need***.
My reliever inhaler is:
(insert name/colour)

I should take ____puff(s) of my reliever inhaler if any of these things happen:

- I'm wheezing
- My chest feels tight
- I'm finding it hard to breathe
- I'm coughing.

**Other medicines** I should take for my asthma every day: (free text)

With this daily routine I should expect/aim to have no symptoms.

Reminds daily prescribed preventer inhaler to increase adherence

Reinforces that salbutamol inhaler is only for symptom relief

Associated co-morbidities require treatment

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# The Yellow Zone

## WHEN I FEEL WORSE

- My symptoms are coming back (wheeze, tightness in my chest, breathlessness, cough)
- I am waking up at night
- My symptoms are interfering with my usual day-to-day activities (e.g. at work, exercising, housechores)
- I am using my reliever inhaler ____ times a week or more
- If I am told to monitor my peak flow and it drops to below _____

→ Described acute loss of asthma control

**Preventer inhaler**

☐ If I have not been using my preventer inhaler, **start using it regularly again.**

☐ Increase my preventer inhaler to ___ puffs ___ times a day for 2 weeks.

→ ICS dose needs to be increased during this time

**Reliever inhaler**

☐ Ventolin MDI: up to ___ puffs every ___ hours

☐ Symbicort: 1 puff as needed up to a total 12 puffs/day

→ Salbutamol = 800mcg/day
Formoterol = 72 mcg/day

**Standby prednisolone**

☐ If I have been given standby prednisolone (steroid) tablets to keep at home: take ___ mg of prednisolone immediately and every morning for 5 days

→ OCS and contacting a healthcare provider.

If I do not improve within 24 hours, I should visit a doctor for further advice.

Alternatively, I may also contact the asthma nurse (at _____within office hours) for further advice before seeing a doctor

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# The Red Zone

## IN AN ASTHMA ATTACK

- My reliever inhaler is not helping or I need it more than every _____ hours
- I find it difficult to walk or talk
- I find it difficult to breathe
- I'm wheezing a lot or I have a very tight chest or I'm coughing a lot
- If I am told to monitor my peak flow and it drops to below _____

Recognise dangerous symptoms in an exacerbation.

## THIS IS AN EMERGENCY. PLEASE TAKE THE FOLLOWING ACTION NOW:

1. Sit up straight. Try to keep calm.
2. Take 2 puffs of my reliever inhaler every 5minutes up to a maximum of 10 puffs
3. If I do not feel better after 10 puffs, or if I feel worse at any point in time, I need to get to the nearest doctor or hospital.
4. Call 995 for an ambulance if needed.

Crisis management and calling for help.

# Why?

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Cochrane Library

Cochrane Database of Systematic Reviews

# Self-management education and regular practitioner review for adults with asthma (Review)

Gibson PG, Powell H, Wilson A, Abramson MJ, Haywood P, Bauman A, Hensley MJ, Walters EH, Roberts JJL

- 36 randomised controlled trials
- 6090 participants
- Compared self-management vs usual asthma care

- Patient outcomes
- Healthcare Consumption

18 studies included action plan as part of self-management strategy

**Figure 2. Forest plot of comparison: 1 Self Management versus Usual Care, outcome: 1.1 Hospitalisations (% subjects hospitalised).**

| Study or Subgroup | Self Management Events | Self Management Total | Usual Care Events | Usual Care Total | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **1.1.1 Optimal Self Management** | | | | | | |
| Cote 1997 | 2 | 50 | 2 | 54 | 1.4% | 1.08 [0.16, 7.38] |
| Cowie 1997 | 2 | 46 | 6 | 48 | 4.3% | 0.35 [0.07, 1.64] |
| Ghosh 1998 | 38 | 140 | 50 | 136 | 37.4% | 0.74 [0.52, 1.05] |
| Heard 1999 | 2 | 97 | 5 | 94 | 3.7% | 0.39 [0.08, 1.95] |
| Ignacio-Garcia 1995 | 0 | 35 | 5 | 35 | 4.1% | 0.09 [0.01, 1.58] |
| Lahdensuo 1996 | 2 | 56 | 3 | 59 | 2.2% | 0.70 [0.12, 4.05] |
| Moudgil 2000 | 10 | 304 | 18 | 289 | 13.6% | 0.53 [0.25, 1.12] |
| Yoon 1993 | 1 | 28 | 7 | 28 | 5.2% | 0.14 [0.02, 1.09] |
| Zeiger 1991 | 2 | 149 | 5 | 160 | 3.6% | 0.43 [0.08, 2.18] |
| **Subtotal (95% CI)** | | **905** | | **903** | **75.4%** | **0.58 [0.43, 0.77]** |
| Total events | 59 | | 101 | | | |
| Heterogeneity: Chi² = 6.63, df = 8 (P = 0.58); I² = 0% | | | | | | |
| Test for overall effect: Z = 3.75 (P = 0.0002) | | | | | | |
| **1.1.2 Self Monitoring and Regular Review** | | | | | | |
| Garret 1994 | 20 | 251 | 25 | 249 | 18.5% | 0.79 [0.45, 1.39] |
| **Subtotal (95% CI)** | | **251** | | **249** | **18.5%** | **0.79 [0.45, 1.39]** |
| Total events | 20 | | 25 | | | |
| Heterogeneity: Not applicable | | | | | | |
| Test for overall effect: Z = 0.81 (P = 0.42) | | | | | | |
| **1.1.3 Self Monitoring Only** | | | | | | |
| Brewin 1995 | 4 | 12 | 10 | 33 | 3.9% | 1.10 [0.42, 2.85] |
| Neri 1996 | 2 | 32 | 3 | 33 | 2.2% | 0.69 [0.12, 3.85] |
| **Subtotal (95% CI)** | | **44** | | **66** | **6.1%** | **0.95 [0.41, 2.21]** |
| Total events | 6 | | 13 | | | |
| Heterogeneity: Chi² = 0.23, df = 1 (P = 0.64); I² = 0% | | | | | | |
| Test for overall effect: Z = 0.11 (P = 0.91) | | | | | | |
| **Total (95% CI)** | | **1200** | | **1218** | **100.0%** | **0.64 [0.50, 0.82]** |
| Total events | 85 | | 139 | | | |
| Heterogeneity: Chi² = 8.10, df = 11 (P = 0.70); I² = 0% | | | | | | |
| Test for overall effect: Z = 3.59 (P = 0.0003) | | | | | | |

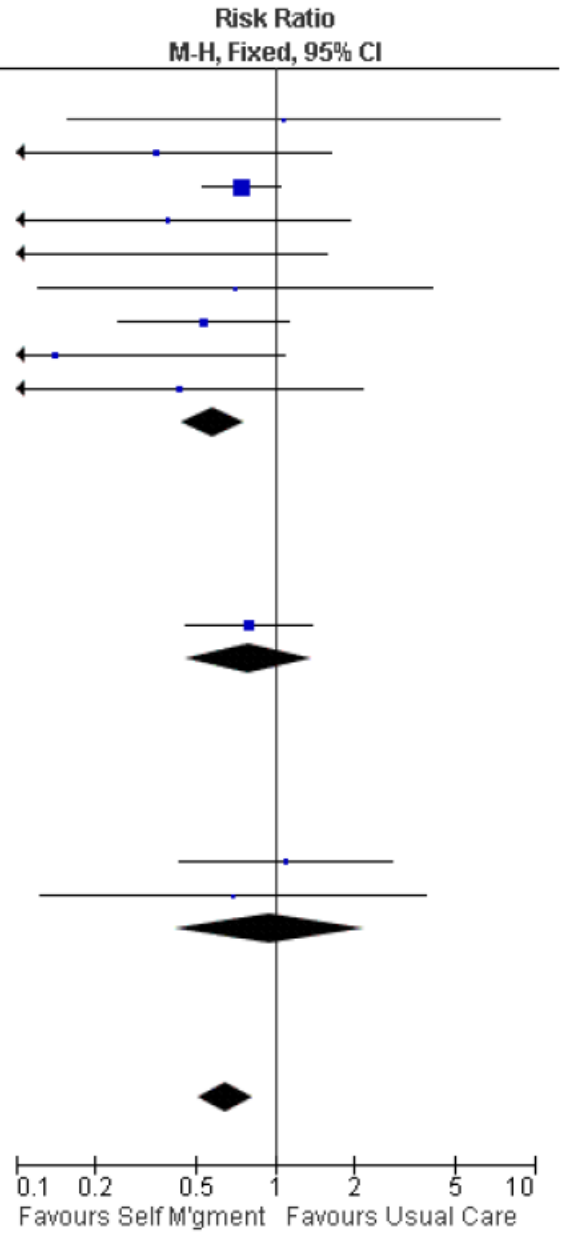


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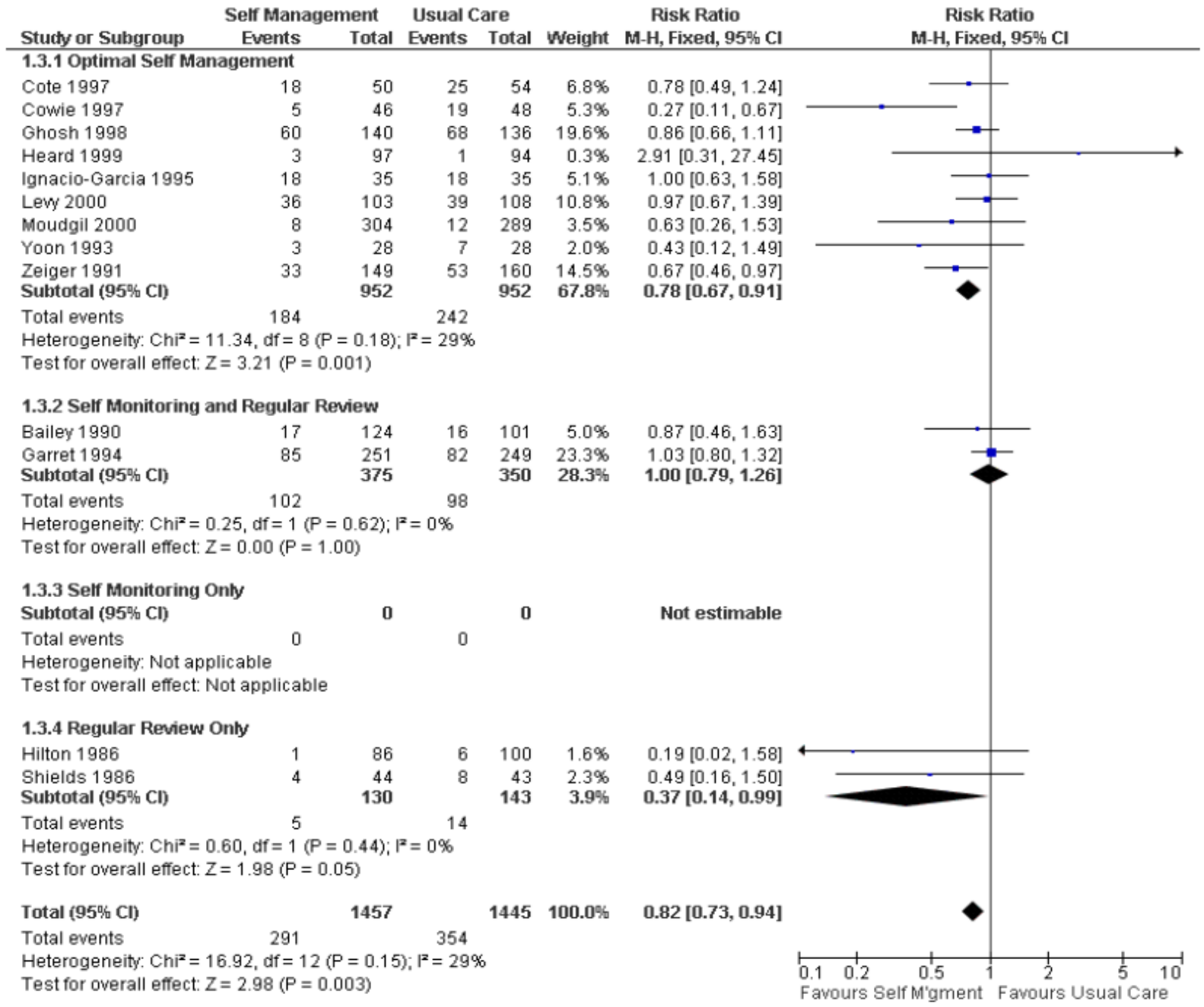
**Figure 3. Forest plot of comparison: 1 Self Management versus Usual Care, outcome: 1.3 ER Visits (% subjects).**

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# Are Asthma Medications and Management Related to Deaths from Asthma?

MICHAEL J. ABRAMSON, MICHAEL J. BAILEY, FIONA J. COUPER, JAN S. DRIVER, OLAF H. DRUMMER, ANDREW B. FORBES, JOHN J. McNEIL, E. HAYDN WALTERS and the Victorian Asthma Mortality Study Group

Departments of Respiratory, Forensic, and Epidemiology and Preventive Medicine, and Victorian Institute of Forensic Medicine, Monash University, Southbank, and Monash Medical School, The Alfred Hospital, Melbourne, Australia

## TABLE 4

## RISK OF DEATH ASSOCIATED WITH SELECTED MANAGEMENT FEATURES AND ASTHMA MEDICATIONS ADJUSTED FOR DEMOGRAPHIC AND PSYCHOSOCIAL FACTORS AND DISEASE SEVERITY*

| Predictor | Adjusted OR | 95% CI |
|---|---|---|
| Used peak flow meter in last year | 0.65 | 0.2–2.3 |
| Written asthma action plan | 0.29 | 0.09–0.93 |
| Verbal instructions only | 1.3 | 0.51–3.2 |
| Usual oral steroid in last month | 4.1 | 1.7–10.3 |
| Usual nebulised symptomatic medication | 4.2 | 1.8–9.9 |
| Used nebulized symptomatic medication either usually during the last month or for an attack | 4.3 | 1.7–11.0 |
| Used inhaled symptomatic medication for an attack | 0.43 | 0.16–1.13 |
| Used inhaled preventive medication for an attack | 0.66 | 0.29–1.5 |
| Used oral steroid for an attack | 0.09 | 0.02–0.33 |
| Used oral steroid either usually during the last month or for an attack | 0.71 | 0.32–1.6 |

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Cochrane Database of Systematic Reviews

# Personalised asthma action plans for adults with asthma (Review)

Gatheral TL, Rushton A, Evans DJW, Mulvaney CA, Halcovitch NR, Whiteley G, Eccles FJR, Spencer S

- 15 randomised controlled trials
- 3062 participants
- Compared **action plan + education vs education** alone

- Patient outcomes
- Healthcare Consumption

**PAAP plus education compared with education alone for adults with asthma**

**Patient or population:** adults with asthma
**Setting:** Community, secondary care, tertiary care
**Intervention:** PAAP plus education
**Comparison:** education alone

| Outcomes | Anticipated absolute effects* (95% CI) | | Relative effect (95% CI) | Number of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| | Risk with education alone | Risk with PAAP plus education | | | | |
| Exacerbation requiring ED or hospitalisation. | 265 per 1000. | 280 per 1000 (89 to 609) | OR 1.08 (0.27 to 4.32) | 70 (1 RCT) | ⊕◯◯◯ VERY LOW[a] | No clear benefit or harm of PAAP plus education (very low-quality evidence). Risk with education alone based on 12 months before study start |
| Asthma control, change from baseline in ACQ score. | Mean asthma control, change from baseline in ACQ score was -0.29 | MD 0.1 lower (0.54 lower to 0.34 higher) | - | 70 (1 RCT) | ⊕⊕◯◯ LOW[b] | No clear benefit or harm of PAAP plus education (low-quality evidence). MCID for ACQ (0.5) not reached |
| Serious adverse events (including death). | Included studies reported no data for this outcome. | | | | | |
| Quality of life, change from baseline in AQLQ score. | Mean quality of life, change from baseline in AQLQ score was 0.3 | MD 0.13 higher (0.13 lower to 0.39 higher) | - | 174 (1 RCT) | ⊕⊕◯◯ LOW[c] | No clear benefit or harm of PAAP plus education (low-quality evidence). MCID for AQLQ (0.5) not reached |

# How?

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# WRITTEN ASTHMA ACTION PLAN (WAAP)

## WHEN I FEEL WORSE

- My symptoms are coming back (wheeze, tightness in my chest, breathlessness, cough)
- I am waking up at night
- My symptoms are interfering with my usual day-to-day activities (e.g. at work, exercising, housechores)
- I am using my reliever inhaler ____ times a week or more
- If I am told to monitor my peak flow and it drops to below _____

### Preventer inhaler

☐ If I have not been using my preventer inhaler, **start using it regularly again.**

☐ Increase my preventer inhaler to ___ puffs ___ times a day for 2 weeks.

### Reliever inhaler

☐ Ventolin MDI: up to ___ puffs every ___ hours

☐ Symbicort: 1 puff as needed up to a total 12 puffs/day

### Standby prednisolone

☐ If I have been given standby prednisolone (steroid) tablets to keep at home: take ___ mg of prednisolone immediately and every morning for 5 days

If I do not improve within 24 hours, I should visit a doctor for further advice.

Alternatively, I may also contact the asthma nurse (at _____within office hours) for further advice before seeing a doctor

# The Yellow Zone

## WHEN I FEEL WORSE

- My symptoms are coming back (wheeze, tightness in my chest, breathlessness, cough)
- I am waking up at night
- My symptoms are interfering with my usual day-to-day activities (e.g. at work, exercising, housechores)
- I am using my reliever inhaler ____ times a week or more
- If I am told to monitor my peak flow and it drops to below _____

→ Described acute loss of asthma control

**Preventer inhaler**

☐ If I have not been using my preventer inhaler, **start using it regularly again.**

☐ Increase my preventer inhaler to ___ puffs ___ times a day for 2 weeks.

→ ICS dose needs to be increased during this time

**Reliever inhaler**

☐ Ventolin MDI: up to ___ puffs every ___ hours

☐ Symbicort: 1 puff as needed up to a total 12 puffs/day

→ Salbutamol = 800mcg/day
Formoterol = 72 mcg/day

**Standby prednisolone**

☐ If I have been given standby prednisolone (steroid) tablets to keep at home: take ___ mg of prednisolone immediately and every morning for 5 days

→ OCS and contacting a healthcare provider.

If I do not improve within 24 hours, I should visit a doctor for further advice.

Alternatively, I may also contact the asthma nurse (at _____within office hours) for further advice before seeing a doctor

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# Yellow Zone Triggers

## WHEN I FEEL WORSE

- My symptoms are coming back (wheeze, tightness in my chest, breathlessness, cough)
- I am waking up at night
- My symptoms are interfering with my usual day-to-day activities (e.g. at work, exercising, housechores)
- I am using my reliever inhaler ____ times a week or more
- If I am told to monitor my peak flow and it drops to below _____

→ **Symptoms**

→ **Peak flow less than 80% of personal best**

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| Item | Price | Shipping | Rating |
|---|---|---|---|
|  Microlife Microlife PF 100 Peak Flow Meter for Spirometry with FEV1<br>♡ \| Quick View \| go USA | $75.00 | $1.99<br>Free on condition $50.00<br>US | NEW |
|  Quest AsthmaMD Lung Performance Peak Flow Meter<br>♡ \| Quick View \| Greate | $67.20<br>~~$134.40~~ | $5.80~<br>CN | NEW |
| 3<br>  Microlife, PF 100 Peak Flow Meter for Spirometry with FEV1, White/Blue<br>♡ \| Quick View \| qoostore | $114.00<br>~~$228.00~~ | Free<br>US | |
|  Omron PF9940 PeakAir Peak Flow Meter<br>♡ \| Quick View \| USAUSA | $47.00 | $1.99<br>Free on condition $50.00<br>US | NEW |
|  AnchorWell Digital Peak Flow Meter for Asthma and COPD Lung Performance Measure Peak Expiratory Flow | $103.00 | $1.99<br>Free on condition $50.00 | NEW |

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**Cochrane** Database of Systematic Reviews

# Options for self-management education for adults with asthma (Review)

Powell H, Gibson PG

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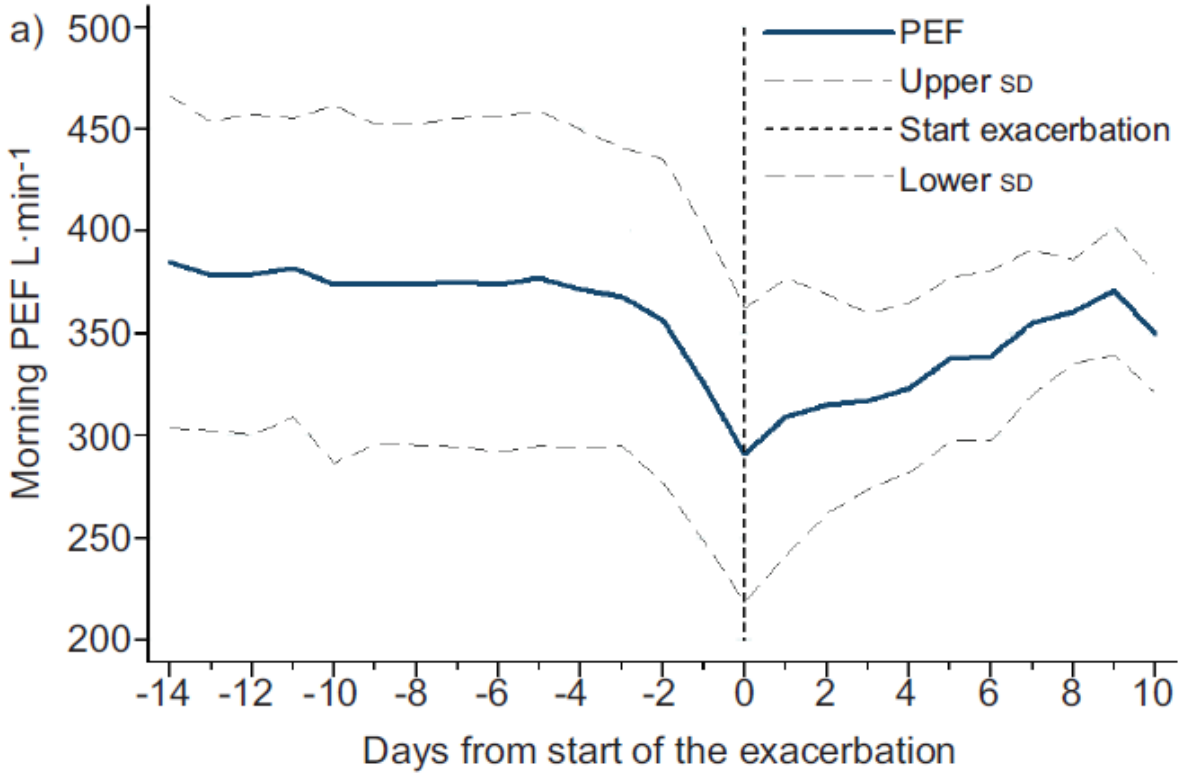
## Comparison 2. Peak Flow Self Management vs Symptoms Self Management

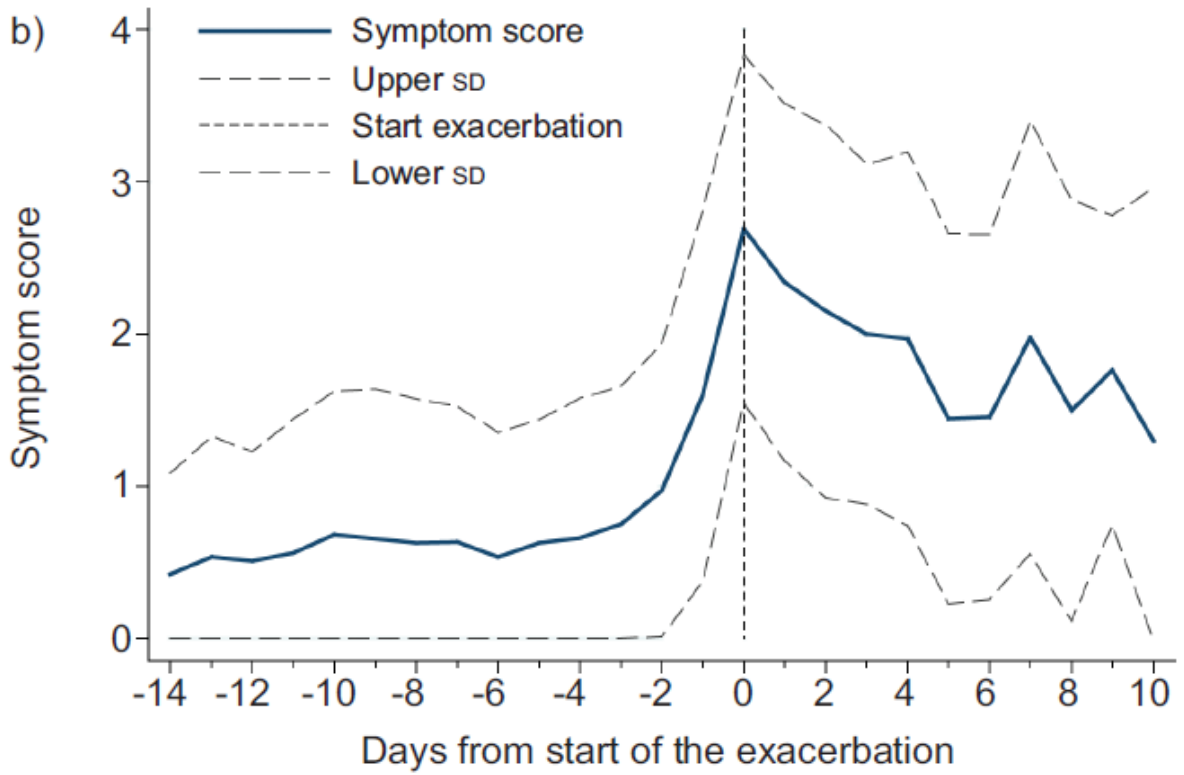
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Hospitalisation (subjects) | 4 | 412 | Risk Ratio (M-H, Fixed, 95% CI) | 1.17 [0.44, 3.12] |
| 2 Hospitalisations (mean) | 2 | 229 | Mean Difference (IV, Fixed, 95% CI) | -0.04 [-0.13, 0.05] |
| 3 ER Visits (subjects) | 5 | 512 | Risk Ratio (M-H, Fixed, 95% CI) | 0.91 [0.61, 1.35] |
| 4 ER Visits (mean) | 2 | 229 | Mean Difference (IV, Fixed, 95% CI) | -0.04 [-0.17, 0.09] |
| 5 Dr Visits (subjects) | 2 | 161 | Risk Ratio (M-H, Fixed, 95% CI) | 0.93 [0.78, 1.10] |
| 6 Days off Work (mean) | 2 | 229 | Mean Difference (IV, Fixed, 95% CI) | 1.96 [-0.44, 4.36] |
| 7 Oral Corticosteroid Courses | 2 | 152 | Risk Ratio (M-H, Fixed, 95% CI) | 1.53 [0.82, 2.87] |

Eur Respir J 2013; 41: 53–59
DOI: 10.1183/09031936.00205911


# Early detection of asthma exacerbations by using action points in self-management plans

**Persijn J. Honkoop*,#, D. Robin Taylor¶, Andrew D. Smith¶, Jiska B. Snoeck-Stroband* and Jacob K. Sont***




Worsened symptoms + PEFR <80% predicts exacerbation with 100% sensitivity and 87% specificity.

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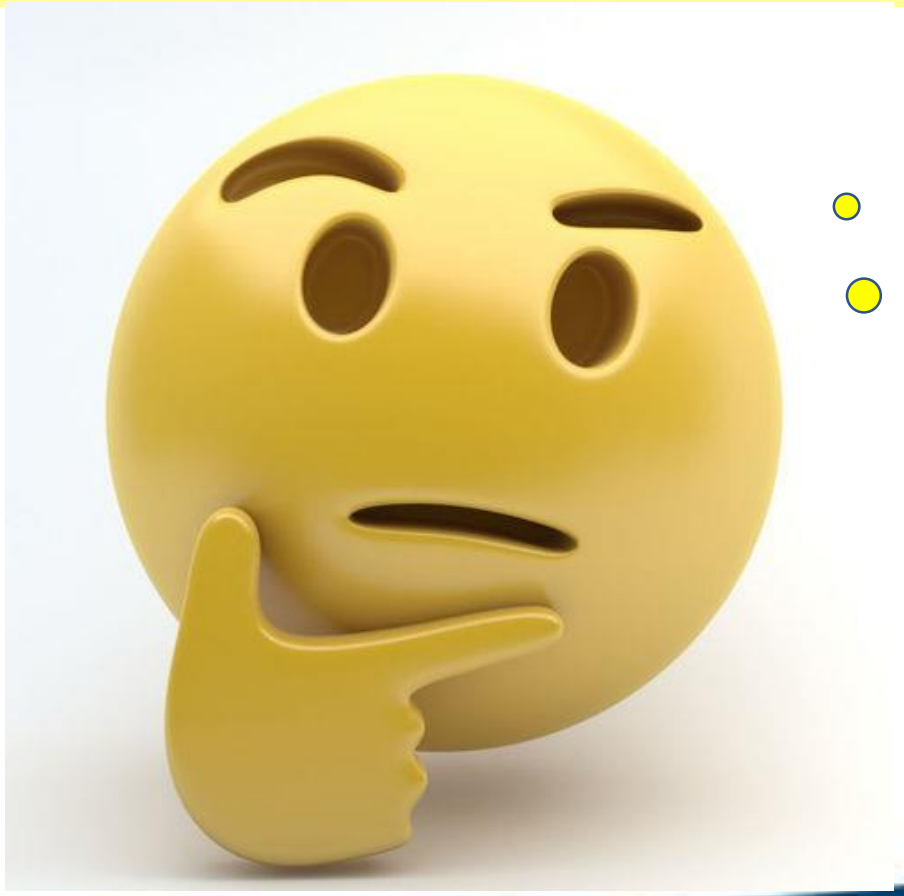
**Preventer inhaler**

- ☐ If I have not been using my preventer inhaler, **start using it regularly** again.
- ☐ Increase my preventer inhaler to ___ puffs ___ times a day for 2 weeks.



**Increase ICS how many times?**

**High-dose ICS?**

**ICS/LABA inhalers?**

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# How much ICS to increase?


**At least 2x for 7 to 14 days**

ARTICLES

**Doubling the dose of inhaled corticosteroid to prevent asthma exacerbations: randomised controlled trial**

*Lancet* 2004; **363:** 271–75

*T W Harrison, J Oborne, S Newton, A E Tattersfield*

**ASTHMA**

Doubling the dose of budesonide versus maintenance treatment in asthma exacerbations

**J M FitzGerald, A Becker, M R Sears, S Mink, K Chung, J Lee, and the Canadian Asthma Exacerbation Study Group**

*Thorax* 2004;**59**:550–556. doi: 10.1136/thx.2003.014936

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# Quadrupling the Dose of Inhaled Corticosteroid to Prevent Asthma Exacerbations

## A Randomized, Double-blind, Placebo-controlled, Parallel-Group Clinical Trial

Janet Oborne[1], Kevin Mortimer[1], Richard B. Hubbard[2], Anne E. Tattersfield[1], and Tim W. Harrison[1]

[1]Division of Respiratory Medicine and [2]Division of Epidemiology and Public Health, Respiratory Biomedical Research Unit, University of Nottingham, Nottingham, United Kingdom

Am J Respir Crit Care Med Vol 180. pp 598–602, 2009

To be enrolled, participants had to give written informed consent, be taking a maintenance dose of inhaled corticosteroid between 200 and 1,000 μg beclometasone dipropionate (or equivalent) per day, have

Low-dose + Moderate-dose ICS

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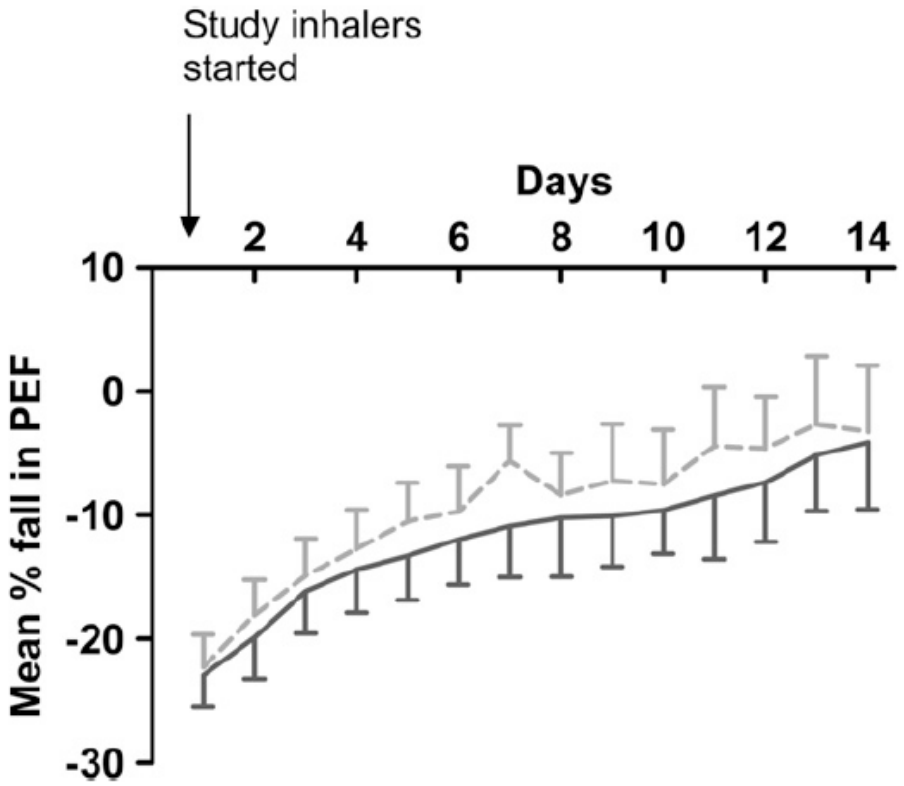


*Figure 2.* Mean fall in PEF (95% confidence interval) expressed as a percentage fall from the mean baseline PEF value (*dashed line*, active; *solid line*, placebo). Includes participants who started oral corticosteroids.

## TABLE 2. PRIMARY AND SECONDARY OUTCOMES

| | Active | Placebo | Risk Ratio (95% CI) | *P* Value |
|---|---|---|---|---|
| Number randomized | 197 | 206 | | |
| Number requiring oral corticosteroids | 18 | 29 | 0.64 (0.37 to 1.11) | 0.11 |
| Number who started the study inhaler | 56 | 38 | | |
| Number requiring oral corticosteroids | 12 | 19 | 0.43 (0.24 to 0.78) | 0.004 |

| | Low dose | Moderate do | High dose |
|---|---|---|---|
| **Beclometasone dipropionate[1]** | | | |
| **Standard particle CFC-free inhalers** | 200–500 micrograms per day in 2 divided doses | 600–1,000 m per day in 2 c doses | ams 1,200–2,000 micrograms per day in 2 divided doses |
| **Extra-fine particle CFC-free inhalers[2]** | 100–200 micrograms per day in 2 divided doses | 300–400 mic day in 2 divid | s per ses 500–800 micrograms per day in 2 divided doses |
| **Budesonide** | | | |
| **Dry powder inhalers** | 200–400 micrograms per day as a single dose or in 2 divided doses | 600–800 mic day as a sing in 2 divided doses | doses |
| **Ciclesonide** | | | |
| **Metered dose inhaler** | 80–160 micrograms per day as a single dose | 240–320 micrograms per day as a single dose or in 2 divided doses | 400–640 micrograms per day in 2 divided doses |
| **Fluticasone propionate** | | | |
| **Metered dose and dry powder inhalers[3]** | 100–250 micrograms per day in 2 divided doses | 300–500 micrograms per day in 2 divided doses | 600–1,000 micrograms per day in 2 divided doses |
| **Fluticasone furoate[4]** | | | |
| **Dry powder inhaler** | – | 100 micrograms as a single daily dose | 200 micrograms as a single daily dose |

**Oral prednisolone 1mg/kg for 3 to 5 days.**

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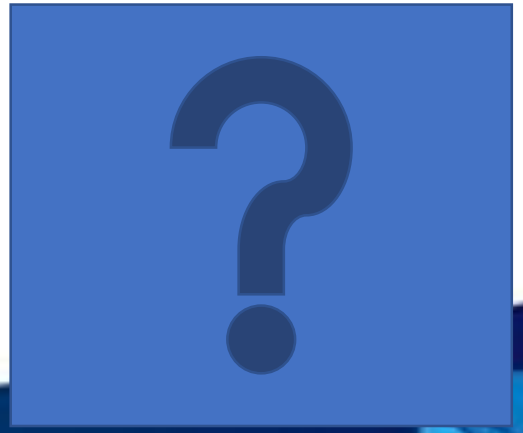
# What about ICS-LABA inhalers?


**ICS-Formoterol preparations**
**- Up to a maximum of 72 mcg of formoterol/day**

**ICS-non-Formoterol preparations**



Salmeterol, olodaterol, indacaterol, vilanterol

1.? Exceed the regulatory limit
2.Commence oral prednisolone
3.Provide an ICS-only inhaler for yellow zone

**Reliever inhaler**

☐ Ventolin MDI: up to ___ puffs every ___ hours → **800 mcg/day**

☐ Symbicort: 1 puff as needed up to a total 12 puffs/day → **72 mcg/day**

**Standby prednisolone**

☐ If I have been given standby prednisolone (steroid) tablets to keep at home: take ___ mg of prednisolone immediately and every morning for 5 days → **1mg/kg IBW**

If I do not improve within 24 hours, I should visit a doctor for further advice.

Alternatively, I may also contact the asthma nurse (at _____within office hours) for further advice before seeing a doctor → **Contact your healthcare provider**

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# Modes?

Google asthma action plan

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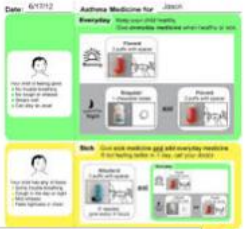
asthma attack | template | asthma management | hospital | kid | printable | spanish | preschool | asthma care | pediatric | school | cartoon | written | asthma emergency | asthma control









https://www.google.com.sg/imgres%3Fimgurl%3Dhttps%253A%252F%252Fwww.pdffiller.com%252Fpreview%252F405%252F820%252F4058209

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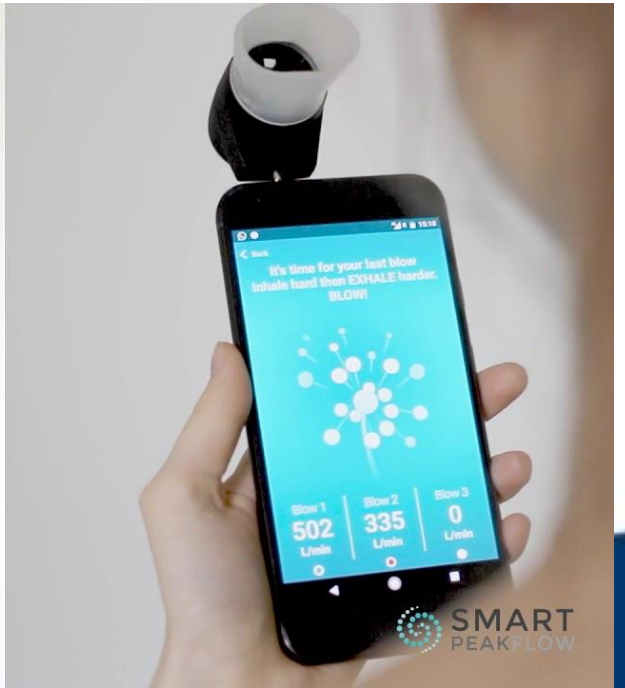
AsthmaMD™ Track. Control. Live Better.

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# Readability, Suitability, and Characteristics of Asthma Action Plans: Examination of Factors That May Impair Understanding

**WHAT'S KNOWN ON THIS SUBJECT:** National asthma treatment guidelines include the recommendation that all asthma patients receive a written asthma action plan. No previous study has sought to examine the readability, suitability, and content of asthma action plans within a nationally representative sample.

*Pediatrics* 2013;131:e116–e126

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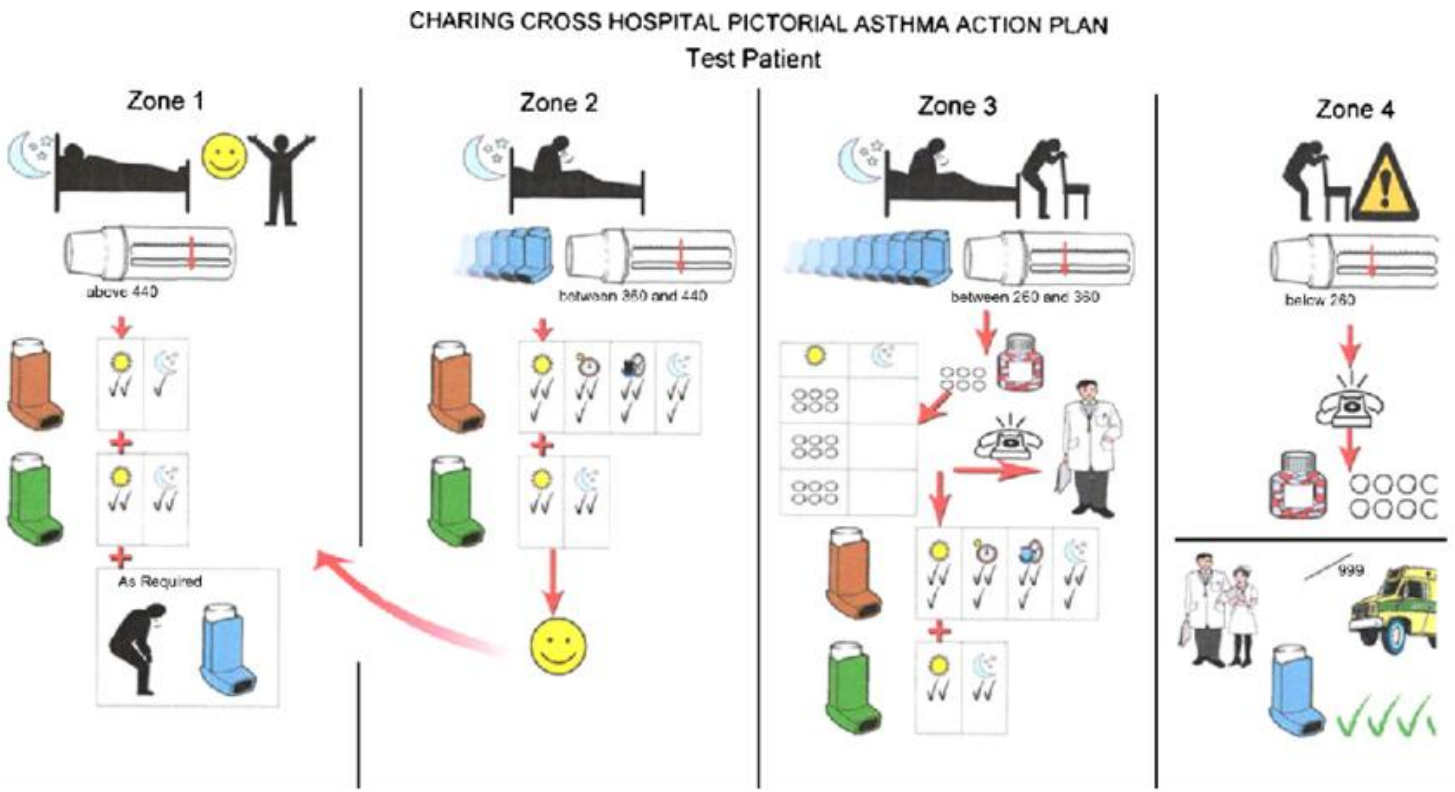
**TABLE 2** Suitability of Written Asthma Action Plans[a]

| Recommended criteria | Mean (SD) | Range | Not suitable | Adequate |
|---|---|---|---|---|
| | | | *n* (%) | *n* (%) |
| Content[a] | | | | |
| Purpose explicitly stated | 0.27 (0.45) | 0–1 | 22 (73.3) | 8 (26.7) |
| Content aimed at desirable behaviors/actions | 1.0 (0) | 1–1 | 0 (0) | 30 (100) |
| Scope limited to essential information | 0.97 (0.18) | 0–1 | 1 (3.3) | 29 (96.7) |
| Content, composite | 0.74 (0.17) | 0.33–1 | 1 (3.3) | 29 (96.7) |
| Literacy demand[b] | | | | |
| Writing style conversational, uses active voice, simple sentences | 0.87 (0.35) | 0–1 | 4 (13.3) | 6 (86.7) |
| Vocabulary uses common words | 0.77 (0.43) | 0–1 | 7 (23.3) | 23 (76.7) |
| Context given first before new information | 0.93 (0.25) | 0–1 | 2 (6.7) | 28 (93.3) |
| Learning aided by "road signs"/advanced organizers | 0.80 (0.41) | 0–1 | 6 (20.0) | 24 (80.0) |
| Literacy demand, composite | 0.84 (0.21) | 0.25–1 | 1 (3.3) | 29 (96.7) |
| Graphics[c] | | | | |
| Graphics simple, uses line drawings/sketches; likely to be familiar to reader[d] | 0.96 (0.20) | 0–1 | 1 (4.0) | 24 (96.0) |
| Illustrations relevant; key messages presented visually in an effective manner[d] | 0.92 (0.28) | 0–1 | 2 (8.0) | 23 (92.0) |
| Purpose and use of lists, tables, graphics explained | 0.67 (0.48) | 0–1 | 10 (33.3) | 20 (66.7) |
| Explanatory captions used for graphics[e] | 0.63 (0.50) | 0–1 | 6 (37.5) | 10 (62.5) |
| Graphics, composite | 0.75 (0.30) | 0–1 | 4 (13.3) | 26 (86.7) |
| Layout and typography | | | | |
| Layout factors optimized[f] | 0.70 (0.47) | 0–1 | 9 (30.0) | 21 (70.0) |
| Typography optimized[g] | 0.70 (0.47) | 0–1 | 9 (30.0) | 21 (70.0) |
| Subheadings or "chunking" used to group ideas | 0.50 (0.51) | 0–1 | 15 (50.0) | 15 (50.0) |
| Layout and typography, composite | 0.63 (0.29) | 0–1 | 9 (30.0) | 21 (70.0) |
| Learning stimulation/motivation | | | | |
| Interactiveness promoted by presenting problems / questions for reader response | 0.37 (0.49) | 0–1 | 19 (63.3) | 11 (36.7) |
| Behaviors are modeled and specific | 0.97 (0.18) | 0–1 | 1(3.3) | 29 (96.7) |
| Motivation / self-efficacy encouraged by subdividing topics into small, learnable parts | 0.67 (0.48) | 0–1 | 10 (33.3) | 20 (66.7) |
| Learning stimulation/motivation, composite | 0.67 (0.25) | 0.33–1 | 8 (26.7) | 22 (73.3) |
| Overall suitability category[h] | 0.74 (0.14) | 0–1 | 0 (0) | 30 (100.0) |
| Any unsuitable score | NA | NA | 12 (40.0)[i] | 18 (60.0)[j] |

# Special groups to consider

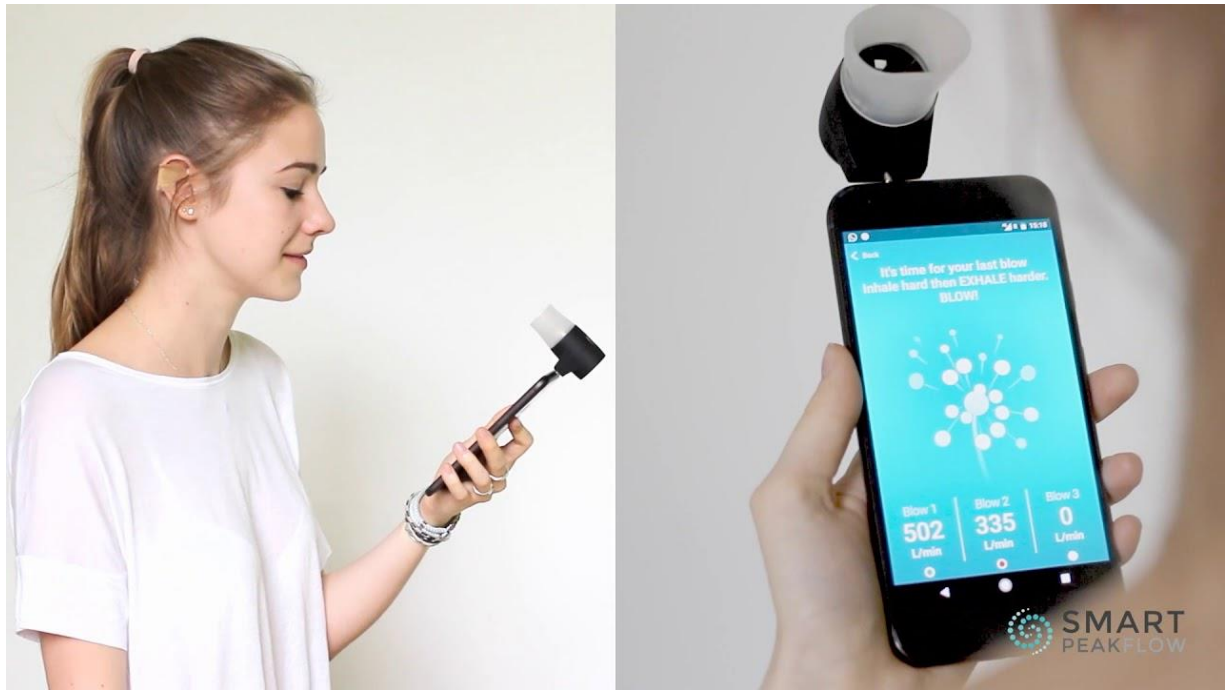
# Illiterate

## Elderly


Roberts, Dr Nicola & Evans, David & Blenkhorn, Paul & R Partridge, Martyn. (2009). Development of an electronic pictorial asthma action plan and its use in primary care. Patient education and counseling. 80. 141-6. 10.1016/j.pec.2009.09.040.

- Adolescents
- Busy professional

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Cochrane Library

Cochrane Database of Systematic Reviews

# Smartphone and tablet self management apps for asthma (Review)

Marcano Belisario JS, Huckvale K, Greenfield G, Car J, Gunn LH

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**Smartphone apps compared with paper-based diaries for asthma self management**

**Patient or population:** patients with clinician-diagnosed asthma
**Settings:** primary and tertiary care
**Intervention:** smartphone app for asthma self management
**Comparison:** paper-based diaries for asthma self management

| Outcomes | Effects of smartphone apps for asthma self management | No of participants (studies) | Quality of the evidence (GRADE) |
|---|---|---|---|
| **Symptom scores**<br>Asthma Control Questionnaire (ACQ) - 6-item version<br>Mean differences in scores at 6 months | One study found no statistically significant difference in the mean difference in ACQ scores between the intervention and control group at 6 months (MD 0.01, 95% CI -0.23 to 0.25) | 278 participants (1 study) | ⊕⊕◯◯<br>**low**[1] |
| **Patients with unscheduled visits to the emergency department**<br>6-month follow-up | One study found that participants in the intervention group were less likely to attend the emergency department than those in the control group (OR 0.20, 95% CI 0.04 to 0.99). Another study found no statistically significant difference between the intervention and control groups (Fisher's exact test P = 0.12) | 370 participants (2 studies) | ⊕⊕◯◯<br>**low**[1] |
| **Hospital admissions**<br>6-month follow-up | None of the included studies found a statistically significant difference between the intervention and control groups (Fisher's exact test yielding a one-sided P = 0.52; OR 3.07 (95% CI 0.32 to 29.83)) | 370 participants (2 studies) | ⊕⊕◯◯<br>**low**[1] |
| **GP consultations for asthma**<br>6-month follow-up | One study did not find a statistically significant difference between the intervention and control groups (OR 1.40, 95% CI 0.85 to 2.31) | 281 participants (1 study) | ⊕⊕◯◯<br>**low**[1] |

# Achieving successful implementation

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# Asthma Knowledge Among Adult Asthmatic Outpatients in a Tertiary Care Hospital

*ASIAN PACIFIC JOURNAL OF ALLERGY AND IMMUNOLOGY (2004) 22: 81-89*

**Shu Ming Chai, Keng Leong Tan, Jesline Liling Wong and Philip Eng**

- Cross-sectional study performed in specialist outpatient clinic

- 94 outpatients

**Written asthma action plan ownership**

Only 17.0% of subjects reported having a written action plan to guide them when they suffered from an asthma attack. The majority (67%) responded in the negative and 15 (16%) were not sure if they had received one. Those who had

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Original Article

Singapore Med J 2009; 50 (2) : 160

# A qualitative study of factors influencing family physicians' prescription of the Written Asthma Action Plan in primary care in Singapore

Tan N C, Tay I H, Ngoh A, Tan M

- Physician uncertainty due to training and exposure
- Perceived ineffectiveness
- Relying on nurses to administer
- Perceived non-compliance and language barrier
- Lost to follow-up

Ring et al. Trials 2012, 13:216
http://www.trialsjournal.com/content/13/1/216

TRIALS

RESEARCH Open Access

# Developing novel evidence-based interventions to promote asthma action plan use: a cross-study synthesis of evidence from randomised controlled trials and qualitative studies

Nicola Ring[1*], Ruth Jepson[1], Hilary Pinnock[2], Caroline Wilson[3], Gaylor Hoskins[4], Sally Wyke[5] and Aziz Sheikh[2]

- Interval telephone reinforcements
- Internet-based asthma management tools for patients
- Software decision support systems for physicians
- Education seminars for physicians
- In clinic asthma education by nurses
- Pharmacy-based asthma service

# Spirometry Test At GPs in the East (ST@GE)

**Bringing spirometry to the doorstep of the private GPs**

**For more information, email us at stage@cgh.com.sg**

Read Project Information Sheets (**PIS**)

1. Assess suitability for test
2. Explain to patient#
3. Service is at no cost to patient

Fill referral form

Fax to **62844197** or Email to stage@cgh.com.sg

Received appointment for Spirometry

Clinic staff reminds patient:
1. to arrive 10 mins before appointment time
2. to avoid inhaled bronchodilators#
3. to bring inhaler, if any


On appointment day*, patient shows up @ clinic, with inhaler, if any

# For the test, to avoid inhaled bronchodilators (refer to details in page 3 of PIS)

* Appointment is to be cancelled or rescheduled to another day if patient is late for 15 mins

- Thank You