

## ASTHMA ACTION PLAN FOR ADULTS

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### ABSTRACT

**Asthma action plan (AAP) is an essential component of asthma education and self-management. AAPs provide patients with instructions on how to recognise loss of asthma control and the appropriate treatment steps. The use of AAP improves asthma-related quality of life and reduces the risk of asthma exacerbation. Despite its benefits, utilisation of AAP is disappointingly low both locally and worldwide. This review highlights the importance of AAP as part of an asthma care plan and provides practical information on the prescription of AAPs. We conclude by identifying possible barriers to AAP implementation and how these may be overcome.**

**Keywords:** AAP; Peak Expiratory Flow; Yellow Zone; Inhaled Corticosteroids; SMART;

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### INTRODUCTION

Asthma is a common chronic condition in Singapore, seen in both primary and tertiary care. It contributes to 0.9% of the total disease burden locally and results in an estimated 4,400 disability-adjusted life-years lost. We observed a higher than expected incidence of fatal asthma at 2 per million population between 2006 to 2010, which was postulated to be due to high-risk health seeking behaviours and insufficient patient education amongst asthma patients<sup>1</sup>. In addition to asthma education and care provisions by healthcare providers, asthma self-management by patients is an important part of an effective overall asthma care plan.

The 4 core components of asthma self-management include:

- 1) Skills training for effective inhaler use;
- 2) Adherence to clinician management strategy;
- 3) Asthma information;
- 4) Self-monitoring of asthma symptoms or peak flow, with written asthma action plan (AAP) to recognise and respond to worsening asthma.

This narrative review will be focusing on the “what”, “why” and “how” of using an asthma action plan in adult patients with asthma.

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### What is an asthma action plan?

The written AAP is a clinician-prescribed plan which varies asthma therapy according to symptom severity and/or peak flow rate (Figure 1). It consists of 3 coloured zones:

- 1) The green zone indicates asthma therapy for baseline medications when asthma control is good;
- 2) The yellow zone provides clinician-directed instructions for intensified therapy during acute loss of control;
- 3) The red zone describes severe symptoms that require prompt medical attention.

This figurative plan guides patients on individualised escalation of therapy during worsening of asthma symptoms with the aim of preventing severe exacerbations, use of systemic corticosteroids, and the need for urgent healthcare attention.

International guidelines including the Global Initiative for Asthma (GINA) guideline 2018 recommend that all patients with asthma should be provided with an AAP<sup>2</sup>. The local asthma clinical practice guideline published in 2008 by the Ministry of Health, Singapore, also recommends provision of AAP to all patients with asthma<sup>3</sup>. It further recommends that healthcare providers use provision of AAP as a clinical quality indicator or care in asthma care. A freely available template for personalised AAP is provided in Annex A of the clinical practice guidelines which deviates from most AAP templates with the addition of an orange zone between the yellow and red zone that provides guidance on initiation of oral prednisolone.

### Why use an AAP? - Evidence for Efficacy

A Cochrane review comprising 36 randomised controlled trials involving 6090 participants compared the effectiveness of adult self-management education programmes versus usual care on health outcomes<sup>4</sup>. In the trials reviewed, 33 studies examined self-monitoring of symptoms and/or peak expiratory flow, 24 trials included regular physician review, and 18 trials provided a written AAP as part of self-management. Active interventions with asthma self-management strategies halved the risks of hospitalisations (risk ratio 0.58 [95% confidence interval 0.43-0.77]), reduced emergency room visits, unscheduled doctor visits, days off work or school, nocturnal asthma symptoms and quality of life. The authors concluded that asthma self-management strategies incorporating an AAP have the potential to improve patient's quality of life and reduce total asthma burden of care.

There is also some evidence that AAP may protect against fatal asthma exacerbations. In a retrospective case-control study of asthma mortalities in Australia, patients provided with a written AAP had a lower risk of asthma death (odds ratio 0.29 [95% confidence interval 0.09-0.93])<sup>5</sup>. To further illustrate this

point, a national review of asthma deaths commissioned by the Royal College of Physicians in the United Kingdom found that only 23% of asthma fatalities had a previous AAP<sup>6</sup>.

A systematic review by Gatheral et al evaluated the effectiveness of personalised AAPs when used alone or in combination with education<sup>7</sup>. The authors were unable to draw firm conclusions due to variable study methods and outcomes measured, but they did not find clear evidence of benefit when personalised AAP was used alone. This suggests that the use of AAP may only be beneficial when coupled with other components of asthma self-education.

## How to personalise an AAP

### The Green Zone

The aim of the green zone is to remind patients of their daily preventer therapies and their personal best peak expiratory flow. Guidance for prescription of maintenance asthma preventer therapies may be found in the GINA 2018 document<sup>2</sup>.

A comprehensive list of asthma symptoms to prompt the use of reliever therapies should also be provided. These should include the occurrence of wheezing, chest tightness, breathlessness or persistent cough. The choices of reliever therapies are inhaled salbutamol or budesonide/formoterol inhaler, should the patient be on single maintenance and reliever therapy (SMART) using budesonide/formoterol inhaler.

### The Yellow Zone

The yellow zone describes symptoms of, and actions to take during, loss of asthma control. In addition to symptoms described in the green zone, the yellow zone should include the presence of nocturnal symptoms and symptom interference of daily activities. If peak expiratory flow monitoring is used, a decrease in 20% of best peak expiratory flow should alert the patient or caregiver to a loss of asthma control.

Written action plans based on symptom self-monitoring alone perform as well as those incorporating peak expiratory flow self-monitoring<sup>8</sup>. The exception to this may be patients with poor symptom and bronchoconstriction perception in whom peak expiratory flow monitoring is preferred<sup>9</sup>. Peak expiratory flow limits for early detection of asthma exacerbations have been suggested<sup>10</sup>. In one study, a combination of increased symptoms with peak expiratory flow of less than 80% of personal best predicted exacerbations within the next five days with a sensitivity of 100% and specificity of 87%; a decrease in peak flow to 60% of personal best predicted an exacerbation the next day with a sensitivity of 78% and specificity of 99%. It is therefore reasonable to commence systemic corticosteroid therapy when peak expiratory flow is less than 60% of personal best in the AAP.

Various treatment escalation measures have been proposed for loss of asthma control in the yellow zone of the AAP. The GINA 2018 guideline recommends at least doubling the maintenance

dose of inhaled corticosteroids (ICS) for a period of 7 to 14 days in the yellow zone. However, studies that investigated the effects of doubling the dose of inhaled corticosteroids did not show a reduction in need for oral corticosteroids and unscheduled physician visits<sup>11,12</sup>. Quadrupling the dose of ICS or increasing it to an equivalent of beclomethasone dipropionate 2000mcg per day may be a more effective strategy to decrease the risk of progression to an exacerbation<sup>13</sup>.

Quadrupling ICS therapy, while attractive, presents difficulty for patients who are already on a high dose of maintenance ICS. There is limited evidence that quadrupling ICS beyond a dose equivalence of 2000mcg of beclomethasone dipropionate is efficacious in AAPs. In these patients, initiation of a short-course of oral prednisolone may be appropriate in place of quadrupling ICS therapy.

For patients who are on combination inhalers containing both ICS and long-acting beta-agonists (LABA), the intensification of therapy in the yellow zone depends on the ICS/LABA formulation. For patients on ICS/formoterol the number of inhalations can be increased to a maximum dose of formoterol at 72 mcg per day. However, the maximum permissible doses of other forms of LABA in non-ICS/formoterol preparations are less clear, with a theoretical increased risk of cardiac events when exceeded. An alternative to circumvent this problem (other than temporarily exceeding regulatory limits or commencing oral corticosteroids), would be the provision of an additional ICS-only inhaler in addition to the maintenance non-ICS/formoterol inhaler, for use only when action points in the yellow zone are activated. Practical considerations are the cost of an additional inhaler that would be used infrequently and drug expiration before complete utilisation.

Provision of standby prednisolone is recommended for patients who are on maintenance high-dose ICS, previous near-fatal asthma exacerbations, peak expiratory flow less than 60% of personal best, or no improvement after 2 to 3 days of increased ICS therapy. The dose recommendation is oral prednisolone at 1mg per kg per day, for a duration of 5 days. A reminder for the patient to visit the doctor for early review of asthma control and medications should conclude the instructions in the yellow zone.

Reliever inhaler therapy use is similar to that in the green zone. Salbutamol may be used up to a maximum of 800mcg per day and budesonide/formoterol inhaler may be used up to a maximum of 72 mcg of formoterol per day.

### The Red Zone

The red zone educates patients on the recognition of an asthma exacerbation. The symptoms described in the red zone should include use of reliever therapy more frequent than every 4 hours, difficulty in walking or talking, increase in breathlessness, wheezing or chest tightness. Salbutamol inhaler should be administered twice every 5 minutes up to a maximum of 10 inhalations, ideally via a spacer device, while seeking immediate medical attention. Patients should be advised to start

rescue oral prednisolone if they have been prescribed.

### **Special considerations for AAP implementation**

The most common form of AAP is the individualised written plan provided by the healthcare professional during a clinic consultation for asthma care. However, one study found that 70% of AAPs required at least a 6th grade education for comprehension<sup>14</sup>. The ideal written AAP should therefore be optimised for readability and adapted to the patient or caregiver's primary language of choice and level of literacy. A group of researchers in Toronto attempted to improve usability of AAPs by involving physicians, asthma educators and patients on an online collaboration to create a usable asthma action plan with visual design optimisation<sup>15</sup>. Participants in the study were able to compile elements of an ideal AAP to developed one with optimised visual design features. Similar models of AAP development may be considered in specific populations to improve adherence.

Patients with poor literacy have worse asthma outcomes due to low socioeconomic status as well as poor access to healthcare<sup>16</sup>. Health information delivery to this group of patients should be easily understood, such as in the form of a pictorial asthma action plan<sup>17</sup>. Implementing AAP using the telephone is also an acceptable strategy to patients and has the potential to improve asthma control<sup>18</sup>.

The elderly represents another vulnerable asthma population due to poor symptom perception, cognitive and memory impairment. Sensory disturbances due to visual and hearing loss may hamper asthma education and explanation on use of AAP. A randomised controlled study showed that telephone administration of asthma-specific questionnaire and encouraging the elderly to discuss asthma care at the next clinic consultation increased use of peak flow meters and AAPs<sup>19</sup>.

On the other end of the spectrum, smartphone app-based asthma self-management platforms have the potential to replace written AAP in technologically-savvy populations. App-based asthma management are not easily misplaced or discarded, the user can be prompted to monitor peak expiratory flow rate and notifications may be sent to the healthcare provider if yellow or red zones action points are activated. A 2013 Cochrane review of smartphone and tablet self-management apps for asthma included 2 randomised controlled trials with 408 participants<sup>20</sup>. One study showed no effect on asthma-related outcomes while the other study demonstrated higher asthma-related quality of life, improved peak expiratory flow rate and reduced emergency room visits (OR 0.20, 95% CI 0.04-0.99). Patient groups that require close monitoring or are at higher risk of non-compliance may benefit from this strategy. Adolescents who used smartphone AAPs had significant improvement in asthma control test scores and improvement in asthma attack prevention self-efficacy scores<sup>21</sup>. Two antenatal clinics in Australia using telehealth for asthma found that participants who had telehealth intervention had better asthma control and

asthma-related quality of life<sup>22</sup>. These examples suggest that while the written AAP is most familiar to physicians, smartphone app-based asthma management is feasible and likely to be non-inferior.

### **Barriers to AAP implementation and suggestions to overcome them**

The self-management model of care for asthma is an attractive one as asthma is a chronic disease with variable periods of worsening symptoms and is rapidly responsive to escalation of therapy. Despite that, only about a quarter of patients with asthma in the developed world have a personalised AAP<sup>23,24</sup>. Local data suggests that implementation rates are similar. Chai et al conducted a cross-sectional survey of patients with asthma seeking care at a tertiary centre in 2004; only 17.0% reported receiving a written asthma action plan<sup>25</sup>.

Some of the barriers to delivery of AAPs cited are a lack of clinic consultation time and paucity of physician experience in creating personalised AAPs<sup>26</sup>. A qualitative study of factors that influence local primary care physicians' prescription of written AAPs found that physician's training and familiarity with AAP, perceived effectiveness, language barriers and availability of a nurse to administer AAP influenced their prescription of AAPs<sup>27</sup>.

Interventions that have been suggested to increase AAP use include<sup>28</sup>:

- 1) Structured asthma education and interval telephone reinforcements for patients;
- 2) Internet-based asthma management tool for patients and physicians with decision support systems;
- 3) Education seminars for physicians aimed at encouraging prescription of AAPs;
- 4) Pre-discharge asthma education by specialist nurse during hospitalisations.

Other novel approaches that have been described are a pharmacy-based asthma service that improved AAP ownership from 19% to 56%<sup>29</sup>; integration of AAPs into electronic health records of healthcare systems with provision of evidence-based guidelines, which has allowed accurate tracking of implementation and outcome indices<sup>30</sup>.

### **Future Challenges**

A more widespread adoption of AAP requires an increase in provider implementation and patient utilisation. To improve provider implementation, there is a need to introduce education programmes that allow clinicians to confidently prescribe AAPs. Thereafter, scheduled healthcare systems reviews of implementation rates, as part of quality improvement initiatives for asthma care should also be in place.

To facilitate patient utilisation, formatting of AAPs should take into consideration the patient's preferred language, literacy level and mode of delivery. Utilisation of AAP can be encouraged with electronic notifications, phone reminders and physician



reinforcement at clinic reviews. Challenges to AAP use are unique to individual healthcare systems and communities, these require targeted strategies for AAPs to be successfully integrated in asthma care.


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## LEARNING POINTS

- **Personalised asthma action plan is an essential and effective component of asthma self-management, in preventing exacerbations.**
- **Inhaled corticosteroid dose should be quadruple (or at least double) of the maintenance dose, in the yellow zone, during acute worsening of symptoms.**
- **Personalising the format and delivery of the asthma action plan would improve patient utilisation.**

Figure 1



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### WRITTEN ASTHMA ACTION PLAN (WAAP)

EVERY DAY ASTHMA CARE	WHEN I FEEL WORSE	IN AN ASTHMA ATTACK
<p>My personal best peak flow is: _____</p> <div style="border: 2px solid green; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>PREVENTER INHALER</b></p> <p><b>I need to take my preventer inhaler <u>every day</u> even when I feel well.</b></p> <p>My preventer inhaler is: (insert name/colour)</p> <p>I should take _____puff(s) in the morning and _____puff(s) at night</p> </div> <div style="border: 2px solid green; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>RELIEVER INHALER</b></p> <p><b>I take my reliever inhaler <u>only if I need</u>.</b></p> <p>My reliever inhaler is: (insert name/colour)</p> <p>I should take _____puff(s) of my reliever inhaler if any of these things happen:</p> <ul style="list-style-type: none"> <li>• I'm wheezing</li> <li>• My chest feels tight</li> <li>• I'm finding it hard to breathe</li> <li>• I'm coughing.</li> </ul> </div> <div style="border: 2px solid green; padding: 5px; margin-top: 10px;"> <p><b>Other medicines</b> I should take for my asthma every day: (free text)</p> </div> <p style="margin-top: 10px;">With this daily routine I should expect/aim to have no symptoms.</p>	<div style="border: 2px solid orange; padding: 5px; margin-top: 10px;"> <ul style="list-style-type: none"> <li>• My symptoms are coming back (wheeze, tightness in my chest, breathlessness, cough)</li> <li>• I am waking up at night</li> <li>• My symptoms are interfering with my usual day-to-day activities (e.g. at work, exercising, housechore)</li> <li>• I am using my reliever inhaler _____ times a week or more</li> <li>• If I am told to monitor my peak flow and it drops to below _____</li> </ul> </div> <div style="margin-top: 10px;"> <p><b>Preventer inhaler</b></p> <p><input type="checkbox"/> If I have <u>not</u> been using my preventer inhaler, start using it regularly again.</p> <p><input type="checkbox"/> Increase my preventer inhaler to _____puffs _____ times a day for 2 weeks.</p> <p><b>Reliever inhaler</b></p> <p><input type="checkbox"/> Ventolin MDI: up to _____puffs every _____ hours</p> <p><input type="checkbox"/> Symbicort: 1 puff as needed up to a total 12 puffs/day</p> <p><b>Standby prednisolone</b></p> <p><input type="checkbox"/> If I have been given standby prednisolone (steroid) tablets to keep at home: take _____mg of prednisolone immediately and every morning for 5 days</p> <p>If I do not improve within 24 hours, I should visit a doctor for further advice.</p> <p>Alternatively, I may also contact the asthma nurse (at _____within office hours) for further advice before seeing a doctor</p> </div>	<div style="border: 2px solid red; padding: 5px; margin-top: 10px;"> <ul style="list-style-type: none"> <li>• My reliever inhaler is not helping or I need it more than every _____ hours</li> <li>• I find it difficult to walk or talk</li> <li>• I find it difficult to breathe</li> <li>• I'm wheezing a lot or I have a very tight chest or I'm coughing a lot</li> <li>• If I am told to monitor my peak flow and it drops to below _____</li> </ul> </div> <div style="margin-top: 10px; color: red; text-align: center;"> <p><b>THIS IS AN EMERGENCY. PLEASE TAKE THE FOLLOWING ACTION NOW:</b></p> <div style="border: 2px solid red; padding: 5px;"> <ol style="list-style-type: none"> <li>1. Sit up straight. Try to keep calm.</li> <li>2. Take 2 puffs of my reliever inhaler every 5 minutes up to a maximum of 10 puffs</li> <li>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.</li> <li>4. Call 995 for an ambulance if needed.</li> </ol> </div> </div> <div style="margin-top: 10px;"> <p>Affix Patient's Sticker</p> <p>Date WAAP given to patient:</p> <p>Asthma nurse :</p> <p>Primary respiratory physician:</p> </div>

Table 1: Adjusting Preventer Inhaler Therapy for AAP Yellow Zone

Maintenance Therapy	Suggested Yellow Zone Therapy
ICS monotherapy	Increased ICS dose by at least 2 times, ideally by 4 times, or to an equivalent of BDP 2000mcg per day, for 7 to 14 days.
ICS/LABA combination inhaler (non-formoterol preparations)	Increase to higher dose formulation of ICS/LABA, for 7-14 days <u>or</u> Add separate ICS inhaler to a maximum BDP 2000mcg per day, for 7-14 days.
ICS/Formoterol combination inhaler (SMART)	Quadruple maintenance dose up to a maximum of 72 mcg of formoterol per day for 7 to 14 days.
	<b>For all patients who do not respond to first-line therapy over 2 to 3 days, on high dose maintenance ICS, or if peak expiratory flow is less than 60% of personal best, to commence oral prednisolone at 1mg/kg/day for 5 days.</b>

ICS: Inhaled Corticosteroids; LABA: Long-acting Beta-agonists; BDP: Beclomethasone Dipropionate;  
SMART: Single Inhaler and Reliever Therapy.

# Appendix

## தினசரி ஆஸ்துமா கவனிப்பு

எனது சிறந்த பீக்ப்ளோ மீட்டர் அளவு: \_\_\_\_\_

### தடுப்பு இன்ஹேலர்

நான் நல்லமாக உணர்ந்தால் கூட எனது தடுப்பு இன்ஹேலரை தினசரி எடுத்துக் கொள்ள வேண்டும்.

• எனது தடுப்பு இன்ஹேலர் (பெயர்/நிறம்): \_\_\_\_\_

• நான் எடுத்துக் கொள்ள வேண்டும் \_\_\_\_\_ ப.ப்கள் காலையில் மற்றும் \_\_\_\_\_ ப.ப்கள் இரவில்

### நிவாரண இன்ஹேலர்

நான் நிவாரண இன்ஹேலரை தேவைப்பட்டால் மட்டுமே எடுக்க வேண்டும்.

• எனது நிவாரண இன்ஹேலர் (பெயர்/நிறம்): \_\_\_\_\_

• கீழ்க்கண்டவற்றில் ஏதேனும் நிகழ்ந்தால் நான் எனது நிவாரண இன்ஹேலரில் \_\_\_\_\_ ப.ப்கள் எடுத்துக் கொள்ள வேண்டும்:

- இழைப்பு ஏற்பட்டால்
- மார்பில் இறுக்கமாக உணர்ந்தால்
- மூச்சு விடுவதில் சிறம்மம் ஏற்பட்டால்
- நான் இருமினால்,

எனது ஆஸ்துமாவிற்கான நான் தினசரி எடுத்துக் கொள்ள வேண்டிய மற்ற மருந்துகள்:

- 1
- 2
- 3
- 4

இந்த தினசரி வழங்கத்தினால் எனக்கு ஆஸ்துமா அறிகுறிகள் தோன்றாது என்று எதிர்பார்க்கிறேன் இலக்கு கொண்டுள்ளேன்.

## நான் மோசமாக உணரும்போது

- எனது அறிகுறிகள் திரும்ப வருகின்றன (இழைப்பு, மார்பில் இறுக்கம், மூச்சு விட சிறம்மம், இருமல்)
- நான் இரவில் விழிக்கிறேன்
- எனது அறிகுறிகள் எனது அன்றாட நடவடிக்கைகளை பாதிக்கின்றன (எ.கா. வேலை, உடற்பயிற்சி, விட்டு வேலைகளில்)
- நான் எனது நிவாரண இன்ஹேலரை வாரத்திற்கு \_\_\_\_\_ முறைகள் அல்லது அதற்கு அதிகமாக பயன்படுத்துகிறேன்
- நான் எனது பீக்ப்ளோ மீட்டர் அளவிடும்படி கூறப்பட்டால், அதன் அளவு \_\_\_\_\_ கீழே செல்கிறது

### தடுப்பு இன்ஹேலர்

- ☐ எனது தடுப்பு இன்ஹேலரைப் பயன்படுத்தவில்லையெனில், அதனை மீண்டும் வழக்கமாக பயன்படுத்த தொடங்குவேன்.
- ☐ எனது தடுப்பு இன்ஹேலரை ஒருநாளானக்கு \_\_\_\_\_ ப.ப்கள் தடவைகள் என இரண்டு வாரங்களுக்கு அதிகரிப்பேன்.

### நிவாரண இன்ஹேலர்

- ☐ வெண்டோலின் இன்ஹேலர்: \_\_\_\_\_ ப.ப்கள் ஒவ்வொரு \_\_\_\_\_ மணிநேரத்திற்கும் பயன்படுத்தவும்.
- ☐ சிம்பிகார்ட்: தேவைப்படும் போது ஒரு \_\_\_\_\_ ப.ப்கள் பயன்படுத்தவும். ஒரு நாள் மொத்தம் 12 \_\_\_\_\_ ப.ப்கள் வரை பயன்படுத்தலாம்.

### தயார்நிலையிலான ப்ரெட்னிடசோலோன்

- ☐ எனக்கு தயார்நிலையிலான ப்ரெட்னிடசோலோன் (ஸ்டீராய்டு) மாத்திரைகள் விட்டில் வைத்துக் கொள்ளுமாறு கொடுக்கப்பட்டிருந்தால்: உடனடியாக ஒவ்வொரு \_\_\_\_\_ மணி நேரத்திற்கும் \_\_\_\_\_ ப.ப்கள் ப்ரெட்னிடசோலோன் ஐந்து நாட்களுக்கு எடுத்துக்கொள்வேன்.

24 மணிநேரத்திற்குள் எனக்கு முன்னேற்றம் தெரியவில்லையெனில் நான் கூடுதல் ஆலோசனை பெற மருத்துவரைப் பார்க்க வேண்டும்.

அல்லது நான் ஆஸ்துமா செவிலியரை (அலுவலக நேரத்திற்குள் கூடுதல் ஆலோசனை பெற தொடர்பு கொள்ளலாம்.

## ஆஸ்துமா தாக்குதலின் போது

- எனது நிவாரண இன்ஹேலர் உதவி செய்யவில்லை அல்லது ஒவ்வொரு \_\_\_\_\_ மணிநேரத்திற்குமேல் எனக்குத் தேவைப்படுகிறது
- நான் பேச அல்லது நடக்க சிறம்மப்படுகிறேன்
- நான் மூச்சுவிட சிறம்மப்படுகிறேன்
- எனக்கு அதிக இழைப்பு ஏற்படுகிறது அல்லது மார்பு இறுக்கமாக உள்ளது அல்லது அதிகம் இருமுகிறேன்
- நான் எனது பீக்ப்ளோ மீட்டர் அளவிடும்படி கூறப்பட்டால் அதன் அளவு \_\_\_\_\_ கீழே செல்கிறது

இது ஓர் அவசரநிலை! தயவுசெய்து பின்வரும் நடவடிக்கைகளை உடனே மேற்கொள்ளுங்கள்:

- 1 நேராக உட்காருங்கள், அமைதியாக இருக்க முயற்சியுங்கள்.
- 2 ஒவ்வொரு 5 நிமிடங்களுக்கு ஒருமுறை நிவாரண இன்ஹேலரில் 2 ப.ப்கள் என, அதிகபட்சம் 10 ப.ப்கள் வரை எடுங்கள்.
- 3 10 ப.ப்களுக்கு பிறகும் நன்றாக உணர்வில்லையெனில், அல்லது எந்நேரத்திலும் மோசமடைவதாக உணர்ந்தால் அருகிலுள்ள மருத்துவரிடம் அல்லது மருத்துவமனைக்கு செல்லவும்.
- 4 தேவைப்பட்டால் அவசர ஊர்திக்கு 995 ஐ அழைக்கவும்.

நோயாளியின் ஸ்டிக்கரை ஒட்டுங்கள்

நோயாளிக் WAAP கொடுக்கப்பட்ட தேதி: \_\_\_\_\_

ஆஸ்துமா செவிலியர்: \_\_\_\_\_

முதன்மை கவசகருமாய் மருத்துவர்: \_\_\_\_\_