Asthma treatment in SA: Are we getting it right?

Clifford Smith

30 November 2023
Disclaimer

Presentation statements of fact and opinions expressed are those of the speaker individually and, unless expressly stated to the contrary, are not of the opinion or position of AstraZeneca. AstraZeneca does not advocate the use of its products in any manner unless as indicated in the registered prescribing information. The information contained in this presentation is not intended or implied to be a substitute for professional medical advice, diagnosis or treatment. AstraZeneca makes no representation and assumes no responsibility for the content, accuracy or completeness of the information contained in this presentation. AstraZeneca is not responsible for any liability, loss, risk, personal or otherwise which is or may be incurred as a consequence, directly or indirectly, of the use and application of any of the information contained in this presentation.
SABA use in asthma

• Regular or SABA overuse*
  • Increased exacerbations
  • Mortality

• GINA 2019/2020 updated recommendations to use inhaled corticosteroids with SABA#

Why is there an overreliance on SABA?

• SABA overuse is common in all grades of asthma severity*
  – Over prescribed by doctors
  – OTC purchase

• Symptom relief
  – Patient and doctor driven
  – Available freely without a prescription
  – Cheap
  – Scripted as first line for asthma historically

Overreliance on SABA:
How bad is this problem in SA?
SABINA

- Short
- Acting
- Bronchodilator
- IN
- Asthma
Global SABINA III: current SABA use and its impact on asthma control*

*Courtesy Prof Bateman

Global SABINA III: current SABA use and its impact on asthma control*

- > 3 canisters/yr
  - 75% SA
  - 38% global

*Courtesy Prof Bateman
SABINA III: South Africa  SABA canisters per year in patients with Asthma

74.9% of patients were prescribed ≥3 SABA canisters per year

SABINA III: South Africa  SABA canisters per year in patients with Mild Asthma

SABINA III: South Africa  SABA canisters per year in patients with Moderate/Severe Asthma

SABINA III SOUTH AFRICA

• SABA overuse is common in all grades of asthma severity
  – Over prescribed by doctors
  – OTC purchase
• 75% prescribed > 3 canisters in 1 year (38% global SABINA)
• 27% OTC purchase without a script
How can we eradicate/ control SABA overuse?

• Adopt and implement AIR (anti inflammatory/reliever Rx)
  – SATS and GINA strategy
GINA 2023 – Adults & adolescents
12+ years

Personalized asthma management
Assess, Adjust, Review for individual patient needs

**TRACK 1: PREFERRED CONTROLLER and RELIEVER**
Using ICS-formoterol as the reliever* reduces the risk of exacerbations compared with using a SABA reliever, and is a simpler regimen

**STEPS 1 – 2**
As-needed-only low dose ICS-formoterol

**STEP 3**
Low dose maintenance ICS-formoterol

**RELIEVER:** As-needed low-dose ICS-formoterol*

**STEP 4**
Medium dose maintenance ICS-formoterol

**STEP 5**
Add-on LAMA
Refer for reassessment of phenotype. Consider high dose maintenance ICS-formoterol, ± anti-IgE, anti-IL5/5R, anti-IL4R, anti-TSLP

See GINA severe asthma guide

**TRACK 2: Alternative CONTROLLER and RELIEVER**
Before considering a regimen with SABA reliever, check if the patient is likely to adhere to daily controller treatment

**STEP 1**
Take ICS whenever SABA taken*

**STEP 2**
Low dose maintenance ICS-LABA

**STEP 3**
Medium/high dose maintenance ICS-LABA

**RELIEVER:** as-needed ICS-SABA*, or as-needed SABA

**STEP 4**
Medium dose ICS, or add LTRA, or add HDM SLIT

**STEP 5**
Add LAMA or LTRA or HDM SLIT, or switch to high dose ICS

Add azithromycin (adults) or LTRA. As last resort consider adding low dose OCS but consider side-effects

*Anti-inflammatory reliever (AIR)
Guidelines for the management of asthma in adults and adolescents – a position statement of the South African Thoracic Society – 2021 Update

UG Laloo, I Kalla, S Abdool-Gaffar, K Dheda, CFN Koegelenberg, M Greenblatt, C Feldman, ML Wong, RN van Zyl-Smit
Stepwise approach to asthma therapy

**Step 1 and 2: Low dose inhaled corticosteroid therapy**
- As needed low dose inhaled corticosteroid-formoterol
- Alternatively
- As needed SABA – and additional inhaled corticosteroid-taken on each occasion SABA used
- Or
- Regular low dose inhaled corticosteroid with SABA as reliever

If the patient remains uncontrolled, review adherence and triggers and step-up therapy if indicated:

**Step 3: Medium dose inhaled corticosteroid therapy**
- Low dose inhaled corticosteroid-formoterol as regular maintenance and reliever
- Alternatively
- Low dose inhaled corticosteroid-LABA as regular maintenance and SABA reliever
- Or
- Medium dose inhaled corticosteroid as regular maintenance with SABA reliever

If the patient remains uncontrolled, review adherence and triggers and step-up therapy if indicated:

**Step 4: Medium to high dose inhaled corticosteroid therapy with or without additional controllers**
- Medium dose inhaled corticosteroid-formoterol as regular maintenance and low-dose inhaled corticosteroid-formoterol as reliever
- Alternatively
- Medium dose inhaled corticosteroid-LABA as regular maintenance and SABA reliever
- And
- Consider the addition of a LAMA (as single separate component or single inhaler triple combination), LTRA or sustained-release theophylline

If the patient remains uncontrolled on step 4 therapy, they should be reviewed by a specialist in asthma care: phenotyping should be performed, and consideration given to additional alternative controllers, biologic therapy, or other interventions.

**Step 5: High dose inhaled corticosteroid therapy with or without additional controllers and biologic therapies**
- High dose inhaled corticosteroid-formoterol regular maintenance with low dose inhaled corticosteroid-formoterol as reliever ± separate LAMA
- Or
- High dose inhaled corticosteroid-LABA with SABA as needed
- Or
- Medium or high dose inhaled corticosteroid-LABA-LAMA with SABA as needed
- And
- Consider addition of azithromycin / LTRA / theophylline/ low dose oral corticosteroids
- Consider biologic therapy if uncontrolled on inhaled therapies: anti-IgE, anti-IL5/5r, anti-IL4r. etc.
- Consider bronchial thermoplasty

SATS 2021
How can we eradicate/ control SABA overuse?

• Adopt and implement AIR (anti inflammatory/reliever Rx)
  – SATS and GINA strategy

• Obstacles?
  – Cost
  – Drug formularies
  – Consider alternatives to ICS/formoterol combination
  – Doctor and patient bias regarding SABA
How can we eradicate/ control SABA overuse?

- Adopt anti inflammatory reliever (AIR)
- Limit access to SABA, promote safety concerns
How can we eradicate/ control SABA overuse?

• Adopt anti inflammatory reliever (AIR)
• Limit access to SABA, promote safety concerns
  • “Black box” warning labels
  • Reduce OTC availability
  • Limit repeat scripts with pharmacy warnings
  • Continuing medical education of physicians and pharmacists
How can we eradicate/ control SABA overuse?

• Adopt anti inflammatory reliever (AIR)
• Limit access to SABA, promote safety concerns
• Adopt Global Quality of Care standards to empower self care
Adopt Global Quality of Care standards

### Global Quality Statements

1. For persons suspected of having asthma, provide objective diagnosis **specific to individual symptoms**

2. **Treat newly diagnosed patients** with pharmacological/non-pharmacological options appropriate to the long-term management of asthma as an inflammatory disease, in line with the latest evidence-based guidelines

3. Carefully monitor and control dispensing SABA canisters to mitigate against overuse (≥3 SABA canisters/year)

4. Review patients at least 3 months after starting or changing treatment. Regular review (at least every 12 months) of patients established on treatment

5. After treatment for an asthma exacerbation in hospital/ED, patients should receive an urgent dedicated follow-up by a trained primary care HCP

### Messages:

1. Improve diagnosis
2. Treat inflammation
3. SABA alone is not the right treatment
4. Follow up for a chronic illness
5. Post-exacerbation visit to try to prevent further attacks!

These statements can be used by national and local clinical groups to reinforce or develop quantitative quality standards appropriate to local practice settings. These statements aim to empower self-care and health-promoting behaviours for asthma care.
How can we eradicate/ control SABA overuse?

• Adopt anti inflammatory reliever (AIR)
• Limit access to SABA, promote safety concerns
• Adopt Global Quality of Care standards to empower self care
  • Will require innovative methods to distribute the messages
    – Patients
    – Pharmacists
    – Doctors
How can we eradicate/ control SABA overuse?

• Adopt anti inflammatory reliever (AIR)
• Limit access to SABA, promote safety concerns
• Adopt Global Quality of Care standards to empower self care
• Direct messaging to patients
  • Advertising to consumer
  • Questionnaires
Reliever Reliance Test: a practice tool based on a valid and reliable questionnaire (SABA Reliance Questionnaire)

SABA Reliance Questionnaire (SRQ): Identifying Patient Beliefs Underpinning Reliever Overreliance in Asthma

Amy H.Y. Chan PhD, Caroline B. Katzer MSc, Rob Horne PhD, John Haughney FRCPE FRCGP, Jaime Correia de Sousa PhD, Sian Williams MA MSc and Alan Kaplan MD CCFP (EM) FCFP
London and Aberdeen, United Kingdom; Toronto, ON, Canada; and Braga, Portugal

A novel measure that assesses patients’ beliefs underpinning SABA over-reliance

SRQ has acceptable internal reliability, and criterion and discriminant validity

- Helps identify beliefs that may put patients at risk of SABA over-reliance
- Flag individuals who would benefit from an asthma medication review

The RRT comprises tested messages concerning SABA over-reliance and ICS underuse. It provides feedback to help patients understand the meaning of their responses and reflect on whether they may be over-reliant on their SABA. Patients who may be overly reliant on their SABA are advised to consult with a healthcare professional.
How can we eradicate/ control SABA overuse?

- Adopt anti inflammatory reliever (AIR)
- Limit access to SABA, promote safety concerns
- Adopt Global Quality of Care standards to empower self care
- Direct messaging to patients
  - Advertising to consumer
  - Questionnaires
- Clinicians must be central to drive this
Questions/comments later please
Asthma Reliever Use in Africa: Kenyan Perspectives

Chakaya J.M.

Pan African Thoracic Society Webinar, November 30, 2023
Disclaimer

Presentation statements of fact and opinions expressed are those of the speaker individually and, unless expressly stated to the contrary, are not of the opinion or position of AstraZeneca. AstraZeneca does not advocate the use of its products in any manner unless as indicated in the registered prescribing information. The information contained in this presentation is not intended or implied to be a substitute for professional medical advice, diagnosis or treatment. AstraZeneca makes no representation and assumes no responsibility for the content, accuracy or completeness of the information contained in this presentation. AstraZeneca is not responsible for any liability, loss, risk, personal or otherwise which is or may be incurred as a consequence, directly or indirectly, of the use and application of any of the information contained in this presentation.
The Burden of Asthma
Global burden of asthma

- Incidence: 43.7 million/year
- Prevalence: 262.68 million (2019)
- Deaths: 490,000 (2017)
- DALYs: 1% of global DALYs

Mattiuzzi et al. 2020.
eClinical Medicine 2023; 59:101936
Asher Bissel et al. 2019
## Burden of asthma in Africa

<table>
<thead>
<tr>
<th>Population</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children under 15</td>
<td>34.1m</td>
<td>41.3m</td>
<td>49.7m</td>
</tr>
<tr>
<td>People under 45</td>
<td>64.9 m</td>
<td>82.4m</td>
<td>102.9m</td>
</tr>
<tr>
<td>Total Population</td>
<td>74.4 m</td>
<td>94.8m</td>
<td>119.3m</td>
</tr>
</tbody>
</table>

Asthma in Kenya

- **ISAAC I and III**
  - 1995: Wheeze in the last 12 months among 13–14-year-old
    - **Nairobi 17.1%; Eldoret 10.4%**
  - 2000: Wheeze in the last 12 months among 13-13 year
    - **Nairobi 18%; Eldoret 13%**

- **2016-2017**: Three stage cluster randomized cross section in Western Kenya (Uasian Gishu County): among 392 participants > 12 years old, 21.7% asthma

Asthma severity in Eastern Africa

• The African Severe Asthma Program (ASAP)

  • Studied 1,086 people with asthma in 3 tertiary care facilities in Uganda (617), Kenya (248) and Ethiopia (221).

  • 25.6% were classified to have severe asthma by month 12 of follow up.

  • 4.6% were classified to have severe refractory asthma by month 12 of follow up.

Bruce Kirenga et al ; in press
Asthma care in the African setting
Asthma care in the setting of high levels of poverty

- Estimated that 462 million in Africa are living in extreme poverty.
- High debt distress among African countries
- Weak health care systems.

African countries show mixed progress towards poverty reduction and half of them have an extreme poverty rate above 35%

MARTA SCHÖCH & CHRISTOPH LAKNER | DECEMBER 22, 2020
Paediatric Asthma Management in Africa

30-11-2023

Sandra Kwarteng Owusu
Paediatric Pulmonologist
Department of Child Health
School of Medicine and Dentistry
Komfo Anokye Teaching Hospital Kumasi
Outline of Presentation

1. Brief overview of childhood Asthma in Africa
2. Specific areas of Asthma Treatment in children
3. Proposed solutions for improving paediatric Asthma treatment in Africa
Disclaimer

Presentation statements of fact and opinions expressed are those of the speaker individually and, unless expressly stated to the contrary, are not of the opinion or position of AstraZeneca. AstraZeneca does not advocate the use of its products in any manner unless as indicated in the registered prescribing information. The information contained in this presentation is not intended or implied to be a substitute for professional medical advice, diagnosis or treatment. AstraZeneca makes no representation and assumes no responsibility for the content, accuracy or completeness of the information contained in this presentation. AstraZeneca is not responsible for any liability, loss, risk, personal or otherwise which is or may be incurred as a consequence, directly or indirectly, of the use and application of any of the information contained in this presentation.
Asthma and Children

Heterogenous and genetically complex disease of the airways with multiple phenotypes

Asthma commonly manifests in childhood

Cardinal features of asthma:

- Airways inflammation
- Reversible airflow obstruction
- Bronchial Hyperresponsiveness
The burden of asthma in children and adolescents continue to rise in Africa.

The use of SABA is highly prevalent

The presence of severe asthma symptoms in the absence of use of inhaled corticosteroids was much lower compared to

Poor asthma control is associated with low country income and LMIC
Components of paediatric Asthma treatments

Non pharmacologic

Pharmacologic
Factors that influence paediatric Asthma treatments

- Under resourced health systems
- High cost of asthma medications
- Community factors
- Health worker factors
- Patient factors
High cost of asthma medications and devices

Asthma medications are not cheap, affordability is a major issue in Africa.

Asthma medications are not readily available in every part of the country (Mention our brief survey of cost of medications).

Access to medications can improve time to contribute to delayed in initiating care.
Healthcare systems

Many health facilities are poorly resourced, especially for emergency asthma care.

Asthma clinics mostly only available in teaching hospitals based in major cities.

Primary healthcare personnel lack expertise and resources to manage asthma.
Community factors

Stigma in the communities

Reaching the unreached - many children with severe asthma symptoms in the communities and schools without ever visiting a healthcare facility

Most children with asthma symptoms have never seen a doctor

Asthma is not recognized as a complete disease entity that needs to be diagnosed and managed

Parents and caregivers donot appreciate need to seek health care in the hospital
Health worker factors

- Missed opportunities to educate families on diagnosis
- Delay in initiating inhaled corticosteroids
- Wrong devices and poor techniques
Practical steps for long-term asthma management

• As soon as a diagnosis of asthma is made, educate the family, *(Missed opportunities)*

• Discuss continuous care – *Asthma clinic enrollment*

• *Adherence to pharmacotherapy* *(controller)* therapy.

• Teach Techniques for use of inhalers

• Talk to family about identifying *triggers and avoidance*

• Look for and manage other associated *allergic co-morbidities*

• Teach the family on prehospital management of exacerbations

• If possible teach them to use an *asthma action plan*
Set Goals together with the family

*Work together- a partnership*

**Impairment**
- No Day time symptoms
- Full participation in school activities, don’t completely stop all activities
- Aim for no nighttime symptoms
  restful sleep free from nighttime cough and wheeze

**Risks**
- Prevent serious attacks and hospitalization
- Have near-normal lung function
- Minimal medication side effects
- Normal growth and development
Eyes on target (inside the airway)
New recommendation by GINA

GINA 2019: a fundamental change in asthma management

Treatment of asthma with short-acting bronchodilators alone is no longer recommended for adults and adolescents


Affiliations: 1 Woolcock Institute of Medical Research, University of Sydney, Sydney, Australia. 2 Respiratory Division, Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada. 3 Division of Pulmonology and Dept of Medicine, University of Cape Town and University of Cape Town Lung Institute, Cape Town, South Africa. 4 Washington University and St Louis Children’s Hospital, St Louis, MO, USA. 5 Section of Allergy and Clinical Immunology, Children’s Hospital Research Institute of Manitoba, University of Manitoba, Winnipeg, MB, Canada. 6 Dept of Respiratory Medicine, Ghent University Hospital, Ghent, Belgium. 7 Pulmonary Dept, Mersin University Hospital, Mersin, Germany. 8 Piara Foundation and Federal University of Bahia, Salvador, Brazil. 9 Respiratory Paediatrics, Imperial College, London, UK. 10 Dept of Pulmonary Medicine, Graduate School of Medical and Dental Sciences, Kagoshima University, Kagoshima, Japan. 11 Dept of Medicine and Therapeutics, The Chinese University of Hong Kong, Hong Kong. 12 Breathe Chicago Center, University of Illinois at Chicago, Chicago, IL, USA. 13 Divisional OP and Clinical Lead National Review of Asthma Deaths, UK-China Japan Friendship Hospital, Peking University, Beijing, China. 14 University of Southern Denmark and Aalborg Hospital, Aalborg, Denmark. 15 St Olav’s Hospital, Trondheim, Norway. 16 Peninsula Health, The Alfred Hospital, Melbourne, Australia. 17 Cetel Bayrak University, Medical Faculty, Dept of Pulmonology, Manisa, Turkey. 18 Quebec Heart and Lung Institute, Laval University, Quebec City, QC, Canada.

Correspondence: Helen K. Reddel, Woolcock Institute of Medical Research, The University of Sydney, NSW, Australia. E-mail: helen.reddel@sydney.edu.au

@ERJpublications
GINA no longer recommends treating adults/adolescents with asthma with short-acting bronchodilators alone. Instead, they should receive symptom-driven (in mild asthma) or a daily corticosteroid-containing inhaler, to reduce risk of severe exacerbations. http://bit.ly/31OLLx6

Inhaled corticosteroids represent the milestone in asthma controller therapy.
Principles of Pharmacotherapy in Asthma

• Two main groups of asthma medications
• Inhaled corticosteroid therapy is the main
• Stay for long-term asthma management

1. **Controllers (Anti-inflammatory effects)** for long-term control
   • **G(old)** = Inhaled corticosteroids
   • Adherence and correct technique

2. **Reliever (Bronchodilators)**—for acute relief includes short acting beta2 agonists (SABAs). **No effect on inflammation**
GINA- 2020 recommendation
1- GINA 2020 recommendations
2 GINA -2020 recommendations
Correct devices for the correct age

Select the appropriate inhaler device for your patient
Correct devices for the different ages in asthma management

Spacer devices are important in childhood asthma management.

Bottled spacers have a role.

We need to spend time teaching families how to correctly use devices.
While on inhaled steroids assess control each visit

Control is the degree to which the manifestations of asthma symptoms are minimised by treatment

At each visit assess the level of control, maintain or adjust the treatment *step up or step down*

<table>
<thead>
<tr>
<th>A. Asthma symptom control</th>
<th>Level of asthma symptom control</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the past 4 weeks, has the patient had:</td>
<td>Well controlled</td>
</tr>
<tr>
<td>Daytime asthma symptoms more than twice/week?</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>Any night waking due to asthma?</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>SABA reliever for symptoms more than twice/week?*</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>Any activity limitation due to asthma?</td>
<td>Yes ☐ No ☐</td>
</tr>
</tbody>
</table>
A proposed scheme to cope with comorbidities in asthma

Luane Marques de Mello\textsuperscript{a,\*}, Álvaro A. Cruz\textsuperscript{b}

\textsuperscript{a} Ribeirão Preto Medical School, University of São Paulo, Brazil
\textsuperscript{b} ProAR – Federal University of Bahia School of Medicine, Brazil
Comorbidities in asthma

Asthma treatment in children must address presence of comorbidities

Allergic and non allergic comorbidities are common.

Comorbidities can contribute to poor asthma control
Table 3
Practical approach to coping with the most relevant asthma comorbidities.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Identification</th>
<th>Initial procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergic diseases</td>
<td>Most common among children and young adults</td>
<td>• Environmental control</td>
</tr>
<tr>
<td>Allergic Rhinitis</td>
<td>• Sneezing, pruritus, rhinorrhea, congestion</td>
<td>• Oral or local anti-histamines</td>
</tr>
<tr>
<td></td>
<td>• Skin prick test</td>
<td>• Intranasal corticosteroids</td>
</tr>
<tr>
<td></td>
<td>• Specific serum IgE</td>
<td>• Leucotriene receptor antagonists (LRA)</td>
</tr>
<tr>
<td>Atopic dermatitis (eczema)</td>
<td>• Typical symptoms and signs</td>
<td>• Allergen specific immunotherapy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Skin protection and care</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Oral antihistamines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Topical steroids</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Topical calcineurin inhibitors (TCIs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Management of infectious triggers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Others phototherapy, immunosuppressive medications, biological therapy</td>
</tr>
</tbody>
</table>
Presence of allergic comorbidities in children with asthma a tertiary hospital

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency (%)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other allergic conditions (n=83)</td>
<td>63</td>
<td>75.90</td>
</tr>
<tr>
<td>- Allergic rhinitis</td>
<td>48</td>
<td>57.83</td>
</tr>
<tr>
<td>- Allergic conjunctivitis</td>
<td>15</td>
<td>18.07</td>
</tr>
<tr>
<td>- Eczema</td>
<td>3</td>
<td>6.61</td>
</tr>
<tr>
<td>- Food allergies</td>
<td>1</td>
<td>1.20</td>
</tr>
<tr>
<td>- Others</td>
<td>1</td>
<td>1.20</td>
</tr>
</tbody>
</table>
### Non-allergic extrapulmonary diseases

**Chronic rhinosinusitis (eventually with polyps)**
- Nasal obstruction, sinus headache, anterior rhinorrhea and/or post nasal drip
- Sinus CT scan/radiography
- Nasal endoscopy

**Gastroesophageal reflux disease (GERD)**
- Heart burn, chest pain, regurgitation
- Proton pump inhibitor therapeutic trial
- Gastrointestinal endoscopy
- Imaging exams
- 24h pH monitoring

**Obstructive sleep apnea syndrome**
- Diurnal somnolence, snoring
- Epworth sleepiness scale
- Polisomnography

**Vocal cord dysfunction (VCD)**
- Dyspnea associated with inspiratory laryngeal stridor
- Pittsburgh vocal cord dysfunction questionnaire
- Spirometry flow-volume inspiratory loop
- Laringoscopy

**Dysfunctional breathing (DB)**
- Typical pattern of symptoms and absence of signs of other disease

### Treatment Options

**Chronic rhinosinusitis (eventually with polyps)**
- Nasal irrigations (saline 0.9% or 3%)
- Intranasal corticosteroids
- Leukotriene receptor antagonists
- Antibiotics
- Oral corticosteroids
- Lifestyle and diet changes
- Proton pump inhibitors
- H₂ antihistamine blockers
- Surgical intervention

**Gastroesophageal reflux disease (GERD)**
- Lifestyle changes and weight reduction
- Avoidance of alcohol and sedatives
- Tongue retention devices
- Continuous positive airway pressure
- Surgical interventions
- Oropharynx rehabilitation (exercises oriented by speech therapist or physiotherapist)
- Emotional support

**Obstructive sleep apnea syndrome**
- Breathing retraining (speech therapist or physiotherapist)
- Emotional support (psychotherapy)
Pediatric asthma treatment in exacerbations

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Level of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use inhaled β₂-agonists as primary bronchodilators in acute asthma and administer as early as possible</td>
<td>A1</td>
</tr>
<tr>
<td>Use IV or IM β₂-agonists for those patients in whom inhaled therapy cannot be reliably administered</td>
<td>B1</td>
</tr>
<tr>
<td>In asthma that is poorly responsive to an intermittent aerosol of β₂-agonist, use continuous nebulization</td>
<td>A2</td>
</tr>
<tr>
<td>For severe asthma, add nebulized ipratropium bromide. Doses every 30 min should be used early. The dose frequency should be reduced as clinical improvement occurs</td>
<td>B1</td>
</tr>
<tr>
<td>Give steroids in all cases of acute asthma. Oral are as effective as IV or IM if patient is able to swallow. Use prednisone 2 mg/kg once daily to a maximum does of 80 mg.</td>
<td>A1</td>
</tr>
<tr>
<td>A single dose of IV magnesium sulfate can be given to patients with acute severe asthma. (suggest dose to be used in children)</td>
<td>C1</td>
</tr>
<tr>
<td>A single dose of intravenous monteleukast should be considered if given very early</td>
<td>D1</td>
</tr>
<tr>
<td>Mucoactive medications should not be used.</td>
<td>D2</td>
</tr>
<tr>
<td>Heliox does not provide benefits when used to treat severe asthma</td>
<td>B2</td>
</tr>
<tr>
<td>Oxygen should be administered in sufficient amount to maintain peripheral oxygen saturation (SpO2) between 0.89 and 0.95</td>
<td>A1</td>
</tr>
<tr>
<td>Mechanical ventilation (noninvasive or after endotracheal intubation) should considered for patients with hypoventilation (PaCO₂ &gt; 60 torr) and respiratory distress</td>
<td>A1</td>
</tr>
<tr>
<td>While on mechanical ventilation use a low tidal volume (VT) of 4-6 mL/kg and long exhalation times to minimize barotraumas and dynamic hyperinflation</td>
<td>B1</td>
</tr>
</tbody>
</table>
Golden moments in acute asthma management in the hospital

Immediately - Triaging and initiating oxygen

Within Minutes and the first 30 mins - Initiate first line management including oxygen

Within an hour – Give steroids, assess, and decide on one of the next three steps – Possible discharge, Admit or refer for second line management
Home Management of asthma exacerbation -

- Families need enough information on managing asthma exacerbation at home.
- Correct use of SABA and spacer at home.

When the patient does not improve

- Asthma action plans can help.
Spirometry is a useful assessment

Key recommendation in asthma diagnosis  ERS/ATS  and PATS

This is key as clinical diagnosis alone is not the best.

Spirometry can support the initial diagnosis and also help to monitor disease progression or response to treatment
Using the asthma action plan

- Asthma action plan is a simplified educational material.
- Summaries their current medication.
- Details of health caregiver.
- What to do in case of emergency.
# Asthma Action Plan for Children

**Department of Child Health Komfo Anokye Teaching Hospital**

<table>
<thead>
<tr>
<th>Name:</th>
<th>Guardian's name and no.:</th>
<th>Hosp no.:</th>
<th>Asthma clinic contact no.:</th>
</tr>
</thead>
</table>

- **Red means danger zone**: Go to the hospital now
- **Yellow means caution zone**: Add quick relief medicine
- **Green means safe zone**: Use preventive medicine

## Safe Zone

- I feel good!
- Breathing is easy
- No cough or wheeze
- I can work and play
- Sleep through the night
- My peak flow is... to...

I will take my daily controller medication even if I am well.

<table>
<thead>
<tr>
<th>Take</th>
<th>How many puffs</th>
<th>How often</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seretide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symbicort</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beclomethasone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluticasone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budesonide</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I use salbutamol inhaler... puffs 20 minutes before exercise or sports.

## Caution Zone

- My asthma is getting worse
- Cough or wheeze
- Chest pain or tightness
- Can't breathe
- Can't work or play
- First sign of cold
- My peak flow has dropped to...

Remind my parent to give me my green zone drugs and add.

<table>
<thead>
<tr>
<th>My blue inhaler</th>
<th>How many puffs</th>
<th>How often</th>
</tr>
</thead>
<tbody>
<tr>
<td>salbutamol</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Prednisolone tablets today, tomorrow and the third day | Every ... mins |

I may have to go to the hospital if I don’t feel better after 30 mins.

I can’t take prednisolone tablets for more than 3 days unless my doctor says so.

## Danger Zone

- Breathing is hard and fast
- Can’t walk well
- Can’t talk
- Chest wall sinks in and out
- Feel very scared
- Medicine not helping
- My peak flow has dropped to...

This is an emergency. Go to the hospital now.

1. Grab my blue inhaler and spacer.
2. Take 2 puffs every 2-5 mins until I feel better.
3. Rush to the nearest clinic.
4. Continue the blue inhaler while in the car on the way to the clinic.
5. Tell the doctor I have an asthmatic attack.

## Please Note

Asthma in children can be treated effectively. Always keep your appointments to the clinic even if your child is well. Bring all your asthma medications to the clinic always. Tell your doctor about new triggers identified.

Dr. Angela Osei Bonsu
Dr. Christian Adu-Takyi
Dr. Sandra Kwarteng Owusu

This Asthma action plan was prepared by: Dr. Christian Adu-Takyi
Dr. Sandra Kwarteng Owusu
Make asthma in childhood a health priority.
What does this mean for Asthma?

• Unclear if poverty increases incidence/prevalence of asthma

• The poor have higher levels of asthma morbidity (hospitalizations, ER visits) and mortality.

• Underdiagnosis and inadequate treatment common.

How should asthma be treated?
GINA 2023 – STARTING TREATMENT
in adults and adolescents with a diagnosis of asthma

Track 1 using ICS-formoterol reliever is preferred because it reduces the risk of severe exacerbations, compared with using SABA reliever, and it is simpler for patients as it uses the same medication for reliever and maintenance treatment.

**FIRST ASSESS:**
- Confirm diagnosis
- Symptom control and modifiable risk factors
- Comorbidities
- Inhaler technique and adherence
- Patient preferences and goals

**START HERE IF:**

**TRACK 1: PREFERRED CONTROLLER and RELIEVER**
Using ICS-formoterol as the reliever reduces the risk of exacerbations compared with using a SABA reliever, and is a simpler regimen

**STEPS 1-2**
As-needed-only low dose ICS-formoterol*

**STEPS 3**
Low dose maintenance ICS-formoterol

RELIEVER: As-needed low-dose ICS-formoterol*

**STEPS 4**
Medium dose maintenance ICS-formoterol

**STEPS 5**
Low dose maintenance LABA

RELIEVER: As-needed SABA, or as-needed ICS-SABA*

*Anti-inflammatory reliever (AIR)
How is asthma treated in Africa including in Kenya?
Asthma management and control in children, adolescents, and adults in 25 countries: a Global Asthma Network Phase I cross-sectional study


- 453, 473 individuals from 63 centres in 25 countries (South Africa, Cameroon and Nigeria from SSA)

- SABA alone used by 29.3% - 85.3% of participants

- ICS used by 12.6% - 51.9% of participants

- 44.8% of participants of those with severe asthma were not using ICS

- Oral SABA and theophylline remain in use
SABA In Asthma – International Study

To evaluate prescriptions, exacerbations and healthcare resource utilisation related to short-acting β₂-agonist use in asthma

- **SABINA I**
  - Retrospective observational research database study in the UK

- **SABINA II**
  - Retrospective observational database studies in Europe, Canada and Israel

- **SABINA III**
  - Cross-sectional study in 25 countries

SABINA 3 Study: High rates of SABA overuse around the world
SABA use in the African cohort in SABINA 3: all patients

(A)

SABA use in the African cohort in SABINA 3: patients with mild asthma

SABA use in the African cohort in SABINA 3: Patients with moderate to severe asthma

SABA overuse in Kenya: the SABINA 3 Study
# Asthma Medicine Sales Through ReSoK’s BreathEasy Initiative

<table>
<thead>
<tr>
<th>Month</th>
<th>ICS</th>
<th>SABA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun-17</td>
<td>56</td>
<td>3,422</td>
</tr>
<tr>
<td>Jul-17</td>
<td>100</td>
<td>6,068</td>
</tr>
<tr>
<td>Aug-17-</td>
<td>100</td>
<td>6,336</td>
</tr>
<tr>
<td>Sep-17</td>
<td>90</td>
<td>3,543</td>
</tr>
<tr>
<td>Oct-17</td>
<td>110</td>
<td>2,706</td>
</tr>
<tr>
<td>Nov-17</td>
<td>145</td>
<td>7,853</td>
</tr>
<tr>
<td>Dec-17</td>
<td>125</td>
<td>3,618</td>
</tr>
<tr>
<td>Jan-18</td>
<td>96</td>
<td>7,759</td>
</tr>
<tr>
<td>Feb-18</td>
<td>222</td>
<td>9,114</td>
</tr>
<tr>
<td>Mar-18</td>
<td>383</td>
<td>2,868</td>
</tr>
<tr>
<td>Apr-18</td>
<td></td>
<td>6,910</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1492</td>
<td>60,197</td>
</tr>
</tbody>
</table>

Source: BreathEasy Medicine Sales Records, ReSoK
What do we know about SABA use and asthma outcomes?
Figure 3. Observed and fitted change-point dose–response curves of asthma death rates by amount of combined inhaled β-agonist use in canister units of 20,000 μg per month. This model allows risk increases at low doses.

Excessive use of SABA associated with asthma deaths in UK - NRAD

• Of 189 patients who died of asthma while on a SABA, the number of SABA prescriptions received was known in 165, of whom 65 (39%) had >12 SABA canisters prescribed in the one year before they died.

SABA use and odds of achieving at least a state of being partly controlled: SABINA 3

**b) SABA canister prescriptions**

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Adjusted OR (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>1796</td>
<td>1.00 (-)</td>
<td></td>
</tr>
<tr>
<td>3-5</td>
<td>842</td>
<td>0.64 (0.53–0.78)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>6-9</td>
<td>627</td>
<td>0.49 (0.39–0.61)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>10-12</td>
<td>1062</td>
<td>0.42 (0.34–0.51)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>≥13</td>
<td>270</td>
<td>0.33 (0.25–0.45)</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
Overuse of SABA

• Associated with
  • Increased bronchial hyper – responsiveness
    • Increases the proportion of asthma patients with moderate to severe disease
  • Uncertain reduction in bronchodilator response due to tolerance
  • Reduced protection from broncho- constrictor stimuli
  • Masking of worsening asthma
  • But evidence for worsening asthma/or deaths with routine use of salbutamol (not fenoterol) was missing in this review.

Reducing SABA overuse: what can be done?
A CONSENSUS STATEMENT ON REDUCTION OF SABA OVERUSE IN KENYA: A REPORT FROM THE KENYA ASTHMA MANAGEMENT ADVISORY BOARD (JANUARY 2022)

Chakaya J\textsuperscript{1*}, Kuhora S\textsuperscript{2}, Kagima W\textsuperscript{3}, Menge T\textsuperscript{4}, Mulinge D\textsuperscript{5}, Munene D\textsuperscript{6}, Njue A\textsuperscript{7}, Riro M\textsuperscript{8}, Okotu B\textsuperscript{9}, Walukana G\textsuperscript{10}

• Policy Level Interventions to ensure lung diseases, beyond TB, are given appropriate attention.

• Guidelines that reflect the situation and address common asthma care bottlenecks

• Data driven planning and care delivery

• Awareness creation among all stakeholders including the general population
Conclusion

- Overuse of SABA in asthma remains common across the world

- Overuse of SABA in asthma appears to increase with increase in GINA treatment step

- Overuse of SABA in asthma is associated with reduced odds of achieving asthma control.

- Overuse of SABA in asthma is associated with increased risk of severe exacerbations and even death

- Reducing overuse of SABA in asthma is a major imperative
Thank you/Asante sana