Unveiling Global Asthma in children
ISAAC and GAN

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Chair, ISAAC and GAN

http://isaac.auckland.ac.nz
http://www.globalasthmanetwork.org
New Zealand, 12,600 km from Jaipur
Auckland, New Zealand
1 in 4 New Zealand children have asthma
Asthma causes disability and death
In 1991 Few Centres With Information on Prevalence of Asthma Symptoms in Children
ISAAC Network 2012: 306 research centres in 105 countries
ISAAC studied three diseases

Asthma

Rhinitis

Eczema

http://isaac.auckland.ac.nz
Methods: ISAAC Phases I and III

- 13-14 year olds (and optional 6-7 year olds) in randomly sampled schools in centres
- 3000 per age group per centre
- Standardised questionnaires
ISAAC – what did we find?
Asthma symptom prevalence 2002-3: 233 centres in 97 countries. India: 19 centres

ISAAC in India: Asthma symptom prevalence: 19 centres

Bangalore
Bikaner
Borivali
Chandigarh
Chennai
Davangere
Jaipur
Jodhpur
Kottayam
Lucknow
Ludhiana
Mumbai (3 centres)
Nagpur
New Delhi
Pimpri
Pune
Rasta Peth

Symptoms of severe asthma among those with current asthma symptoms
ISAAC in India: Symptoms of severe asthma among those with current asthma symptoms

Bangalore
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Prevalence of Current Symptoms of Severe Asthma Among Current Wheezers, 13-14 Year Age Group

Is asthma prevalence changing?
Is asthma prevalence changing?

ISAAC time trends in India 1996-2003

Borivali
Chandigarh
Chennai
Jodhpur
Kottayam
Mumbai
New Delhi
Pune

Change in Prevalence of Current Symptoms of Asthma (Current Wheeze), 13-14 Year Age Group

ISAAC Phase Three Time Trends

△ ≥1 SE Increase
□ Little Change
▼ ≤1 SE Decrease

Cooking fuels and asthma
Current wheeze and cooking with ‘open fire only’ (individual analyses)

<table>
<thead>
<tr>
<th>Age of children</th>
<th>Fully adjusted Odds Ratio (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-7 yrs</td>
<td>2.17 (1.64-2.87)</td>
</tr>
<tr>
<td>13-14 yrs</td>
<td>1.35 (1.11-1.64)</td>
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</tbody>
</table>

Global Asthma Network
377 centres in 135 countries

GAN Global Centres

EOI Centres
Registered Centres

January 2019
GAN Phase I Surveillance

Children 6-7 yr, 13-14 yr & adults*

- Prevalence
- Severity
- Management*
- Risk factors

*new to GAN – not in ISAAC
Global Asthma Network India

GAN Phase I: nine centres completed in India

Bikaner
Chandigarh
Jaipur
Kolkata
Kottayam
Lucknow
Mysuru
New Delhi
Pune
The Global Asthma Report 2018

www.globalasthmareport.org
India

Virendra Singh

Despite barriers, regular patient education programmes are increasing the acceptability of inhaler treatment.

Among India’s 1.31 billion people, about 6% of children and 2% of adults have asthma. Most people do not have health insurance and there is a wide gap in healthcare facilities for rich and poor. Almost all types of inhaled corticosteroids, β₂-agonist and combination inhalers are available at pharmacies but these are expensive in comparison to oral formulations. In 2015, the Indian Chest Society and National College of Chest Physicians published national Indian asthma guidelines. However, medical professionals appear to underutilise these guidelines.

**Barriers in treatment**

A large number of patients in India still consider asthma a stigma and therefore conceal the disease. Many believe that inhalers are habit forming and strong medicines. Asthma has different deceptive symptomatic names, such as cough and saans (breathlessness). Many patients take treatment when they are symptomatic, or symptoms are intolerable, and stop when symptoms subside. Despite these barriers, with frequent and regular patient education programmes, the acceptability of inhaler treatment for bronchial asthma is gradually increasing.

**Reducing mortality**

From 1990 to 2005 asthma mortality in India fell, particularly in prosperous states and urban areas where healthcare facilities are better. India’s highest mortality, which health authorities are addressing, is in Uttar Pradesh and Rajasthan.

**Rajasthan initiatives**

In Rajasthan (western India), since 2011 most important medicines are provided free to all state patients at government hospitals. The state has undertaken pooled procurement of medicines for Rajasthan’s 70 million people, leading to a substantial reduction in procurement cost. Annual spending, including supply chain, personnel and cost of medicine, is around 3000 million rupees (0.5% of the state budget). Across the state, including remote areas, the government opened 15,000 pharmacies. The state provides asthma patients with free metered dose inhalers, dry powder inhaler capsules and nebulizer solution. Many patients have shifted from private to government hospitals, where outpatient and inpatient numbers increased. The outcome is that asthmatic patients are accessing treatment more easily, but compliance issues persist.

**National initiative**

The Government of India announced in February 2018 that it is planning free health insurance to cover treatment costs for 100 million low-income families.
Asthma guidelines for children and adolescents in New Zealand 2017
Goal: All children who have asthma are correctly diagnosed promptly

Diagnosis in children

– based on having characteristic symptoms in absence of another cause

– AND assessing response to treatment
Likelihood of Asthma – more/less

More likely
- Typical episodic wheeze/cough/SOB
- Typical triggers
- Atopy
- Family history

Less Likely
- Lack of interval symptoms
- Isolated cough
- Moist cough
- Dizzy/light-headed
- Stridor
- Signs of specific disease
Red Flags

C. Red flags suggesting alternate diagnoses*

- Daily symptoms from birth
- Frequent or daily wet, moist-sounding or productive cough
- Digital clubbing
- Chest wall deformity
- Failure to thrive
- Heart murmur
- Spilling, vomiting or choking
- Asymmetrical chest findings
- Stridor as well as wheeze
- Persistent ear, nose or sinus infection
- Family history of unusual chest disease
- Symptoms much worse than objective signs or spirometry
What age do we diagnose asthma?

Current paradigm

< 1 year "bronchiolitis"
1– 4 years "preschool wheeze"
5 years + "asthma"
Preschool Wheeze

Three patterns

1. Infrequent preschool wheeze
2. Frequent preschool wheeze
3. Preschool asthma

Pattern does not predict later asthma or not
Preschool Wheeze - one pattern is

Infrequent preschool wheeze

• Symptoms only with viral illnesses, infrequent, up to every 8 weeks
• Treatment – reliever as needed, no inhaled corticosteroid (ICS)
Preschool Wheeze - another pattern is

Frequent preschool wheeze

• Symptoms only with viral illnesses, frequent, more than every 8 weeks
• Treatment – reliever as needed & trial of ICS or montelukast
  ▪ if improves, call it preschool asthma
  ▪ If it doesn’t, call it frequent preschool wheeze
Preschool Wheeze – the third pattern is

**Preschool asthma**

- Symptoms between viral illnesses, frequent, more than every 8 weeks

- Treatment – reliever as needed & ICS, or montelukast if severe flare ups

This pattern does not mean the child will go on to have asthma at school or later.

Child can change patterns – review and trial off meds every 3 months
Goal: All children with asthma are assessed for their severity, control and future risk

- Asthma Control Test
  or
- GINA asthma symptom control
Goal: The right step of medicine in the right device is used for the age and symptoms of the child
Goal: The correct inhaler device is considered and age appropriate

- Spacer with mask < 2 years
- Spacer no mask transition 2 – 4 years

Improves lung deposition by 60%
Don’t use when severe exacerbation
• Turbuhaler - from 5 - 7 yrs

• MDI alone – never (possible from 8 yrs)
Assessing inhaler technique

Check every visit
Goal: Identify and address personal, family or environmental factors which may be unsettling the asthma

- Smoke exposure
- Allergen avoidance
- Anxiety and psychosocial triggers
- Poor housing
- Associated conditions eg rhinitis
- Influenza vaccine if on asthma preventer
Goal: Achieving effective self/family education and management

Asthma Health Literacy for Maori Children in NZ Report 2015
Getting it right for all people with asthma