NCDs – global overview of Chronic Respiratory Diseases including Lung Cancer

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Medical Officer

Global consultation on community based integration of TB prevention and care with chronic lung conditions
Johannesburg, South Africa, 28-30 June 2017
Chronic Respiratory Diseases (CRDs) A major public health problem??

• 1 billion people suffer from CRDs including asthma, respiratory allergies, COPD, occupational lung diseases, sleep apnea and pulmonary hypertension

• CRDs account for about 5 million deaths annually

• COPD to become the 3rd leading cause of death by 2030

• Indoor air pollution kills more than 4 million people each year
Indoor air pollution

4.3 million people die prematurely:

• 12% are due to pneumonia
• 34% from stroke
• 26% from ischaemic heart disease
• 22% from chronic obstructive pulmonary disease (COPD), and
• 6% from lung cancer
Outdoor air pollution
3 million people die prematurely:

- 40% from ischaemic heart disease
- 40% from stroke
- 11% from COPD
- 6% lung cancer
- 3% ARI in children
Cancer is a leading cause of death worldwide, accounting for 8.8 million deaths in 2015. The most common causes of cancer death are cancers of:

- Lung (1.69 million deaths)
- Liver (788 000 deaths)
- Colorectal (774 000 deaths)
- Stomach (754 000 deaths)
- Breast (571 000 deaths)
Estimated number of lung cancer deaths (dots, left scale) and ASR (crosses, right scale) in South Africa from 2010 to 2025.

Volker Winkler et al. BMJ Open 2015;5:e006993

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Fig. 1.3 Proportion of global deaths under the age 70 years, by cause of death, comparable estimates, 2012 (7)

- Communicable, maternal, perinatal and nutritional conditions: 34%
- Injuries: 14%
- NCDs: 52%
  - Cardiovascular diseases: 37%
  - Diabetes mellitus: 4%
  - Respiratory diseases: 8%
  - Malignant neoplasm: 27%
  - Other NCDs: 23%

8%
Age-standardized prevalence of tobacco smoking among persons aged 15 years and older, 2015

Prevalence of tobacco smoking (%)  
Age-standardized, per 100 000 pop.

- <10.0
- 10.0–19.9
- 20.0–29.9
- 30.0–39.9
- ≥40
- Data not available
- Not applicable

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement. © WHO 2016. All rights reserved.

Data Source: World Health Organization
Map production: Information Evidence and Research (IER)
World Health Organization
TOBACCO WILL KILL OVER 175 MILLION PEOPLE WORLDWIDE BETWEEN NOW AND THE YEAR 2030

Cumulative tobacco-related deaths, 2005–2030
Commits governments to develop national responses:
- By 2030, reduce by one third premature mortality from NCDs
- Strengthen responses to reduce the harmful use of alcohol
- Achieve universal health coverage
- Strengthen the implementation of the WHO Framework Convention on Tobacco Control
- Support research and development of vaccines and medicines for NCDs that primarily affect developing countries
- Provide access to affordable essential medicines and vaccines for NCDs
Global challenges

• CRDs not high on global health agenda, lack of funding at all levels in LMIC
• Lack of reliable data on CRDs
• 30% of patients at PHC present with cough but
  – Prevention and treatment opportunities missed
  – Effective treatment not available or not accessible
  – Medicines not affordable
Need for improved surveillance and monitoring for asthma and COPD
Global Burden of Disease programme

Estimates:
• mortality
• prevalence
• disability adjusted life years (DALYs)
• years lived with disability (YLD)
• risk factors

Need time trends of these to understand burden of disease, risk factors and outcomes of changes

http://vizhub.healthdata.org/gbd-compare/
Global Asthma Network (GAN)
344 centres in 132 countries (66% LMICs)
45% ISAAC centres - time trends
Global prevalence of childhood asthma
ISAAC Phase 3

<table>
<thead>
<tr>
<th>Region</th>
<th>6-7 years</th>
<th></th>
<th>13-14 years</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>n</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Africa</td>
<td>5865</td>
<td>589</td>
<td>10.0%</td>
<td>66308</td>
</tr>
<tr>
<td>Asia-Pacific</td>
<td>59979</td>
<td>5719</td>
<td>9.5%</td>
<td>99634</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>40573</td>
<td>3824</td>
<td>9.4%</td>
<td>51705</td>
</tr>
<tr>
<td>Indian sub-continent</td>
<td>50092</td>
<td>3392</td>
<td>6.8%</td>
<td>55783</td>
</tr>
<tr>
<td>Latin America</td>
<td>93774</td>
<td>16256</td>
<td>17.3%</td>
<td>165900</td>
</tr>
<tr>
<td>North America</td>
<td>4012</td>
<td>767</td>
<td>19.1%</td>
<td>141009</td>
</tr>
<tr>
<td>Northern and eastern Europe</td>
<td>42548</td>
<td>3715</td>
<td>8.7%</td>
<td>72057</td>
</tr>
<tr>
<td>Oceania</td>
<td>13888</td>
<td>3020</td>
<td>21.7%</td>
<td>36299</td>
</tr>
<tr>
<td>Western Europe</td>
<td>77722</td>
<td>7487</td>
<td>9.6%</td>
<td>107673</td>
</tr>
<tr>
<td>Global total</td>
<td>388811</td>
<td>44799</td>
<td>11.5%</td>
<td>798685</td>
</tr>
</tbody>
</table>

ISAAC found that:

- asthma occurred everywhere in the world
- was more common than was thought
- there were large variations
- asthma overall was increasing
- increases were more common in LMICs
- asthma was more commonly severe in LMICs
- association with atopy was weak in LMICs
### Environmental exposures associated with asthma symptoms

<table>
<thead>
<tr>
<th><strong>POSITIVE</strong></th>
<th><strong>NEGATIVE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• tobacco smoke</td>
<td>- breast feeding in LMICs</td>
</tr>
<tr>
<td>• open fire cooking</td>
<td>- fresh fruit and vegetables</td>
</tr>
<tr>
<td>• farm animals</td>
<td></td>
</tr>
<tr>
<td>• high intensity truck traffic</td>
<td></td>
</tr>
<tr>
<td>• dampness in homes</td>
<td></td>
</tr>
<tr>
<td>• burger/fast food intake</td>
<td></td>
</tr>
<tr>
<td>• obesity</td>
<td></td>
</tr>
<tr>
<td>• paracetamol/antibiotic use</td>
<td></td>
</tr>
<tr>
<td>• migration to higher prevalence</td>
<td></td>
</tr>
<tr>
<td>country</td>
<td></td>
</tr>
<tr>
<td>• greater family size (severe asthma)</td>
<td></td>
</tr>
</tbody>
</table>
Prevention and Control
Patients may present at PHC level with one or more respiratory symptoms:

- Acute cough
- chronic cough
- wheeze
- shortness of breath
- chest tightness
- chronic sputum production
Acute cough may be present due to:

- Common cold
- Acute bacterial sinusitis
- Pneumonia
- Pertussis
- Exacerbations of COPD
- Allergic rhinitis
- Rhinitis due to environmental irritants
Chronic cough may be present due to:

- COPD
- Asthma
- Lung Cancer
- Tuberculosis
- Bronchiectasis
- Left heart failure
- Other conditions
Symptoms of heart failure

• Chronic coughing or wheezing
• Shortness of breath
• Oedema
• High heart rate
• Fatigue
• Nausea or lack of appetite
• Confusion or impaired thinking
<table>
<thead>
<tr>
<th><strong>History</strong></th>
<th><strong>Asthma</strong></th>
<th><strong>COPD</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Previous history</strong></td>
<td>Diagnosis of asthma known</td>
<td>Diagnosis of COPD known</td>
</tr>
<tr>
<td><strong>Onset of symptoms</strong></td>
<td>Since childhood or early adulthood</td>
<td>Onset in middle age (40-45) or later</td>
</tr>
<tr>
<td><strong>History</strong></td>
<td>- Seasonal allergies, - Known triggers of symptoms</td>
<td>- history of heavy smoking for more than 15 years - Exposure to indoor air pollution - Exposure to occupational dust</td>
</tr>
<tr>
<td><strong>Symptoms</strong></td>
<td>- Intermittent symptoms with asymptomatic periods in between - Worse at night, early morning - Triggered by exercise, weather changes, seasonal allergies - Respond to salbutamol or other bronchodilators</td>
<td>- Worsened over a long period of time - Long history of frequent cough and sputum production before shortness of breath - Persistent with little day-to-day variation</td>
</tr>
</tbody>
</table>
Management of asthma and COPD

Most patients present for the following reasons:

- Most often due to an asthma attack
- due to chronic symptoms
- to get medicines (inhalers)
I. Protocols for primary care
for management of hypertension, diabetes, raised cardiovascular risk, asthma, chronic obstructive pulmonary disease and referral of suspected breast and cervical cancer through an integrated approach

WHO PEN Protocol 1
Prevention of Heart Attacks, Strokes and Kidney Disease through Integrated Management of Diabetes and Hypertension

WHO PEN Protocol 2
Health Education and Counseling on Healthy Behaviours
(to be applied to ALL)

WHO PEN Protocol 3
3.1 Management of Asthma
3.2 Management of Chronic Obstructive Pulmonary Disease (COPD)

4.1 Assessment and referral of women with suspected breast cancer at primary health care

WHO PEN Protocol 4
4.2 Assessment and referral of women with suspected cervical cancer at primary health care
Management of Asthma

Medicines on the Essential Medicines List

Reliever medicine
• Short acting $\beta_2$- agonist: Salbutamol

Controller medicine
• Inhaled corticosteroid Beclometasone
Management of Asthma

• All patients with persistent asthma should receive long-term inhaled corticosteroids (ICS) adapted to the grade of severity of their condition.

• In most cases follow up visits can be arranged for every 3 – 6 months if the patient understands the long term plan, is able to use the inhalers properly and has a sufficient supply of medicines
Management of Asthma

• In a few cases asthma will worsen and treatment will need to be increased *(step up)*

• Possible reasons for poor response to treatment:
  – Treatment not taken as prescribed
  – Poor inhaler technique
  – Continued exposure to environmental triggers
  – Temporary deterioration due to ARI or exposure to allergen
5 STEP, WHO PEN approach to asthma

Treatment with Beclometasone 100 µg * based on symptoms and lung function

Step 1: 0 puff / day

Step 2: 1 puff / twice daily

Step 3: 2-4 puffs / twice daily

Step 4: Add low dose theophylline or LABA if available

Step 5: Add oral prednisolone (10 mg/day)

* And inhaled 100 µg salbutamol as needed
Asthma: Advice to patients and families

**Prevention**
- Avoid cigarette smoke and trigger factors
- Avoid dusty and smoke filled rooms
- Reduce dusts in rooms (furniture/floor, wet cleaning)
- Avoid occupational dusts

**Treatment**
- Patient should understand that it takes some time until inhalers become fully effective
- Patient should know what to do if asthma deteriorates
- Patient understands the need to use inhalers and spacers
Risk Factors for COPD

- Cigarette smoke
- Occupational dust and chemicals
- Environmental tobacco smoke (ETS)
- Indoor and outdoor air pollution
- Genes
- Infections
- Socio-economic status

Aging Populations

© 2015 Global Initiative for Chronic Obstructive Lung Disease
Management of COPD

Assess severity

- **Moderate** - if breathless with normal activity
- **Severe** – if breathless at rest
- Measure PEFR, oxygen saturation if possible
- Check for COPD comorbidities such as diabetes, CVD, depression etc
Management of COPD

**Treatment**

- Inhaled salbutamol, two puffs as required, up to four times daily;
- If ipratropium inhalers are available, they can be used instead of, or added to salbutamol
- If symptoms are still troublesome, consider low dose theophylline
- Strongly advise for smoking cessation
Management of COPD

**Exacerbations**

- *Antibiotics* should be given for all exacerbations
- High doses of salbutamol by MDI with spacer or nebulizer: *4 puffs every 20 minutes for one hour*
- Oral prednisolone, *30-40 mg/day for seven days*
- If ipratropium inhalers are available, they can be used instead of, or added to salbutamol
- *Oxygen*, if available, should be given by mask that limits concentration to 24-28%
COPD: advice to patients and families

• Tobacco use and indoor air pollution are the major risk factors, to be avoided
• Assist with smoking cessation for patient and other family members
• Keep areas where meals are cooked well ventilated
• Cook with wood and carbon outside the house or build oven with chimney
• Stop working in areas with occupational dust or high air pollution
Global challenges

• Many guidelines available at PHC level:
  – National
  – WHO PEN guidelines, GINA, GOLD
  – International Professional Societies
  – Industry sponsored
  – Mixed

• Lack of simple, standardized guidelines which are implementable by small teams
National CRD plans

AFRO  AMR  EMR  EUR  SEAR  WPR

CRD plan  CRD operational
National guidelines for CRDs
Practical Approach to Lung Health (PAL)

• Syndromic management of patients who attend health services for respiratory symptoms

• Focus on
  1. PHC setting
  2. Priority respiratory diseases > 5 yrs:
     + TB
     + ARI (pneumonia)
     + CRDs: mainly Asthma, COPD
What are the components of PAL strategy?

PAL has 2 components:

1. **Standardization** of health care procedures:
   management and follow-up through the adaptation and development of clinical guidelines

2. **Coordination** among:
   – health care levels
   – the components of the health system particularly at district level
Practical Approach to Care Kit

Decision support and tools to assist health care providers

Knowledge Translation Unit, University of Cape Town Lung Institute
STEPS TO IMPROVE CRD MORBIDITY:
1. Strategic and targeted advocacy
2. Simplified evidence-based protocols
3. Primary healthcare facilities
4. Build capacity
5. Links with TB, environment and other programmes
6. Access to medicines
7. Relevant and feasible indicators
Contents: chronic conditions

TB

HIV

Chronic respiratory diseases

Chronic diseases of lifestyle

Mental Health

Epilepsy

Musculoskeletal disorders

Women’s health

End-of-life

Practical Approach to Care Kit
mHealth: The Opportunity

- >7 billion mobile subscriptions globally
- More prevalent in developing countries
- More people have access to a phone than clean water
mHealth: the enabler of service delivery

- mDiabetes
- mCessation
- mSmart Life
- mCervicalCancer
- mAgeing
- mTB/Tobacco
- mBreatheFreely
mBreatheFreely program focus areas: Asthma

- **General population**
  - Prevention messages: Awareness

- **Parents of young children**
  - Educational messages: Disease education, prevention, management

- **Adolescents and adults with asthma**
  - Prevention and management messages:
    - Smoking cessation, avoid irritants, healthy lifestyle, med adherence, when to seek health care, etc...

- **Health Care Workers**
  - Training messages: Disease education, awareness of prevention and management strategies

**Timeline:** 6+ months (for discussion)
# mBreatheFreely program focus areas: COPD

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Prevention Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>General population</td>
<td>Awareness</td>
</tr>
<tr>
<td>People at risk (smokers, biomass fuel)</td>
<td>Awareness, prevent disease through smoking cessation, air pollution, healthy lifestyle, etc...</td>
</tr>
<tr>
<td>People with COPD but unaware</td>
<td>Prevention and awareness messages: Smoking cessation, healthy lifestyle, when to seek health care, etc...</td>
</tr>
<tr>
<td>People with diagnosed COPD</td>
<td>Prevention and management messages: Smoking cessation, healthy lifestyle, med adherence, when to seek health care, etc...</td>
</tr>
<tr>
<td>Health Care Workers</td>
<td>Training messages: Disease education, awareness of prevention and management strategies</td>
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**Timeline:** 6+ months (for discussion)
Thank you!