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CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) – PROJECT OVERVIEW

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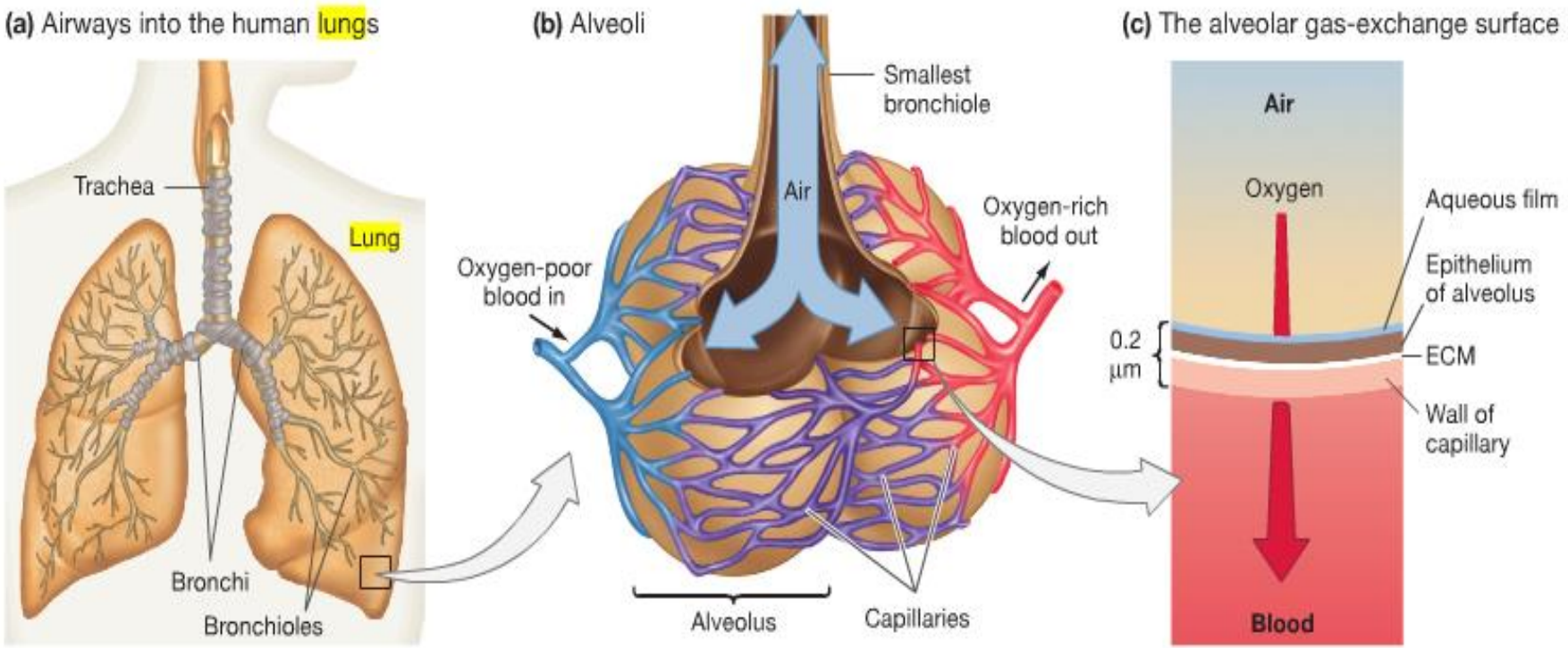
CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

- Chronic obstructive pulmonary disease (COPD) is a lung disease that is characterized by a persistent blockage of airflow from the lungs.

- It is an under-diagnosed, life-threatening lung disease that interferes with normal breathing and is not fully reversible.

LUNG STRUCTURE AND FUNCTION



"Biological Science Freeman", 2010

RISK FACTORS

- Most cases of COPD occur as a result of long-term exposure to lung irritants that damage the lungs and the airways.
  - CIGARETTE SMOKES / SMOKING
  - AIR POLLUTION, CHEMICAL FUMES AND DUST FROM THE ENVIRONMENT OR WORKPLACE
  - IN RARE CASES, A DEFICIENCY OF ALPHA-1 ANTITRYPSIN DEFICIENCY

WHOA ARE A RISK?

- People who smoke or are exposed to smoke.
- People who have a family history of COPD are more likely to develop the disease if they smoke.
- Long-term exposure to other lung irritants also is a risk factor for COPD.
- Almost 90% of COPD deaths occur in low- and middle-income countries, where effective strategies for prevention and control are not always implemented or accessible.

SYMPTOMS

- BREATHLESSNESS
- ABNORMAL SPUTUM OR MUCUS IN THE AIRWAY
- CHRONIC COUGH
- DAILY ACTIVITIES CAN BECOME VERY DIFFICULT AS THE CONDITION GRADUALLY WORSENS

GOAL AND OBJECTIVES

We aim to provide evidence for the burden of COPD in Tanzania and further identify potential drivers of COPD in the community to guide possible intervention.

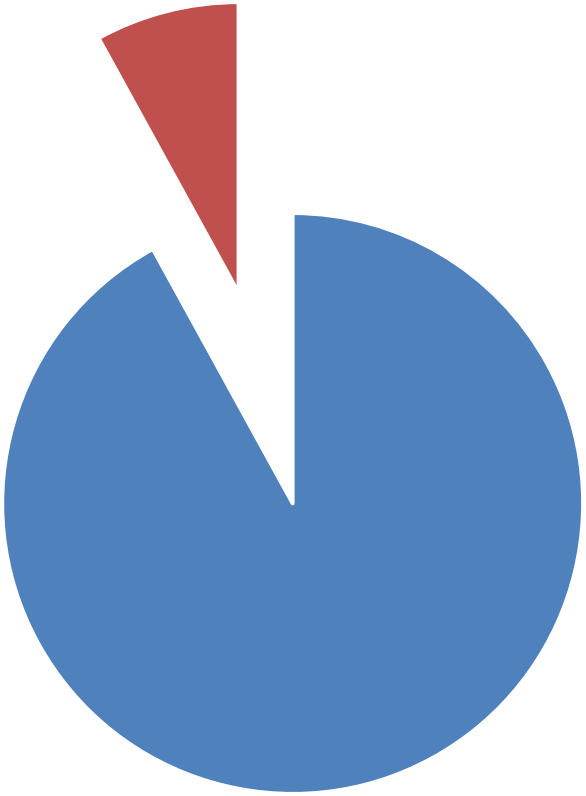
Objectives:

- To estimate the burden of COPD in the general population as well as in the selected high risk population strata (e.g. chronic smokers, women in rural communities and small-scale miners) using the BOLD protocol.
- To identify potential factors and drivers for developing COPD and the associated exacerbations in relation to occupation, smoking habits, socio-economic status and demographic characteristics and suggest interventions.
- To describe the severity and control of COPD based on Global Initiative for Chronic Obstructive Lung Disease (GOLD) classification in relation to severity of symptoms and airway limitation, frequency and severity of exacerbations, co-morbidities and type/number/mode of medications.
- To quantify the type and level of indoor and outdoor pollution exposure in selected inhalational exposure settings including households, residential areas and mining sites, using air pollution samplers and GPS monitors and ultimately suggest recommendations.

STUDY SITES AND POPULATION

- SITE 1: MASWA DISTRICT, SIMIYU REGION
  - General population – target use of biomass fuel for cooking and indoor pollution
- SITE 2: MERERANI MINING SITE, SIMANJIRO DISTRICT, MANYARA REGION
  - Select group of artisanal miners – outdoor pollution at workplace

METHODS



- SAMPLE SIZE, $n = \frac{Z^2 P(1-P)}{E^2}$
- n = 710 from each site

- Maswa; 6 villages selected from 2 wards in LALAGO division
  - CROSS-SECTIONAL SURVEY

- X ‘‘pits’’ in mererani site
  - CASE – CONTROL STUDY

DATA COLLECTION

- QUESTIONNAIRES: Validated and adopted from BOLD protocol. Assess the exposures to risk factors for COPD and other important variables for the study.

- SPIROMETRY: This measure will be used to determine whether the participant has COPD. The diagnosis of COPD is based on a history of exposure to risk factors and the presence of airflow limitation that is not fully reversible, with or without the presence of symptoms. A post-bronchodilator FEV1/FVC <70% and a post-bronchodilator FEV1 <80% predicted confirms the presence of airflow limitation that is not fully reversible.

DATA COLLECTION

- POLLUTION MONITORS: Measures for personal exposure to air pollution (PM_{10} and CO) using TSI SidePak for PM_{10} monitoring and Langan T15 for CO monitoring with a sampling rate of one minute. GPS monitors will be used to record the location of monitoring locations and the movement of participants in various microenvironments.

- The optimal sites for pollution monitoring will be determined based on the spatial configuration of the area to capture > 95% of the area. A list of houses surrounding each optimal site will be made and each house approached in based on their distance from the optimal site until one is recruited for intensive outdoor and indoor pollution monitoring.

ETHICS AND PARTICIPANT SAFETY

- This study is done in accordance to international code of conduct of medical research. Ethics certified by IHI and NIMR ethics Boards.

  - OBTAIN WRITTEN CONSENT
  - OBSERVE CONFIDENTIALITY
  - DO NO HARM, ENSURE PARTICIPANT'S SAFETY