The Importance of Lung Function in Predicting Mortality and Disability

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What is Spirometry?

(spiro=breathing + metry=measurements)

• A *simple* and *safe* test

• Measures the *speed & volume* of air in 1 breath with maximal effort

• An estimation lung function
In the Beginning .......

Sir John Hutchinson, 1846

Vital capacity

- More sensitive to detect Tuberculosis than auscultation
- Can predict life expectancy. Suggested this test for routine life insurance cover.

Hutchinson J, The Lancet 1846; 1: 630-632
Spirometers
Portable Spirometers
What do you we measure?

- **VC** - Vital capacity
  maximum volume expired in 1 breath

- **FEV\textsubscript{1}** - Forced expiratory volume in 1 second
  maximum volume expired in the first second (i.e. speed)

- Both measurements allow an estimation on the maximum amount of air (oxygen) during peak lung performance.
Use of Spirometry:-

**in the presence of symptoms or risk factors**

- **Detect** lung damage & loss of lung function
- **Diagnose** accurately which lung conditions (Chronic Obstructive Pulmonary Disease [COPD] vs. Asthma)
- **Disability** severity assessment in patients with symptoms
- **Death** allows predict the risk of death
What about in the general population?
(no symptoms or risk behaviours)

Deaths from Heart Diseases

All-Cause Mortality

Young et al, Eur Respir J 2007
Population: indication of Lung Health

- Normal life course of lung function
- Poor development - low reserve
- Fast aging decline
- Poor development + Fast aging decline
Promotion of Lung Health and Lung Aging

(a) Maximizing lung growth - pregnancy factors

(b) Maximizing peak lung function level - childhood and adolescent factors

(c) Slow down aging decline

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**Graph:**
- **X-axis:** Age (Years)
- **Y-axis:** FVC (L)
- **Legend:**
  - **a:** Maximizing lung growth - pregnancy factors
  - **b:** Maximizing peak lung function level - childhood and adolescent factors
  - **c:** Slow down aging decline
Key Message on Spirometry

- A simple and important measure of lung capacity
- Important test for diagnosis of lung diseases
- Important measure of lung health

- Factors that will improve lung health and resilience
- Factors that will reduce rate of lung function decline with age
BLOW TO KNOW

Thank you for your attention!