



Smart Mask to monitor and prevent TB spread

Researchers at UCT have developed a Smart Mask that is able to limit transmission of TB or other highly infectious air-borne diseases, monitor cough frequency and determine the infectious risk to a group, community or region.

Globally, approximately 500 000 tuberculosis (TB) patients have untreatable Multi Drug Resistant TB (MDR-TB). Anti-microbial resistance occurs when the organism develops the ability to evade an antimicrobial drug that was originally effective for treatment of infections caused by it.

Under MDR-TB patients, there is a group of patients who are highly infectious and referred to as 'superspreaders'. Although the number of MDR-TB patients and superspreaders is small (2% of total caseload), these patients consume more than 45% of South Africa's total R1.6 billion TB budget. The mask could dramatically reduce the disease burden caused by superspreaders and MDR-TB patients.

Benefits

- The mask is fitted with a compliance sensor and GPS for detecting whether or not the face mask is worn and properly positioned on a person at any relevant time, for example, when the patient is travelling
- The mask is able to map and model the potential spread of infectious disease, informing infection management

Market

Research institutes, government TB initiatives, non-government organisations (NGOs), and medical doctors or hospitals.

Technical Description

The mask comprises a modified facial mask with GPS and environmental sensors measuring ambient carbon dioxide (CO₂) concentration, humidity and temperature, and light intensity, and is able to relate CO₂ concentration to a projected number of people in the mask wearer's proximity. The mask has an auditory cough monitoring microphone, and sensors measuring skin and exhaled air temperatures.

Keywords:

MRI, patient tracking, MRI orientation, image correction

Intellectual Property Rights:

PCT: PCT/IB2015/053143

Technology Readiness Level:

5 - Early Prototype

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