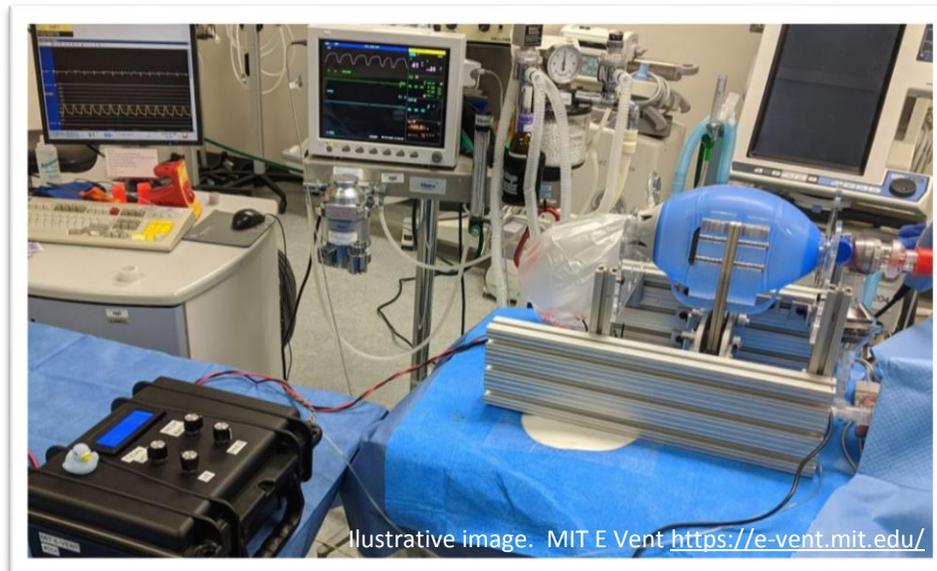


CENAM's contribution to mitigate in Mexico the effects of the disease COVID-19

The world is facing the most relevant International Public Health Emergency in recent years. The pandemic has highlighted the weakness of the international community in terms of specific epidemiological knowledge and the insufficiency of hospital care facilities; Mexico is no an exception. Not only do we not adequately know the mechanisms of aggression of the SARS-CoV-2 virus, but we also do not know how to avoid its proliferation mechanisms.

Regarding the care of patients requiring hospitalization, the use of mechanical ventilators represents one of the greatest challenges for the Health Sector in Mexico; due to the limited number of units available. Its use is intended only for patients with severe respiratory failure. The application of timely, effective and safe support therapies is the mainstay to achieve the recovery of patients who develop serious manifestations of COVID-19 such as severe respiratory failure (1).

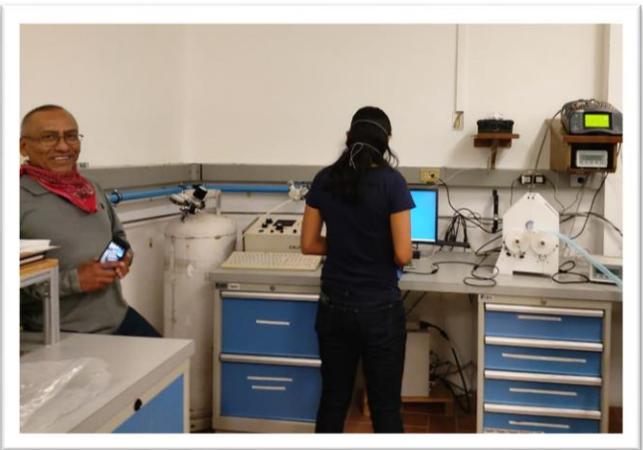
In order to contribute to reduce ventilators shortage, academic bodies and research institutions, some of them coordinated by the National Council of Science and Technology of Mexico, execute emerging projects for the design and construction of noninvasive and invasive ventilators.



Because the operation of the ventilators requires high reliability in the measurement of the volume of air introduced by the respirators, the volumetric flow of inspired and exhaled air, in addition to the pressures inside the lungs; the Centro Nacional de Metrología (CENAM) collaborates with the institutions that develop the ventilators, in order to characterize and ensure the performance of the measurement sensors that are part of the prototypes, as well as to identify the strengths and weaknesses of the products developed.

The metrological validation of the prototypes considers some of the following tests:

- Measurements of air volume displaced by the prototype.
- Characterization of the air displacement system.
- Characterization of gas flow sensors (for example hot wire or differential pressure type).
- Characterization of low pressure relative pressure sensors.



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