

Covid-19: Shortage of ventilators; IIT team pitches Bag Valve Mask as alternative

India has placed order for 12,000 ventilators. The country has less than 50,000 ventilators which may be insufficient to deal with Covid-19 situation. An IIT-H team has proposed an alternative.



Bag valve masks can be improvised to function as alternatives to ventilators, which are expensive. (Image for representation: Screenshot from YouTube)

HIGHLIGHTS

- India may require up to 1 million ventilator units to deal with Covid-19 pandemic
- Indian hospitals are estimated to have less than 50,000 ventilator units
- IIT-H professors pitch for improvised bag valve masks as alternatives

Covid-19 is essentially a respiratory ailment. It complicates some of the pre-existing health conditions in patients leading to death. A minor percentage of patients needs assisted breathing during hospitalisation. Simply put, these patients need ventilators, which is in shortage in India.

Some estimates suggest that this number could be around five per cent of the total cases in India. In a recent study, the John Hopkins University estimated that India may need up to 1 million ventilators in the coming weeks and months to deal with Covid-19 situation. However, this came before the government's intervention - the national lockdown.

There is no concrete number of ventilators that India has in its hospitals. But estimates are that the number of ventilators in both the government and private hospitals is less than 50,000. Some 10 days back, India has placed the order to import 12,000 ventilators. It seems here that the health authorities monitoring the progress of Covid-19 in India failed to foresee the novel coronavirus situation in the country.

India banned the export of ventilators only on March 19, by when the country had recorded 173 cases of novel coronavirus infection. The same day, the export of masks and overalls (protective equipment) were prohibited.

However, components that are used to manufacture ventilators continued to be shipped out of the country. On March 24, the day national lockdown was announced, the export of "all ventilators, including any artificial respiratory apparatus or oxygen therapy apparatus or any other breathing appliance/device" was stopped.

India, anyway, had a shortage of ventilators.

Now, a team of IIT-Hyderabad professors has pitched for adopting bag valve masks as alternatives to ventilators. IIT-H director Professor BS Murthy said the bag valve mask is already in consideration in other countries due to its portability, utility in areas which have no power supply and cost-effectiveness.

Pitching for bag valve masks, Professor Murthy and his colleague Professor V Eswaran said these are small devices which are used to deliver breathing support in emergency situations. These are inexpensive, easy to produce, and used for resuscitation in emergency situations.

Bag valve masks are currently hand-powered and cannot be put to continuous use as a ventilator. Professor Murthy said it needs redesigning to get power from a battery.

"Our estimate of the cost is that it can be manufactured for less than Rs 5000, or one-hundredth the cost of a conventional machine. The cost of manufacturing 6 million of these devices will be probably less than that of the inadequate number of 60,000 conventional machines mentioned above," Professor Murthy said.

He said several designs have already been proposed including the one at IIT-H. The IIT-H team has proposed to the central government setting up a task force to ensure production of these alternative devices to conventional ventilators at industrial scale.

Ventilators are devices that assist a patient in breathing if the person cannot breathe on own. In serious cases of Covid-19, patients cannot breathe on their own. The cost of computer-controlled ventilators ranges from Rs 5 lakh to Rs 40 lakh depending on their model and manufacturing companies.

With the fear of novel coronavirus infection reaching rural areas of India, the need for portable ventilator devices cannot be overemphasized. However, the IIT-H's proposal of improvising bag valve masks to be used as alternatives to ventilators is not the only one to have been made in recent days.

A Noida-based start-up has built a portable - plug-to-use - ventilator that does not need installation like a conventional one. According to an Economic Times report, the company aims to manufacture around 20,000 units of portable ventilators to deal with emerging Covid-19 situation in India.

Source: India Today

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