

Why go for costly ventilators, asks IIT-H Director

Go for Bag Valve Mask, which costs just ₹5,000; but these need to be adapted for the Covid-19 emergency, say experts



Professor BS Murty, Director, IIT Hyderabad

Why spend huge amounts on conventional ventilators, when you can acquire an alternative at just ₹5,000 a piece or one-hundredth the cost of a conventional machine, asks IIT-Hyderabad Director BS Murty.

Bag valve mask, often called by the proprietary name of ‘Ambu Bag,’ are used for resuscitation in emergency situations. The institute has asked the Government to set up a taskforce to evaluate various designs and shorten the process to mass produce these low-cost ventilators.

However, Murty said that the bag valve masks are currently hand-powered and are not suited for continuous use as ventilators. “It would be easy to design a similar device powered by an electrical source, which could be a car battery, apart from the conventional power supply,” he said.

With governments making frantic efforts to acquire ventilators to treat prospective critical patients that are infected with Covid-19, IIT-Hyderabad wants the Centre to consider ‘bag valve mask’ to meet any surge in demand for ventilators.

Assuming a low six per cent infection rate in the country, it is expected that about eight crore people would get affected. Of these, at least 5 per cent (or 40 lakh) will require ventilators. It is estimated that the country has 40,000 ventilators, mostly in the private sector, two professors at the IIT-H said.

The most sophisticated computer-controlled ventilators cost about ₹40 lakh while more modest foreign-made ones cost around ₹15 lakh. Indian-made ventilators cost about ₹6 lakh, they said.

But ‘bag valve masks’ are small devices, which are used to deliver breathing support in emergency situations. They are inexpensive, easy to produce, and portable — which therefore have every quality that is required in this crisis, Murty, and V Eswaran, Department of Mechanical and Aerospace Engineering, IIT-H, said.

The Indian industry has a maximum manufacturing capacity of approximately 6,000 units per month. At peak production, it could manufacture only another 60,000 machines in the next 10 months, at a cost of ₹3,600 crore, Murty said.

Tweaking needed

On bag valve masks, Eswaran said: “Our estimate of the cost is that it can be manufactured for less than ₹5,000, or one-hundredth the cost of a conventional machine. The cost of manufacturing 60 lakh of these devices will be probably less than that of the inadequate number of 60,000 conventional machines mentioned above.”

The cost is so low that it can be considered a single-use device that will be given over to single patient, and never used again.

“It needs to be manufactured, however, on an industrial scale, in millions, within a short time of a few months. There have been several designs proposed within India itself. We have one at IIT-H,” he said.

The institute, however, maintained that these designs are untested and uncertified. The design should factor in the high-performance demands.

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