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HOW DOES A CONCENTRATOR HELP?

Relevant for: Science & Technology | Topic: Science and Technology- developments and their applications and effects in everyday life

Oxygen concentrators reduce the burden on the lungs.File photo

With the demand for medical oxygen continuing unabated and several States struggling to keep pace with demand, the oxygen concentrator has emerged as a sought after device. Unlike medical oxygen sourced from industrial units, which are supplied via cylinders, concentrators are devices that can be operated at home.

When is an oxygen concentrator needed?

When blood saturation levels drop below 94%, it could be a sign of respiratory distress. Usually this merits hospitalisation, but due to the surge in COVID-19 cases and oxygen beds in short supply, the device could help those whose saturation levels range between 88 and 92 if they can’t access hospital services. Any lower would require more intensive oxygenation and any higher would mean that an improvement in lung function can obviate the need for such a device.

What does a concentrator do?

An oxygen concentrator takes in air and separates the oxygen and delivers it into a person via a nasal cannula. Air is 79% nitrogen and 21% oxygen and a concentrator that works by plugging into a source of electricity delivers air that is upto 95% oxygen. In respiratory infections that causes oxygen saturation levels to dip below 90%, having an external device supply pure oxygen eases the burden on the lungs. However in cases of severe respiratory distress, it may be necessary to provide oxygen that is almost 99% pure and an oxygen concentrator is not up to that job,

How does it work?

A concentrator consists of a compressor and sieve bed filter. The former squeezes atmospheric air and also adjusts the pressure at which it is delivered. The sieve bed is made of a material called Zeolite that separates the nitrogen. There are two sieve beds that work to both release oxygen into a tank that’s connected to the cannula as well as release the separated nitrogen and form a continuous loop that keeps producing fresh oxygen.

Are all concentrators the same?

These products come with a variety of specifications. There are those with varying oxygen outputs. For COVID-19 patients, a device with a 5L-10 L output is recommended. What’s important though is that it delivers air that contains at least 90% pure oxygen. The cost of these devices can range from Rs. 40,000 to Rs. 90,000. There are also pulse and continuous flow concentrators where the latter delivers oxygen at a constant rate and the other uses a sensor to deliver a puff of oxygen when a user is about to inhale.

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