



Improving Outcomes and Air Quality in an IVF laboratory

CASE STUDY
Patki Hospital
Kolhapur, India

Patki Hospital, located in Kolhapur, India, is a 50-bed super-specialty IVF center, specialized in obstetrics, infertility and gynecology.

The IVF department of Patki Hospital is spread over an area of 5000 sq. ft, with a dedicated area for IVF procedures of 2000 sq. ft. This area is home to the important functional departments in the hospital such as the andrology lab, used for sperm work, the operation theatre, used for procedures such as ovum pickup and embryo transfer, and the culture room.

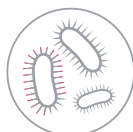
PROBLEM



VIRUS



VOCs



BACTERIA

Patki Hospital's entire laboratory is designed as per international and ICMR guidelines for tissue culture labs, cleanroom standards for coving, electrical fittings and flooring are followed and the lab is equipped with HVAC air handling

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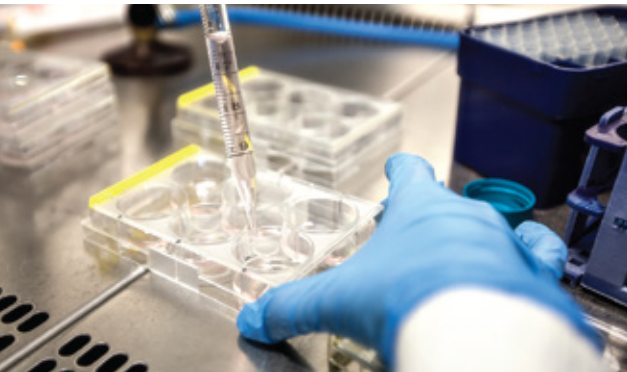
units. The culture room has full height, stainless steel walls and the lab has two laminar flow cabinets, four carbon dioxide incubators, two stereo zoom and two inverted phase contrast microscopes with micromanipulators for ICSI. The lab surfaces, incubators and laminar flow hoods are regularly disinfected with non-VOC, non-ammonia based MEA tested disinfectants.

However, the hospital did not believe that these hygiene protocols were enough to reduce airborne VOC and infection load in the lab.

As well as common sources of VOCs found in IVF labs such as plasticware, disinfectants and fumes from outdoor air pollution, the COVID-19 pandemic saw an increase in sanitizer use by patients and staff, a major source of VOCs. In addition, Patki Hospital was concerned about the viral, bacterial and fungal load in the lab's air. VOCs, viruses, bacteria and fungi can all be detrimental to the development of human embryos 'in vitro'.

Although the HEPA filters in the lab's air handling unit prevent the entry of airborne bacteria to some extent, they do not prevent the entry of viruses and VOCs. Furthermore, the hospital noted that bacteria and viruses can also be introduced to the lab by staff in various ways including the generation of aerosols.

After investigating various options, the hospital decided to deploy a Novaerus Defend 1050 in their lab, a powerful, plasma-based, portable air dis-infection device.



“The clinical pregnancy rate of IVF cycles when the Defend 1050 was used was higher (66.35%) than those when the Defend 1050 wasn't used (53.26%).”

RESULTS

While using the Defend 1050, Patki Hospital observed the following:

1. The Defend 1050 was effective in reducing the level of VOCs in the IVF Lab. Due to the reduction of VOCs and the infective load, the air quality improved to acceptable standards, helping in the formation of good quality blastocysts 'in vitro', which have higher chances of implantation.
2. The clinical pregnancy rate of IVF cycles when the Defend 1050 was used was higher (66.35%) than those when the Defend 1050 wasn't used (53.26%).
3. During the COVID-19 pandemic, the Defend 1050 is important to reduce the viral, bacterial and fungal load created by aerosols in the IVF lab, protecting IVF staff from infection.