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ICMR pioneers drone-based cornea transport to revolutionise eye care

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Successful pilot demonstrates potential of aerial medical logistics for timely and efficient cornea transplants



Aligning with the vision of Prime Minister Narendra Modi to make India self-reliant and technologically empowered, the Indian Council of Medical Research (ICMR) has launched a pioneering study on the aerial transport of human corneas and amniotic membrane grafts.

ICMR in collaboration with AIIMS New Delhi and Dr. Shroff's Charity Eye Hospital and with the support from Ministry of Civil Aviation has conducted a feasibility study to assess the potential of using drones to transport sensitive ophthalmic biomaterials such as human corneas and amniotic membrane grafts from peripheral collection centres to tertiary hospitals for transplantation procedures, in Sonipat and Jhajjar, Haryana.

The drone successfully transported corneal tissue from Dr. Shroff's Charity Eye Hospital (Sonipat centre) to the National Cancer Institute (NCI), AIIMS Jhajjar, and subsequently to AIIMS New Delhi. The distance between the two cities was covered in around 40 minutes via drones which usually takes around 2-2.5 hours to cover via road. The drone maintained optimal conditions for specimen integrity and upon arrival, the cornea was evaluated, leading to a successful transplant surgery.

Dr Rajiv Bahl, Secretary, the Department of Health Research (DHR) and Director General, ICMR, stated, "The i-DRONE platform was originally conceived during the COVID-19 pandemic to deliver vaccines to remote regions. Since then, we've scaled our efforts to include low-temperature delivery of blood products and essential medicines to high-altitude and sub-zero locations. This cornea transport study marks another step forward—enhancing patient access, ensuring timely transplants, and reducing pressure on overburdened tertiary hospitals."

Prof. (Dr.) M Srinivas, Director, AIIMS, New Delhi, remarked, "Corneal blindness affects millions in India, and timely availability of donor tissue is often a limiting factor. This drone-based transport model could be a transformative step toward ensuring equitable access to vision-restoring surgeries, especially in underserved areas. The success of this pilot project opens the door to deploying precision drone logistics for a wide range of critical medical applications."