Breathing life into the fight against COVID-19 in the far-flung villages in Kupwara district of Kashmir

PATH

Figure 1: Machail, covered after the first snow

This case study is a part of a compendium of case studies that capture the unique experience of the National Stock Exchange (NSE) Foundation as it mobilized the efforts of the Centre for Health and Research innovation (CHRI) through Project CAVACH, a respiratory care coordination project.

These case studies from Dab Bal and Machil villages in Jammu and Kashmir's Kupwara district offer insights into the challenges of strengthening oxygen systems in difficult-to-reach areas, isolated in the winter due to heavy snowfall, and how interventions by project CAVACH made a difference in these places.

The story of Hajipa from Dab Bal village, Kupwara.

On 23 November 2021, a 75-year-old woman Hajipa, wife of Habibullah Mir, experienced sudden breathlessness. Their house was located at Dab Bal village in Kupwara district of Jammu and Kashmir, which does not have any medical facility in its vicinity. As the inclement weather conditions made it difficult for the family to move her to the District Hospital at Kupwara, the Indian Army promptly sent its soldiers on foot to their home with one oxygen concentrator and a diesel generator from the nearest army post to provide electricity to operate the equipment. This oxygen concentrators was among the batch of 70 oxygen concentrators that were donated to the Army Hospital by NSE Foundation and were deployed by CHRI. The Indian Army provided round-the-clock support for four days till Hajipa's condition improved. Once the weather conditions improved, she

was taken to the Kupwara district hospital for further treatment.

Machil, another remote and hard to reach village in the Kupwara district of Kashmir, India

Machil (or Machhal) is a remote village in the northern part of the Kupwara district of Kashmir, located 150 km away from Srinagar. It gets cut off from the valley during the winter months (November to March) because of heavy snowfall. The nearest town with a functional health facility is Kupwara, which is approximately 60 km away.

Kupwara, a district lying on the frontier of the Kashmir valley, in the Indian-administered union territory of Jammu and Kashmir, is home to nearly 900,000 people. Although it is connected by National Highway 701, a spur road of the National Highway 1, to Baramulla, Kupwara district headquarters is not yet connected through railways. Kupwara is situated at a distance of 90 km from Srinagar. The north-west part of the district is bound by

the line of control (LOC) while the southern portion of the district is mountainous.

Kupwara has two district level hospitals, one in Kupwara and other in Handwara and these two hospitals cater to approximately 900,000 people residing in the district. There are six community health centers. However, these are dysfunctional due to lack of medical and paramedical personnel. Most of the medical facilities and assistance is provided by the Indian Army stationed in this area. They extend support to the community by developing medical infrastructure and by providing better medical facilities to critical patients in need when roads connecting far-off villages are cut off due to heavy snowfall in the winter.

Machil's tryst with COVID-19 pandemic

Although a far-flung area in the northern Himalayas with a limited population, Machil also had its share of COVID-19 infected patients, and people required oxygen during the second wave of the pandemic. All medical services in this area are provided by Sahi Memorial Hospital, which is operated by the Indian Army.

The Sahi Memorial Hospital was established in the year 2013 at Machil by the Rashtriya Rifles wing of the Indian Army in memory of the late Major Vijay Vikramjeet Sahi. A Shaurya Chakra winner, who was martyred in an encounter in the district many years ago. This hospital was set up when Sarpanches (village headmen) and residents from border villages of Machel approached the Indian Army located at Thalli with the requirement of setting up a hospital in that area. They highlighted the lack of medical facilities for all locals, especially the senior citizens, children, and women of these villages, and the difficulty of accessibility to medical services during winter months.

Currently the facility is catering to a population of approximately 16,000 from several villages: Machil (Machhal), Pushwari, Dabpal (Dappal), Mishri Bahik, Katwar, Ring Bala, Ring pen, Thalli, Doban, and T-Shuntwari. In addition, the hospital provides medical services to 1500 armed forces personnel, who guard the line of control round the clock.
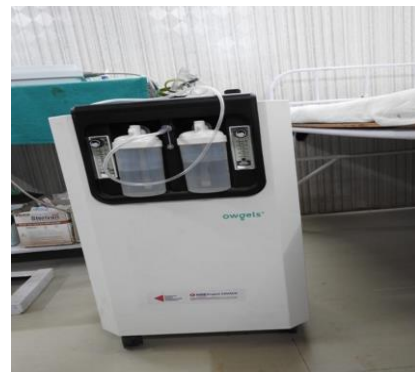
The services of this 12-bed Sahi Memorial Hospital is available to the villagers throughout the year. It caters to an average of 50–60 patients every month during the winter. Many times, they have carried critical patients in need of better medical facilities to hospitals in their choppers when roads connecting far-off villages to the main city are cut off due to heavy snowfall in the winter. When required, Sahi Memorial Hospital called other doctors from the nearby stationed Madras Regiment to provide healthcare services for the residents of nearby villages.

During the pandemic, the hospital had only one oxygen concentrator that met the requirements of all patients in need of oxygen. As the infection surged and demand for oxygen increased, one oxygen concentrator proved inadequate to support patients and led to the loss of precious lives.

Project CAVACH's support in augmenting oxygen supply in these remote areas

During the second wave of the pandemic, when the country's hospitals were swamped with patients who required medical oxygen, demand for oxygen in Kupwara also increased. At this time, the NSE Foundation decided to donate oxygen concentrators (OCs) to four Army establishments in J&K (three sites in Baramulla district and one site in Kupwara district). The NSE Foundation sought the assistance of the Centre for Health Research and Innovation (CHRI), which was already working on other projects in the area, to deploy these OCs to hospitals. The NSE Foundation, along with CHRI, contacted Colonel Singh (name changed) to discuss the donation of 70 OCs and their deployment in Baramulla and Kupwara.

In September 2021, out of the 70 oxygen concentrators donated by NSE Foundation, 20 OCs with 10 LPM capacity each were deployed by CHRI at Sahi Memorial Hospital. As the sectors towards the border did not have a regular electricity supply, diesel generator sets were made available by the Army to keep the equipment running.

One of the 20 oxygen concentrators provided by NSEF and deployed by CHRI to Sahi Memorial Hospital, Machil

"*The availability of oxygen concentrators at this remote health center improved the treatment capability at an early stage and stabilize the patients till such time that they can be transported to the nearest District Hospital, which is 60 km away. The oxygen concentrators provided by Project CAVACH are very effective and easy to use. We have trained three of our personnel to operate this setup. These oxygen concentrators are a blessing to all the villagers of the Machil Sector. We thank the NSE Foundation and CHRI for their assistance to help us fight*

COVID-19 and keep this place free from any more casualties due to the pandemic."

Captain Lingaraj (name changed)

The *maulavi* of the nearby Pushwari village in Kupwara, reflecting on the health facility provided by the Indian Army, said, "*This hospital always provided relief. During this COVID wave, CHRI and the NSE Foundation helped our villages become self-sufficient in oxygen. We are grateful to them. Nobody, other than them, has helped us in this pandemic and during our health needs. Pushwari is one hour by walk, 15-20 minutes by car and this is the nearest operational facility during winters.*"

Efforts to fight the COVID-19 in border areas

The Indian Army and the civil administration are working closely to provide door-to-door services. They had organized *Khairiyat* (wellness in Urdu) patrolling to raise awareness around Covid-19 and encourage people for vaccination among thousands of Bakarwals visiting high lands during summers. They have vaccinated majority of the people, with all residents of Machel having received the first dose by October 2020. The district administration had decided to station one medical officer in the health facility through the winter so that the villagers can feel confident about accessing the services.

Lance Nayak Kruti (name changed) is one of the three personnel trained in handling the oxygen concentrators. He is training other army personnel and hospital staff in handling the devices. The mobile network was restored to Machil in December 2020. Through mobile internet connectivity, people are getting information about the COVID-19 pandemic as well as about the Covid-appropriate behavior, their democratic rights, welfare schemes and other government schemes.

"*Machil is a remote area. It gets heavy snowfall. Hospital is available for all the weather, and they provide free treatment. This center is very beneficial for us. It is available at 8-10 minutes of walk. We are grateful to the CHRI and the NSE Foundation for giving us oxygen concentrators.*"

Machil village sarpanch, Habibullah Bhat

About NSE Foundation's Project CAVACH

Project CAVACH is an initiative of the National Stock Exchange (NSE) Foundation, which was implemented by mobilizing the efforts of the Centre for Health and Research innovation (CHRI), an affiliate of PATH. Launched on 15th July 2021, Project CAVACH (COVID-19 and Vaccination Awareness Campaign for Health) aimed at strengthening systems related to the access of oxygen and the supply of other essential equipment in hospitals in remote regions.

NSE Foundation facilitated the establishment of five pressure swing adsorption (PSA) oxygen generation plants with capacities ranging from 250 LPM to 1000 LPM in Jharkhand and Maharashtra, where CHRI was engaged to provide on-ground support in procuring, installing and commissioning of these plants. In addition to this, the project supported the provision of small oxygen delivery equipment to 18 facilities in Rajasthan, Tamil Nadu, Assam, Maharashtra, Delhi, Jammu & Kashmir, and Nagaland.