

# Resolving Healthcare Challenges

Contributions to a Brighter Future for Patients and Healthcare Professionals

Special Feature

Terumo's Response to the Global COVID-19 Pandemic

Support to bringing medical care to those in need



## Terumo's Infection Prevention Initiatives

Dr. Shibasaburo Kitasato, one of the founding members of Terumo's establishment, dedicated his life to combating infectious disease and researching bacteriology. His spirit has continued to live on throughout Terumo's long history. This spirit can be seen in Terumo's ongoing commitment to the priority theme of fighting infections. Driven by this commitment, we have launched Japan's first disposable syringes and blood bags, developed closed infusion systems, helped infection prevention and control initiatives in operating rooms and hospital rooms, and provided training on infection prevention measures that can be taken within hospitals.

Guided by this spirit, business activities are being advanced in accordance with the following basic policies, which were formulated based on Terumo's Group mission,

Core Values, and business continuity plan policies, to combat the impacts of the global COVID-19 pandemic.

1. To protect the health and safety of all Terumo associates with utmost priority.
2. To maintain a stable supply of products to continuously meet global healthcare needs.
3. To actively engage in and contribute to the prevention and treatment of the disease, by maximizing the Terumo Group's expertise and technologies.

These policies shape the dedicated efforts of associates to supply products and services to the healthcare professionals active on the front lines of medicine as well as the patients requiring treatment.

## Support for Treatment of Patients—Increased Production of Extracorporeal Membrane Oxygenation (ECMO)

Some victims of COVID-19 suffer serious cases of pneumonia that may lead to severe respiratory failure and other conditions that can threaten the life of the patient. The first step to combatting these conditions is to manage the patient's breathing via a ventilator. Should this approach prove ineffective or should it be judged that the patient's condition is deteriorating, an ECMO may be used to support lung functioning.

ECMO supports lung functioning by extracting blood from a patient's veins to and reintroducing the blood into

the patient's body after injecting oxygen into and removing carbon dioxide from the blood. The primary goal of these systems is to provide the lungs with a break and to secure the time needed to recover.

Terumo is one of the pioneers in the field of ECMO, having launched a percutaneous cardiopulmonary support system in 1995, and our ECMO are installed in approximately 850 medical institutions in Japan. The spread of COVID-19 has caused a sharp rise in demand for ECMO from medical institutions. As a result, Terumo

was forced to produce a volume of ECMO that would represent annual production volumes under normal conditions within only several months.

The ECMO hardware is comprised of hundreds of components and with complicated structures that make rapidly ramping up production volumes incredibly difficult. Nevertheless, Terumo was quick to begin preparations for increasing production at the ME Center (Suntou, Shizuoka Prefecture), where the ECMO hardware is manufactured, in order to support patients through the swift supply of ECMO, commencing a concerted, organization-wide effort to increase production.

Terumo was fast to prepare for ramping up production after the outbreak in Wuhan, China in January 2020. Our

first step in these efforts was to request that suppliers accelerate production and shorten delivery times to ensure that we could quickly secure a supply of the necessary components. Internal efforts included asking associates who were not engaged in production to telework whenever possible, implementing exhaustive infection prevention measures on the production floor, and adjusting operating times and shifts as we continued to move forward with production activities. Thanks to the efforts of all relevant associates, we were able to begin preparations for increasing production in January 2020 and thereby managed to raise production levels in response to growth in demand in Japan and overseas.

## Comment from Associates

### ME Center

Ramping up production of ECMO was incredibly difficult due to the sheer volume of components and materials used, many of which were difficult to secure due to the impacts of the COVID-19 pandemic. The purchasing section responded with diligence, contacting each and every supplier starting in January to ask for their assistance with this effort. Fortunately, suppliers were understanding of our situation and did their best to supply us with the components we needed even under the difficult circumstances. We were thus able to set up a schedule for production.

Production of ECMO hardware requires highly technical skills, and the most important processes can only be performed by the few engineers who have the necessary nationally accredited qualifications. Despite these limitations, we were tasked with producing a year's worth of systems in just several months. We had previously been engaged in an ongoing drive to encourage our engineers to obtain nationally accredited qualifications and broaden their skills to facilitate high-variety, low-volume production. The benefits of these efforts proved advantageous in our production efforts, and we managed to achieve a massive increase in production output through a team effort.

Thinking back on this experience, we are amazed at the large number of hurdles we overcame to accomplish our goals, united by our strong desire to supply patients with the items they need and acting while practicing extreme caution to prevent the spread of COVID-19.



**Masataka Yamaka**  
Assistant Manager  
Procurement,  
ME Center Purchasing

**Masahiro Sano**  
System ME Team Leader  
Production Section

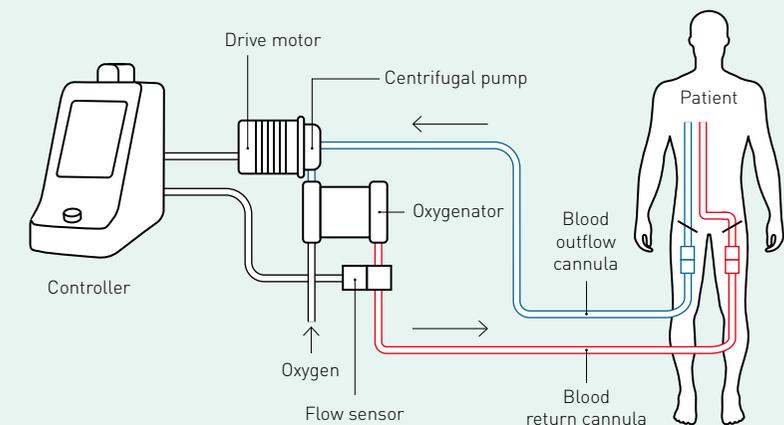


Extracorporeal Membrane Oxygenation (ECMO)



Associates producing ECMO hardware at the ME Center

## Support for Lung Functioning by ECMO



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### Ongoing Supply of Necessary Products and Services

In addition to ECMO, Terumo provides a wide range of other items used in medical settings, including the medical devices and pharmaceuticals needed for everyday examinations and treatments. We are currently facing restrictions on the movement of people and commodities. Working within these limitations, factories and supply chain- and service-related divisions are coordinating and collaborating to fulfill their roles in ensuring an ongoing supply of the products and services that the medical field needs, all while taking exhaustive steps to prevent associates from becoming infected by COVID-19.

At the Ashitaka Factory (Fujinomiya City, Shizuoka Prefecture), we manufacture products used in vascular interventional therapy as well as the oxygenators used in cardiovascular surgeries that employ heart-lung machines and in ECMO. Committed to continuing production, this factory was quick to examine and advance preparations for implementing infection prevention measures. Associates at this factory are expected to wear masks when commuting or on factory premises and frequently use hand sanitizer. In addition, associates were divided into groups based on factory floors, shifts, and work units. Interactions between groups were prohibited as part of the factory's exhaustive prevention measures. It was because of such measures that the Ashitaka Factory was able to continue production and prevent interruptions in the steady supply of products.

The Supply Chain Management Department, meanwhile, is responsible for shipments and deliveries of products manufactured at factories in Japan and overseas at the appropriate timing based on the requests of medical institutions. In response to the massive decrease in the volume of air transportation, this department dedicated a great deal of effort to arranging transportation methods as needed to import products from overseas into Japan and to export products, raw materials, and works in progress from Japan to overseas. In addition, finely tuned measures were implemented through coordination with

business divisions and sales branches to ensure that shipments of ordered products were not delayed.

Maintenance, inspections, and repairs of delivered medical devices are crucial tasks for supporting the activities of the medical field. The After-Sales Service Department is responsible for inspections and repairs of ECMO, infusion pumps, and other medical engineering (ME) equipment. When a request for emergency inspections or repairs has been received under the current climate, in which many medical institutions are placing limits on visitations, service engineers have been dispatched to respond to the request while taking the utmost precautions to help prevent the spread of COVID-19. Meanwhile, this department has been continuing operations by staggering the times at which associates come into the office to ensure that the necessary general inspection and repair services can be performed without delay.

The Terumo Call Center in Japan has recently seen a sharp increase in inquiries from general customers with regard to thermometers and other items. We have been providing earnest responses to this rising volume of questions and concerns from customers through coordination between staff both in office and teleworking.

Terumo associates are motivated in their daily work by a sense of commitment to their mission of supporting the medical field through work that is indispensable to patients and healthcare professionals. Going forward, all Terumo associates will remain mindful of the fact that their actions benefit patients as they seek to supply the products and services the medical field needs.



Associate from the After-Sales Service Department visiting a medical institution to inspect medical devices

### Comments from Associates

#### Supply Chain Management Department

The Supply Chain Management Department is charged with a wide variety of tasks. These tasks include processing product orders and shipping in Japan, exporting products and raw materials to overseas bases, receiving products and other articles imported into Japan, making shipment judgments, and managing domestic distribution quality. This department's work is currently performed by a team of around 150 associates, including dispatch associates. The global COVID-19 pandemic has impacted our work in a variety of manners, including increasing product orders, prompting fluctuations in factory production and supply volumes, and greatly reducing the volume of air transportation. Even in the face of these changes, we remain committed to supplying medical institutions and patients with the products they need. Working together with relevant internal divisions as well as subcontracting warehouses and distribution centers, we decentralized workplaces and asked associates to wear masks and use hand sanitizer. In this manner, we made every effort to ensure safety as we continued our operations. The challenges faced by individual associates varied based on whether they were working at an office, warehouse, or distribution center or at home. Nevertheless, we all proceeded to perform our duties as we had thus far, motivated by our dedication to preventing interruptions in distribution.



**Tokihiko Ibata**

Leader  
Customer Service  
Distribution Group



**Yoshiomi Kimura**

Leader  
Purchase, Export and  
Import Group  
Logistics Quality Group

#### After-Sales Service Department

During the course of day-to-day operations, the After-Sales Service Department has cultivated a workplace culture of thinking about what we can do and how we can help in the event of a major catastrophe. We are currently faced with limitations on visiting medical institutions. To ensure that we can continue to perform inspections and repairs of the products we have supplied under these conditions, we have coordinated with other divisions to secure dedicated workspaces in addition to our normal workplaces to allow associates to perform their work in a decentralized manner. We thereby sought to carry out our duties while taking steps to prevent the spread of COVID-19.

Visiting medical institutions to perform work at their request carries with it the fear of contracting COVID-19 and spreading it to those around us. Putting on the protective gear and goggles supplied by the Company has helped alleviate this fear. It is our commitment to our mission of helping people that drives us to visit medical institutions under these difficult conditions.

At the moment, reducing our risk of introducing COVID-19 into medical institutions is of utmost importance. For this reason, we have been encouraging teleworking associates to think about the contributions they can make when they are once again able to visit medical institutions as we go about our work.



**Yuu Ikeda**

Assistant Manager



**Masayuki Miura**

Assistant Manager



**Nobuya Kitahara**

Assistant Manager

### Comment from Healthcare Professional

#### Dr. Ichiro Takeuchi

Chief Professor, Department of Emergency Medicine, Graduate School of Medicine, Yokohama City University  
Director, Advanced Critical Care and Emergency Center, Yokohama City University Medical Center



The global COVID-19 pandemic utterly transformed the world in 2020. Lockdowns disrupted distribution on a global scale and halted economic activities while medical institutions saw a massive influx of patients. Those of us in the medical field are tasked with the important mission of finding a way to fight this never-before-seen virus and protecting those patients that suffer serious conditions.

After the first passengers were transported off the Diamond Princess cruise ship when it was anchored at the Port of Yokohama, there were 170 cases of severe respiratory failure during the first wave of COVID-19 in Japan in which patients were attached to veno-venous ECMO. Patients have since been removed from ECMO support in 121 cases (patients continued to undergo ECMO treatment in 10 cases as for July 7, 2020). This makes for a

70% rate of survival, which is among the highest in the world. This feat is especially impressive when considering Japan's poor outcome of the H1N1 influenza pandemic in 2009. One cannot help but wonder what has changed over the past decade. No doubt, a major factor behind this change has been progress in treatments, team-based medicine approaches, diagnosis technologies, and medical technologies. One party we have to thank for this progress is Terumo, which, as a Japanese medical device manufacturer, has pursued quality improvement through internal efforts, at factories around the world, and based on the experience gained through operations in the global healthcare market.

We will have to keep combatting the global COVID-19 pandemic in the future, and there will be more patients in serious conditions needing treatment. Accordingly, a task going forward will be the ongoing cultivation of medical professionals who can use ECMO. We intend to move ahead with the cultivation of support staff while capitalizing on aid from the Ministry of Health, Labour and Welfare and from academic associations. As we face the second and third waves of COVID-19 infections, we will work diligently together with Terumo to increase the numbers of patients suffering from severe respiratory failure who are able to return to normal lives and to make the Japanese healthcare system the safest and most reliable in the world.