GETINGE

Life

#3 2020

A magazine from Getinge.

Heroic efforts
Service technicians keep the ventilators running during the pandemic

Intensive care
Step inside the Intensive Care Unit

The neonatal doctor

Prematurely born Sabina Checketts saves the lives of other newborns

Getinge manufacturing sites

Sources - Facts in numbers

Page 7
The Mechanical Ventilator: Past, Present, and Future, 2011, Respiratory Care website.

Page 9
Getinge website.

Page 11
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Page 13
Workshop report, Professor Liisa Lehtonen, Dr Hanna Soukka and the NICU staff of the TYKS Hospital in Turku, 2015, Critical Care News website.

Page 15
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Page 17
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Page 18
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1 **USA**
Mahwah
Merrimack
Wayne

2 **FRANCE**
Ardon
La Ciotat
Tournefeuille
Vendôme

3 **GERMANY**
Feldkirchen
Hechingen
Rastatt

4 **NETHERLANDS**
Delft

5 **SWEDEN**
Getinge
Solna
Växjö

6 **POLAND**
Poznan

7 **TURKEY**
Ankara
Antalya

8 **CHINA**
Suzhou

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Collaboration key to develop and improve global health care

Welcome to Life Magazine #3 2020 where we take a closer look at the Intensive Care Unit (ICU) and specifically our ventilators and NAVA technology.

ICUs around the world have definitely been in focus this year, as this is where the most critically ill COVID-19 patients are being treated. Health care professionals have shown heroic courage and tremendous dedication while saving lives under such extreme and difficult circumstances. And at Getinge we have done our outmost to support them in their work.

Along with the pandemic came an increased need for ICU ventilators, which triggered a significant ramp-up in production in our factory in Solna, Sweden. This is hard work, and it is not something we could do entirely on our own. We have teamed up with authorities, industries, companies and established partnerships. I dare say we will continue to improve global health care together in many different ways also long after this pandemic has passed.

Talking about the future and cooperation; in one of the stories on the following pages we reveal an exciting project where we are pioneering the future ICU together with industry-leading partners. The days of the Quiet ICU, without disturbing alarms going off all the time, are no longer far away.

We also dive into our NAVA technology and get to meet the inventor, as well as a doctor who was a prematurely born baby and today saves newborns herself. Then we pay a visit to two nurses who share their experiences and emotions from working in an ICU during a pandemic.

Enjoy the reading!

Jeanette Hedén Carlsson,
Executive Vice President
Communication & Academy

The highest level of care

In many cases, this is the place where patients literally hover between life and death. The Intensive Care Unit (ICU) holds advanced equipment and specially trained personnel in order to give seriously ill patients the highest level of treatment. Here you get an introduction to the modern ICU and what it can look like.

What has intensive care meant for modern hospital care?

"With the ICU, hospitals nowadays have options they didn't have before at all. They can treat more difficult cases and severe sick patients. The surgical procedures have been extended and improved a lot over the years. Now there is an actual chance to help patients that somewhere else might have died."

Benjamin Raber, Global Therapy Development Manager Critical Care at Getinge.

Facts about ICU

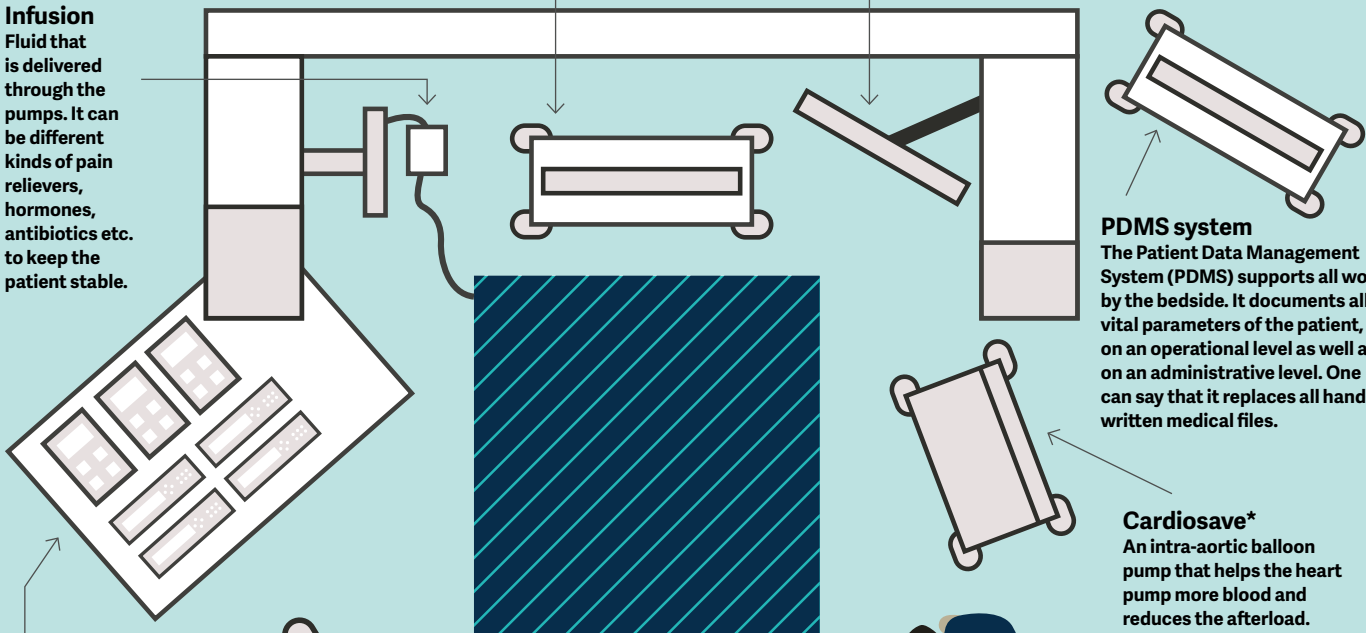
- The world's first ICU unit was established in 1953 in Copenhagen, at Kommunehospitalet.
- Those who are admitted to an ICU need advanced respiratory support and often support of two or more organs. It can be ARDS (Acute Respiratory Distress Syndrome) patients who suffer from trauma, infections, pneumonia or sepsis. It can also be neonatal babies or children.
- A patient's stay in an ICU varies. It can be everything from a few hours, to a day or longer periods (weeks or months).

Maquet Moduevo*
A unit attached to the ceiling to distribute medical gas, electrical, data sockets and to carry all equipment needed close to the patient (monitoring systems, ventilators, IV pumps etc.)

Servo-u*
A ventilator that delivers oxygen and air with the right pressure into the patient to help him/her breathe. The airflow goes via tubes through the mouth and airways to secure the gas exchange.

Patient monitor
The parameters displayed here often include blood pressure, oxygen saturation of the blood, heart rate and respiratory rate, temperature and many times additional parameters like cardiac output.

Infusion
Fluid that is delivered through the pumps. It can be different kinds of pain relievers, hormones, antibiotics etc. to keep the patient stable.



PDMS system
The Patient Data Management System (PDMS) supports all work by the bedside. It documents all vital parameters of the patient, on an operational level as well as on an administrative level. One can say that it replaces all hand-written medical files.

Cardiosave*
An intra-aortic balloon pump that helps the heart pump more blood and reduces the afterload.

The ICU bed
The bed typically has electric and manual controls, side rails, wheels and a brake. A removable headboard allows procedures (for example endotracheal intubation and vascular access) from the head of the bed.

Infusion pumps
Delivers fluids into a patient's body in a controlled manner.

Cardiohelp*
A heart-lung support system, suitable for all indications requiring extracorporeal circulation for cardiopulmonary support, i.e. ECMO or ECLS.

Chair for relatives
During this often very emotional time in the patient's family's lives, relatives are allowed to sit by the patient during designated hours of the day in alignment with the staff, especially for children.

Hospital staff stand-by
Nurses are working in a three-shift model to make sure that the patient is observed 24/7, treated and gets the care he/she needs.

**Product is offered by Getinge. In addition; syringes, gloves and other emergency equipment can be found in an ICU.*

The future of intensive care
comes with a Quiet ICU

Research shows that Intensive Care Units (ICUs) with lower noise levels could potentially lead to better outcomes for patients and improve the situation for relatives and caregivers. Professor John Fraser, who leads a team that is investigating how the ICU environment impacts patients and staff, is one of many who look forward to the days of a Quiet ICU.

Noise levels and the number of alarms going off in ICUs are often beyond acceptable levels and well above international recommendations. The average daytime noise levels have been reported to be around 60-65 decibels with peak levels up to 80-90 decibels, which is similar to being close to power tools in use. This is getting more and more recognized as a problem in hospitals across the world.

"We admit our sickest patients into the ICU to help them recover. It is well known that sleep and rest are important for recovery, but most of the noise created that interferes with the patients' ability to sleep and rest are clinical alarms from medical equipment situated at the patient bedside, usually very close to the patients' head," says Professor Fraser, Director of ICU at St Andrew's War Memorial Hospital and Director of the Critical Care Research Group (CCRG) at the University of Queensland in Brisbane, Australia.

The patient cannot do anything to address the alarms – they are there for the caregiver to respond to.

Professor John Fraser from Brisbane, Australia.

"This leads to a suboptimal healing environment as it can interrupt sleep and often causes unnecessary anxiety for the patient," says Professor Fraser.

The same goes for relatives who come to visit; when they hear an alarm it frequently causes them to believe that something is seriously wrong, even though most of the time it is a low priority alarm.

"Excessive noise also has an impact on the caregiver's health. Additionally, up to 90 percent of the alarms are

1971

The year the first modern mechanical ventilator was introduced; Servo 900.

"It is well known that sleep and rest are important for recovery, but most of the noise created that interferes with the patients' ability to sleep and rest are clinical alarms from medical equipment situated at the patient bedside."

low priority and don't require any immediate action, and with this many alarms going off all the time there is a risk that staff will accidentally ignore a potentially critical one," explains Professor Fraser. "It would make sense to send these alarms and the clinical data directly to the caregiver, to help them with their decision making and give them more immediate control of the alarm, rather than disturbing the patients."

Getinge, along with partners from other industries, work side by side with clinicians and researchers to make this happen.

The Quiet ICU can become a reality in the near future. The absence of the noise alarms will most probably lead to better treatment outcomes.

"By using existing and upcoming technologies for integrated solutions and the ability to transfer alarm data directly to the caregiver, the vision of a Quiet ICU will become a reality," says Professor Fraser.

His research team is conducting research on patients in the ICU experiencing delirium and the Quiet ICU is a very welcome solution.

"It could potentially achieve significant improvements in patient outcomes, a friendlier environment where relatives can focus on being supportive, and a safer and more efficient way for caregivers to not only save more lives but also improve the quality of those lives."

They fight COVID-19 on the frontline

Throughout the pandemic, Katja Maier and Henning Hollenbach, intensive care nurses in the Klinikum Ludwigshafen in Germany, have worked grueling 12-hour shifts caring for critically ill COVID-19 patients. In this interview, they voice experiences and emotions they share with thousands of heroic colleagues around the world.

Katja and Henning had been working together in the Intensive Care Unit (ICU) of the academic teaching hospital of the Johannes Gutenberg University Mainz and the medical faculty in Mannheim of the University Heidelberg for a couple of years when the outbreak began. After that, nothing has been the same.

"In early April, all ventilator stations in the ICU were full. This was a super tense period," Katja says. "The speed and severity were overwhelming. People would arrive awake and responsive. Then they were intubated. One hour later, we had to put them in prone position."

The panic in the eyes of these patients, those who survived and those who didn't, made a lasting impression.

"Our first French citizen from the high risk area Alsace just across the border was on the ventilator for a very long time. Finally, when he was extubated and could be transferred, he went to the helicopter in full gear. With his French beret on his head. He was still COVID-19 positive when we waved him off, but he is doing really well today," Henning says.

Katja recalls: "Even if the older generation was hit hard, I remember a guy in his thirties who got the worst of it. Coming in, he was still breathing spontaneously, but within half an hour he deteriorated so much that he had to be intubated. One day later he got ECMO. Not many patients had to go through that."

Medical devices, such as ventilators and Extracorporeal Membrane Oxygenation (ECMO), which provides the body with oxygen when the lungs cannot do their job anymore, have been key in fighting the virus outbreak.

Henning says: "Helping severely ill COVID-19 patients would not have been possible without ventilators. The patients got very bad very quickly, and we had to ventilate most of them invasively."

The medical teams have dealt with the strains of working close to a potentially deadly virus by being professionally cautious.

"We had respect because nobody knew how this new virus would manifest itself. But we are used to highly infectious diseases and had protective equipment," Katja explains. "When I went into a COVID room, I had five pairs of gloves on top of each other. I knew I had to change them and couldn't just walk out."

It goes without saying that working close to COVID-19 also has affected the private lives of the medical professionals.

Katja explains: "There was a lot of uncertainty, but I managed to ensure my husband and daughter that I know how to avoid bringing anything dangerous home. It's riskier to go shopping than being with me."

Henning Hollenbach says that the intensive care equipment and therapies have been crucial this year.

Henning says: "My whole family, including my grandma, brother and nephew, live in the same apartment building. We managed by distancing ourselves. We just had to find other solutions, such as having Sunday breakfast together on FaceTime."

Even after countless hours under immense pressure, the spirit of Katja and Henning is impressively unbroken.

"If a new wave comes, we will deal with it in the same way as with the first one. But nobody has to stand on balconies and clap for us again. This is what we are trained for," Katja says.

Henning concludes: "What really helps are the little things that can help people stay away from ending up in the intensive care unit. Keep your distance, practice hand hygiene, wear a mask. As long as there is no vaccine, continuing with this every day is the best way to really give us a hand."

10.4

The percentage of patients who develop ARDS (Acute Respiratory Distress Syndrome) while in intensive care.

As an ICU nurse, Katja Maier is used to working with patients that require a high level of care.

Inventing therapies that save lives

The invention of Getinge's patented Neurally Adjusted Ventilatory Assist (NAVA) – using the patient's own respiratory drive to control ventilator assistance – has elevated mechanical ventilation to an entirely new level and helped the tiniest premature baby in the world survive. Meet the Swedish-Canadian researcher behind this groundbreaking technology.

258

The weight in grams of the smallest baby boy ever who was treated with the NAVA technology and survived.

"**We are talking** about the ECG of breathing," says Christer Sinderby, the father of NAVA. "Using NAVA in mechanical ventilation is like adding ECG to the stethoscope when monitoring a heart. Both are based on electrical signals and are more precise."

The flow of air has powered most of Christer's life. In his youth, the talent for mastering the mighty sea breezes enabled him to compete with the best windsurfers in the world.

As a scientist, the ability to control a few milliliters of air blown into a premature baby's tiny lungs has earned him and his wife Jennifer Beck respect in the entire medical world. Recently, NAVA played a major role in helping a premature baby, weighing only 258 grams at birth, survive.

"It goes without saying that it's hard to sync a ventilator with rapid breaths of 2-3 milliliters of air. We have managed to use the baby's own respiratory drive to achieve this synchronization," Christer explains.

NAVA has been used exclusively by Getinge since it was invented in the mid-1990s.

"Since the patient's own signals control the tidal volume and respiratory pattern, NAVA helps protect the lungs and reduces the risk of making the patient uncomfortable by pushing too much or too little air into them," Christer explains.

Independent of air leakages, NAVA facilitates the use of non-invasive ventilation with nasal masks or prongs. A much more comfortable alternative than intubating the patient.

Back in 1999, the innovation was so remarkable that it was published in the prestigious medical journal Nature Medicine.

NAVA in a nutshell

NAVA virtually connects the patient's brain to control the ventilator. The patient's respiratory drive (Edi) is the signal that excites the diaphragm and is proportional to the output of the respiratory centers in the brain. The Edi signal is captured by an Edi catheter placed in the esophagus. In NAVA, Edi is used to control the timing, depth and duration of each breath.

Christer Sinderby, PhD

After obtaining a MSc and PhD in Sweden, Dr. Sinderby became a postdoc at McGill University in Montreal, Canada in 1991. In 1995, he took up a position as an independent researcher at the University of Montreal. Since 2003, he is a scientist at the Keenan Research Centre for Biomedical Science, University of Toronto.

"I think we're still the only researchers focusing on ventilator technology published there," Christer says.

Christer Sinderby and Jennifer Beck are still dedicated to improve the abilities of Getinge's mechanical ventilators.

"We focus on ventilation solutions that will be a reality in 5-10 years. Getinge's patience with the long-term scope that is a necessity in medical research has paved the way for a partnership with mutual respect for both the corporate and scientific perspectives," Christer concludes.

The premature baby who grew up to be a neonatal doctor

Sabina Checketts was born premature with only a 50-50 chance of survival. Today, she is a neonatal doctor who spends her days saving the lives of other tiny newborns.

When Sabina Checketts' mom walked her to school in the mornings she sometimes nudged her and pointed to a man walking in the opposite direction and said 'Look, there is the man who saved your life'.

"He was the one who had been heading a medical team in the Neonatal Intensive Care Unit (NICU) where I was saved after being dangerously prematurely born. Seeing him on the other side of the boardwalk realizing what he had done, somehow got me interested in medicine," says Sabina.

Sabina's school did fundraising for a local newborn unit, and since the school knew Sabina was prematurely born they took her along for a visit.

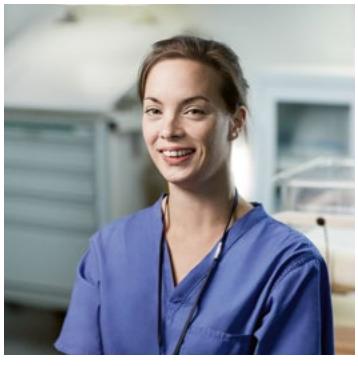
"Seeing all the newborns in their cots was really the moment when I made up my mind. So I went home and told my parents I was going to be a doctor."

Facts

Name: Sabina Checketts.
Born: In 1987, premature at week 28 (12 weeks too early).
Weight/length at birth: 1,1 kg/35 cm.
Profession: Neonatal Doctor.
Workplace: Alternate NICU units within United Kingdom National Health Service (NHS).
Hometown: London, UK.

Sabina's parents had of course told her everything about her birth – the fear and terror that she only had a 50-50 chance of survival and the huge risks for lifelong complications if she did survive. But also about the joy of their firstborn finally being there.

"Hearing their side of the story as well as my personal experience has definitely impacted the way I behave



at work. It has given me an increased awareness of what parents remember from what might very well be the biggest moment in their life. What you say will be with them forever – they will remember how you as a doctor acted and how you made them feel," Sabina explains.

Sabina has no long-term consequences from being prematurely born. But she is very careful about how she presents her own story to the parents because even though she wants to give them a sense of optimism, she does not want to falsely reassure anything.

"But it's nice to share with the parents that their doctor was a premature baby as well, they like hearing that. Also, prematurity shouldn't be seen as a limit to what a child can accomplish."

One of the biggest concerns for premature babies is

the breathing, since their lungs are not fully developed. Intubation with a breathing tube is often needed, connected to a ventilator. The ventilator that helped Sabina survive was a far cry from what she sees in NICUs today.

"We've gone from a mode of ventilation where you were breathing for the baby to one now where we can breathe with the baby as well. The idea is to minimize the damage to the lungs and look for the very best outcome for every premature baby."

She concludes:

"I have a very special bond to all the babies, they are like my little twins. It's nice to give something back and to be able to go home and say, 'I saved a life today'. When I enter the doors of the NICU I feel like home, it gives me a lot of joy to get to care for all these little ones every single day."

This image shows a staged neonatal department from the late 1980s with a Servo Ventilator 3000. The baby in the image is not Sabina Checketts.

35

The average percentage in weight gain per week for babies successfully treated with NAVA technology in a hospital in Finland over the last years.

A methodic way of working where everyone has precise responsibilities has proven successful in the production in Solna, Sweden. Here Kristian Peruses is assembling a Servo-u.

Building ventilators for life

To meet the global need of ventilators that treat COVID-19 patients, Getinge set out to ramp up the production capacity by 160 percent in 2020. An ambitious target, which would help caregivers save more lives.

Evie Roseneld and Ferouzan Tamboshi in the Solna factory are performing tests on Servo-i and Servo-s. During 2020 the production in the factory has more than doubled.

In the beginning of 2020, about 200 ventilators left Getinge's factory in Solna, Sweden every week. When the pandemic started to spread, it soon became clear there was a rocketing global need of ventilators to help treat the critically ill patients.

"We decided early on to ramp up our production. In 2019 we produced 10,000 units, in 2020 we will make 26,000. Cross-functional teams have been working with the same objectives, all the way from receiving the customer order until it's ready for shipment to save more lives," tells Elin Frostehav, Vice President Critical Care at Getinge.

Elin Frostehav.

Her team has created clear responsibilities to allow everyone to keep calm and work methodically towards the goal. And they have already reached several milestones.

"One success factor was to set ambitious targets and break it down into smaller pieces. This way everyone knows how to contribute, understands the risks and solves the issues by raising them early on and overcoming them together," explains Elin.

It was not enough to run faster; there was a need to do things differently.

"We knew it would be challenging but decided to trust our people and their abilities to find solutions, which they did and keep on doing! We also dared to ask for support, both internally and from other companies."

26,000

The number of new ventilators that will be produced in total by Getinge during 2020.

Hundreds of organizations have reached out to be part of the solution and newfound partnerships are established.

"It's very positive for us and at the same time it has created meaningful jobs for people who have been laid off at their ordinary workplaces. Together, we have managed to deliver more life-saving products," says Elin.

With many boarders closed, it has sometimes been hard to get the ventilators delivered to hospitals, although in Europe road transportation has worked more or less as normal.

Christian Lambrant.

"The challenging part was to make sure we had enough capacity for air freight, and to a reasonable price. In the beginning of the outbreak we struggled with limited supply to some countries," says Christian Lambrant, Chief Logistics Officer at Getinge.

Markus Stirner-Schilling, Senior Director Acute Care Therapies at Getinge adds:

"We have seen various pandemic outbreaks before, but nothing comparable with COVID-19 as many ICUs around the world required more ventilators, but only got resuscitator based breathing bags in many cases, with risk to damage the sick lungs even more. Hence we allocated all produced ventilators by a severity score based on case dynamics and fatalities by country."

Markus Stirner-Schilling.

Some of the heroes in the achievement of ramping up the production are of course the people who build the machines.

"The pressure has been high in the assembly line, but so has the engagement. All are doing their outmost to get those ventilators shipped to where they are so desperately needed. Throughout this journey we are all learning a lot which will be beneficial in the future," concludes Elin.

Alessandro Usai and Maurizio Ceccaci in Spallanzani Hospital in Rome, installing Servo-u during an emergency.

Service in the midst of a virus outbreak

When the pandemic started to spread, the pressure on Intensive Care Units (ICUs) increased rapidly, as did the need for installations of new ventilators. And older machines needed to be up and running around the clock. Some of the people standing on the frontline, putting their own health at risk while doing their job, are Getinge's service technicians.

One of the first countries where the pandemic hit hard was Italy. Life as the Italians knew it changed overnight, with rocketing numbers of deaths and strict lockdowns. At the same time, it was of outmost importance that hospital equipment was in good shape at all times, in order to treat the patients.

Let us listen to the voices of a few of all the brave service technicians who left their families quarantined at home while going to the hospitals to do what they do best – supporting medical staff in their tremendous efforts to save more lives.

"For me, March was a very intense month. My son, Mattia, was born and the plan was to take time off but the situation was getting very difficult. I worked in all hospitals in the Rome area and in just a few weeks we installed 50 new ventilators."
Alessandro Usai, Field Service Engineer Center South SW/CC

"Everyone has shown flexibility and availability working on products that might be new to them, so that we can support our customers throughout this emergency. I have been concerned about all the contaminated material I need to handle but attention is the new fundamental part of my work – with no room for mistakes or distractions."
Domenico Lombardo, Field Service Engineer NorthWest CC

"We saw so many ill people, it was a tragedy. Everything was urgent – repairing, testing and delivering. We also received many requests to put old ventilators back in operation in the shortest possible time; any machine that could help a patient breathe became fundamental."
Leonardo Dell'Orti, Field Service Coordinator NorthWest

"Even before the pandemic we wore masks, but today we pay much more attention by keeping distance and avoiding contact with the hospital staff to keep them safe. Also for my loved ones' sake I have been super careful, they were sealed at home and I wanted to protect them."
Stefano Fittante, Field Service Engineer NorthEast IC

"Fortunately I have not needed to cross over to the zone where the corona patients are. But I have seen the faces of people working there, full of tension and fatigue, knowing that sooner or later they could get infected. They have such an enormous responsibility and very little satisfaction, at times losing more than they could save."
Maurizio Strada, Field Service Engineer NorthEast SW/CC

"I was one of few people who could still circulate outside during lockdowns, being part of a category that took on the battle on the frontline. I had my lunch sitting on the empty boardwalks or in the trunk of my car, if I managed to have lunch at all. Despite dis-infecting everything before I returned home at night, I still feared to bring contamination. But I was always happy to return to work the next day."
Denis Bulegato, Field Service Engineer NorthEast SW

"Some people advised me to find excuses not go to work since I was entering dangerous areas. But what if the doctors and nurses would refuse? This is a time when we must show commitment and provide the best possible support."
Mauro Gherghi, Field Service Engineer Center South IC

CC = Critical Care
IC = Infection Control
SW = Surgical Workflows

ECMO, illustrated in this image, has been key in fighting the virus outbreak.

ECMO therapy supports patients during the pandemic

In reports about the treatment of COVID-19 patients, ventilators are often in focus. But when they are not enough, there is a final possible solution: Extracorporeal Membrane Oxygenation (ECMO). The very first COVID-19 patient at York Hospital, U.K., was treated with ECMO in March this year.

The patient showed up at the hospital in mid-March, showing aggressive symptoms of the virus. He was believed to be the first confirmed case of COVID-19 in York, according to York Daily Record. At first, he was placed on a ventilator, but when that did not help, the hospital team decided that he should be put on the ECMO program. ECMO therapy can be risky, and it is certainly not for everyone. A candidate should have few comorbidities and cannot be too old. However, patients well over 50 years old have been successfully treated with ECMO. Stefan Koch, Getinge's Head of Training and Simulation Cardiopulmonary explains how it works:

"Blood containing a low amount of oxygen and a high concentration of carbon dioxide leaves through a catheter inserted into a large vein. It connects to an oxygenator that adds oxygen and removes carbon dioxide. With ECMO, the doctors can gain time to take the right measures and it gives the patients lungs time to heal."

During spring, more and more stories have been published in media about COVID-19 patients that have been saved by ECMO. Recently, Michigan Medicine of University of Michigan reported through its news website that almost 500 patients had been on ECMO treatment worldwide, and the number is probably growing. In many cases, it is Getinge's solutions that are supporting medtech teams around the world to perform ECMO.

The survival rate for the treatment is yet to be analyzed further in the pandemic, when more data will be available. During the swine flu (H1N1) when ECMO also was used, the rates were fairly high, around 60 percent, according to Michigan Medicine's website.

As for the patient in York, the story ended happily, as reported in York Daily Record. He was on ECMO for eight days. From arriving at the hospital being close to death, the patient could walk home fully recovered.

Facts/ECMO*

A therapy that is used for patients with acute respiratory distress syndromes. ECMO can be considered after regular ventilation therapy does not work.

Depending on configuration, ECMO can be used for lung support (as in the case of COVID-19) and it can be used for both heart and lung support.

The main purpose is to maintain oxygenation of the organs. ECMO replaces the lung function by oxygenating the patient's blood outside of the body, i.e. extracorporeal.

**ECMO therapy is sometimes called ECLS therapy, which stands for Extra Corporeal Life Support. The ECMO therapy procedure may differ from country to country.*

2,407

The number of confirmed COVID-19 patients worldwide that have been treated with ECMO/ECLS during the pandemic up until September 2020.

What's on?

PiCCO helps health care providers treat COVID-19 patients

PiCCO Technology can be used to assess hemodynamic parameters, which describes the blood flow in the blood vessels. It is a less-invasive monitoring technique where the catheter is inserted into an artery and followed by a calibration procedure called transpulmonary thermodilution.

The guidelines for treatment of COVID-19 patients recommends usage of a conservative fluid management strategy and PiCCO can be used to monitor it. PiCCO help assess lung water, which is a common problem for the most severely ill patients. It also measures the fluid status, gives a quantification of pulmonary edema and differentiates the origin of it.

Photo: Glenn T Unger

Getinge new principal partner for the Foundation for Queen Silvia Children's Hospital

Getinge is principal partner for the Foundation for Queen Silvia Children's Hospital, a fundraising organization that makes a difference for children and young people who are treated for both physical and mental illness at Sweden's largest children's hospital in Gothenburg.

Children and young people who are suffering from long-term illnesses need environments, experiences and activities that encourage play and laughter; a life that can bring comfort and hope. The foundation raises funds to finance initiatives that complement the routine care provided by the hospital. Initiatives that are needed every day, but that cannot always be financed with public funds.

Flow-e and Flow-c receive 510(k) clearance

U.S. Food & Drug Administration (FDA) has cleared Getinge's Flow-e and Flow-c Anesthesia machines, members of the Flow Family also including Flow-i. They both share the same core technology as the other models, such as ventilation performance to ICU standards, precision agent dosing, hypoxia prevention technologies and an intuitive user interface. All to offer personalized anesthesia delivery for even the most challenging patients, from neonates and pediatric to the morbidly obese. Getinge's innovative solutions for anesthesia are all created with the anesthesiologist and patient safety in mind.

Becoming CO_2 neutral by 2025

To secure long-term value-creation and competitiveness, sustainability is an integral part of Getinge's organization, actively working to minimize the negative environmental footprint. Getinge is committed to achieving the Paris agreement goals of limiting global warming to 1.5 °C above pre-industrial levels, and has now made the decision to become CO_2 neutral by 2025, which was announced earlier this year. The target will be reached by a stepwise approach in several areas and supports the company's objective to contribute to a sustainable health care environmentally as well as socially.

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