WORLD'S CLINICAL NEWS LEADER

VISIT HospiMedica.com DAILY CLINICAL NEWS

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AI-Enhanced ULS Shortens Scan Time

A new ob/gyn ultrasound scanner includes artificial intelligence (AI) algorithms that support auto-recognition, high image quality, and efficiency features.

The GE Healthcare (GE; Little Chalfont, United Kingdom) Voluson SWIFT ultrasound system includes

Cont'd on page 11

Closed-Circuit Nebulizer Delivers Inhaled Medication for COVID-19 Therapy

A closed-circuit nebulizer technology, which is being used in hospitals to deliver aerosolized medication to critically-ill ventilated COVID-19 patients, will help ensure safe delivery of inhaled antiviral drugs for the treatment of COVID-19.

Aerogen (Galway, Ireland; www.aerogen.com), which has developed the closed-circuit nebulizer technology, is collaborating with pharmaceutical companies in multiple COVID-19 drug development initiatives, including the development of new inhaled drugs

Cont'd on page 14

Remote Endoscopy with 360° Capsule Camera

An ingestible small bowel capsule endoscope expands the availability of remote digital pathology during the COVID-19 pandemic.

The CapsoVision (Saratoga, CA, USA; www.capsovision.com) CapsoCam Plus capsule endoscope holds four laterally oriented cameras that provide a full 360° panoramic image of small bowel mucosa. Unlike camera systems

Cont'd on page 20

Advanced Systems Tackle Challenges of COVID-19 Screening in Hospitals

To assist hospitals and healthcare institutions faced with overwhelming pressures due to the pandemic, advanced systems are addressing the need to screen COVID-19 patients at urgent care clinics and emergency departments, toward identifying those more likely to develop severe infections or potentially life-threatening complications. HospiMedica's special COVID-19 Update section starts on page 3.

See article on page 7

Patient connected to Phillips Trilogy EV300 portable life-support ventilator. Image courtesy of Phillips

Double-Contrast MRI Detects Small Tumors

A new study shows how two-way magnetic resonance tuning (TMRET) can help explore a variety of biological processes via magnetic resonance imaging (MRI).

Developed by researchers at Shanghai Jiaotong University (China; www.sjtu.edu.cn), the University of California Davis (UCD; USA; www.ucdavis.edu), Stanford University (CA, USA; www.stanford.edu), and other institutions, the

Cont'd on page 16

Portable MRI Enables Bedside Scans

An innovative point-of-care (POC) MRI system wheels directly to the patient's bedside, plugs into a standard electrical wall outlet, and is controlled through a wireless tablet.

The Hyperfine Research (Guilford, CT, USA) Swoop portable MRI system is a low-field system that features standard permanent magnets

Cont'd on page 22

Intuitive Anesthesia Systems Offer Broad Safety Profile

New anesthesia systems help ensure comprehensive patient safety throughout the perioperative period, from induction to recovery.

The Mindray Medical (Shenzen, China) A8 and A9 anesthesia systems were designed based on deep insights regarding the clinical workflow of the operating room, that lead to the use of an intuitive graphical user interface that ease anesthesiologist workload. An 18.5 in. capacitive touchscreen with 360-degree positional rotation provides up to ten customizable

Cont'd on page 25

INSIDE

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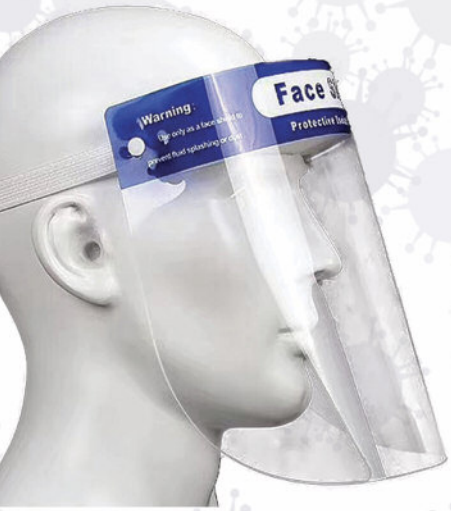

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Post-COVID-19 Kidney Disease Epidemic Linked to SARS-CoV-2

A new study by researchers from the Icahn School of Medicine at Mount Sinai (ISMMS New York, NY, USA; www.icahn.mssm.edu) of patients hospitalized with COVID-19 has revealed that nephrologists will need to prepare for a significant uptick in patients with chronic kidney disease linked to exposure to the SARS-CoV-2 virus. Their review of data from electronic health records of patients older than 18 years with laboratory confirmed COVID-19 has revealed troubling consequences of COVID-19 on the kidneys, including acute kidney injury (AKI).

Delayed Immune Response to SARS-CoV-2 Explains Why More Men Die From COVID-19

A study by researchers from the University of Washington (Seattle, Wash., USA; www.washington.edu) suggests that varying immune responses to SARS-CoV-2 due to age and sex could explain why COVID-19 infections tend to be more severe among older adults and males. In their study published in the open access journal PLOS Biology, the authors wrote, "Collectively, our data demonstrate that host responses to SARS-CoV-2 are dependent on viral load and infection time with observed differences due to age and sex that may contribute to disease severity." The findings of the study have significant implications for the development of immunomodulatory treatments for SARS-CoV-2.

Real-Time Imaging Shows How SARS-CoV-2 Attacks Human Cells

Scientists from the NIH's National Center for Advancing Translational Sciences (NCATS Bethesda, MA, USA; www.ncats.nih.gov) have used imaging assays to view the binding of the spike, or protein, on the SARS-CoV-2 virus to ACE 2 (angiotensin converting enzyme 2) and subsequent internalization that takes place when ACE2 and the spike protein interact in real time. The scientists performed real-time imaging to show how SARS-CoV-2 attacks human cells.

COVID-19 Could Be a Gut Infection

A new study by Progenabiome (Ventura, CA, USA; www.progenabiome.com) in collaboration with the Centre for Digestive Diseases (CDD Sydney, Australia; www.centrefordigestivediseases.com) of symptomatic patients who tested positive for COVID-19 has found SARS-CoV-2 in 100% of fecal samples, suggesting that COVID-19 could be a gut infection and a potential new transmission route. The study also showed COVID-19 mutations, providing insights into the SARS-CoV-2 virus, its evolution and strains, based on data from the stools of patients.

Repurposed Hepatitis C Drugs for COVID-19 Treatment

A team of researchers from the University of Washington (UW) Medicine (Seattle, Wash., USA; www.uw.edu) have identified antiviral drugs used to treat hepatitis C that are protease inhibitors and could be repurposed for use as treatment for COVID-19. They examined 6,800 known drugs with a history of safe use in humans that could possibly break the life cycle of the coronavirus by blocking an important protein called the main protease. The team singled out boceprevir and narlaprevir, protease inhibitors developed by Merck & Co. that have been superseded by more effective hepatitis C treatments.

New Tool Monitors SARS-CoV-2 Mutations

Scientists at the University of Melbourne (Melbourne, Australia; www.unimelb.edu.au) have developed a new tool containing information about all the protein structures that coincide with the SARS-CoV-2 (COVID-19) genome, including every known genetic mutation and its resultant mutant protein structure, to monitor mutations that make it difficult to develop COVID-19 vaccines and drugs. The powerful new tool harnesses genomic and protein information about the virus and its mutations to aid COVID-19 drug and vaccine development.

AI Algorithm Detects COVID-19 in Lungs by Analyzing CT Scans

In a new study, researchers have demonstrated that an artificial intelligence (AI) algorith

Cont'd on page 5

cont'd from page 7

co-developed by the University of Central Florida (Orlando, FL, USA; www.ucf.edu) can be trained to classify COVID-19 pneumonia in computed tomography (CT) scans with up to 90% accuracy, as well as correctly identify positive cases 84% of the time and negative cases 93% of the time. They found that the algorithm was extremely proficient in accurately diagnosing COVID-19 pneumonia in the lungs and distinguishing it from other diseases, especially when examining CT scans in the early stages of disease progression.

Combination of Neutralizing Antibody and Oral Anti-Viral Compound to be Tested against COVID-19

Sorrento Therapeutics (San Diego, CA, USA; www.sorrentotherapeutics.com) has entered into an agreement with ViralClear Pharmaceuticals, Inc. (Westport, CT, USA; www.biosig.com) to explore the synergistic potential of small molecules and antibodies combination therapies against COVID-19. Sorrento will initiate testing with a selection of its agents in combination with ViralClear's anti-viral compound for possible synergistic anti-viral effect against SARS-CoV-2 in the preclinical model of Golden Syrian hamsters. ViralClear will contribute its oral antiviral merimepodib (IMPDH inhibitor) which is currently in a Phase 2 trial in combination with remdesivir to treat COVID-19. . Sorrento will initially make available STI-1400 neutralizing antibody candidate for testing.

Some SARS-CoV-2 Antibodies More Protective Than Others in Preventing Reinfection

Researchers at the University of Tennessee Health Science Center (Memphis, TN, USA; www.uthsc.edu) and their colleagues at MD Anderson Cancer Center (Houston, TX, USA; www.mdanderson.org) have found that some antibodies to SARS-CoV-2, the virus that causes COVID-19, are more protective than others, when it comes to reinfection. This information has implications for the overall understanding of the virus and whether infection actually does trigger immunity.

Engineered RNA-targeting compounds disable replication engine of SARS-CoV-2

Researchers at The Scripps Research Institute (Jupiter, FL, USA; www.scripps.edu) have engineered RNA-targeting compounds that disable the replication engine of the SARS-CoV-2 virus. The team has created drug-like compounds that, in human cell studies, bind and destroy the pandemic coronavirus' so-called "frameshifting element" to stop the virus from replicating.

Drug to Lower Blood Sugar Halves Mortality in Diabetic COVID-19 Patients in Hospitals

A multicenter observational study led by Boston Children's Hospital (Boston, MA, USA; www.childrenshospital.org) has found that sitagliptin, an FDA-approved drug to lower blood sugar in Type 2 diabetes, also cuts mortality in diabetic patients hospitalized with COVID-19 by as much as half. The researchers found that patients who received sitagliptin in addition to insulin had a mortality rate of 18%, as compared with 37% in matched patients receiving only insulin.

Enlivex Reports Positive Allocetra Trial Results in COVID-19 Patients

Enlivex Therapeutics Ltd. (Nes Ziona, Israel; www.enlivex.com), a clinical-stage immunotherapy company, has reported positive top-line results of an investigator-initiated clinical trial of Allocetra in COVID-19 patients in severe/critical condition. The clinical trial included five COVID-19 patients, three in severe condition and two in critical condition. All five patients had complete recovery from their respective severe/critical condition and were released from the hospital after an average of 5.5 days (severe) and 8.5 days (critical), following administration of Allocetra, at which time they were all COVID-19 PCR negative.

Medela's Portable Medical Surgical and Airway Suction Devices for Safety amidst COVID 19

Medela Healthcare (Baar, Switzerland; www.medelahealthcare.com) mobile suction devices - a safer alternative to wall vacuum - can help expand critical care capacity and support UK hospitals in the fight against COVID-19. Medela offers a range of portable suction pumps which are available with a virus filter capable of reducing cross-contamination from COVID-19 with filtration efficiency of greater than 99.99987%. These compact devices offer flexibility to hospitals while reducing the risk of viral transmission.

COVID-19 Machine-Learning Algorithm Secures FDA EUA

COViage, a machine learning algorithm-driven Hemodynamic Instability and Respiratory Decompensation Prediction System, developed by Dascena, Inc. (Oakland, CA, USA; www.dascena.com), has received Emergency Use Authorization (EUA) from the US Food and Drug Administration (FDA). The system is authorized for use by healthcare providers in the hospital setting for adult patients with confirmed COVID-19 to assist with the early identification of patients likely to experience hemodynamic instability or respiratory decompensation.

Approved MS Drug Inhibits Replication of SARS-CoV-2 in Lung Cells

In a new study, biomedicine researchers at the Aarhus University (Aarhus, Denmark; www.international.au.dk) have shown that a drug called dimethyl fumarate (DMF), which is approved for the treatment of multiple sclerosis

Cont'd on page 5

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İmtiyaz Sahibi: M. Geren • **Yazı işleri Müdürü:** Ersin Köklü
Müşir Derviş İbrahim Sok. 5/4, Esentepe, 34394 Şişli, İstanbul
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Cont'd from page 4

(MS) patients, inhibits the growth of a range of viruses in the body's cells and that this includes the coronavirus (SARS-CoV2) – at least when the researchers test it in a test tube. The drug not only effectively inhibits the coronavirus when tested on human lung cells but also fights the immune reaction that is killing COVID-19 patients around the world.

New Drug Could Be Life-Saving COVID-19 Treatment

NeuroRX, Inc. (Wilmington, DE, USA; www.neurorxpharma.com) has developed RLF-100 (Aviptadil), a synthetic form of Vasoactive Intestinal Peptide (VIP), which has been granted Fast Track Designation by the US FDA for the treatment of Critical COVID-19 with Respiratory Failure. The man-made version of VIP which is known to be highly concentrated in the lungs, where it inhibits coronavirus replication, blocks the formation of inflammatory cytokines, prevents cell death, and upregulates the production of surfactant. The FDA has now granted IND authorization for intravenous and inhaled delivery of RLF-100 for the treatment of COVID-19 and awarded it Fast Track designation.

New COVID-19 Treatments to Target Liquid Jelly in Patients' Lungs

A group of researchers at the Translational Research Centre at the Umeå University (Umeå, Sweden; www.umu.se) have established the active agent in the jelly formed in the lungs of some patients who die of severe COVID-19 and respiratory failure, potentially opening up the path to the development of new effective treatment therapies. The researchers have also shown that the jelly consists of the substance hyaluronan, which is a polysaccharide in the glycosaminoglycan group.

Researchers Create SARS-CoV-2 Clone

Researchers at the Texas Biomedical Research Institute (San Antonio, TX, USA; www.txbiomed.org) have applied a novel reverse genetics approach to create recombinant SARS-CoV-2, which is a cloned virus that behaves like the original virus both in cultured cells and hamsters, and will aid in the development of SARS-CoV-2 antivirals and vaccines. Through the process of reverse genetics via bacterial artificial chromosome (BAC), the scientists created a recombinant SARS-CoV-2. This was the first SARS-CoV-2 study to use this approach, which will facilitate the development of live-attenuated vaccines to combat the disease.

SARS-CoV-2 Surface Adopts 10 Different Structural States upon Contact with ACE2

Researchers in the Structural Biology of Disease Processes Laboratory at the Francis Crick Institute (London, UK; www.crick.ac.uk) have discovered that spike protein on the surface of the SARS-CoV-2 coronavirus can adopt at least 10 distinct structural states, when in contact with the human virus receptor ACE2. This new insight into the mechanism of infection will equip research groups with the understanding needed to inform studies into vaccines and treatments.

Blocking Immune System Pathway Could Stop COVID-19 Infection

A recent study by researchers at Johns Hopkins Medicine (Baltimore, MD, USA; www.hopkinsmedicine.org) has shown that blocking a specific protein in a biological pathway may prevent SARS-CoV-2 infection and keep the virus from misdirecting the immune system against healthy cells and organs. Making the discovery even more exciting is that there may already be drugs in development and testing for other diseases that can do the required blocking.

Study by Scientists Who Discovered SARS Could Lead To Development of COVID-19 Treatment

In a new study, Ling Chen and Nanshan Zhong of China's National Clinical Research Center for Respiratory Disease and Jian Han, Faculty Investigator at the Hudson Alpha Institute (Huntsville, AL, USA; www.hudsonalpha.org) and founder of iRepertoire used sequencing to characterize the immune system of COVID-19 survivors from symptom onset through recovery. They also identified a potent biomarker for predicting disease progression, thus opening the path for the development of a COVID-19 treatment inspired by a person's own immune system. Han is among the group of doctors that first diagnosed SARS and played an instrumental role in treating and controlling the disease.

SARS-CoV-2 Neutralizing Antibodies Fade Quickly

SARS-CoV-2 antibody levels in the blood of COVID-19 patients decline rapidly during the weeks after their bodies have cleared the virus and symptoms have subsided, according to a new study by researchers at the University of Montreal (Montreal, QC, Canada; www.umontreal.ca). In their analysis of blood samples collected at one-month intervals from individuals who were recovering from COVID-19, the researchers found that the levels of Immunoglobulins G, A, and M that target the binding site declined between six and 10 weeks after the onset of symptoms and the ability of the antibodies to neutralize the virus also reduced over the same period.

COVID-19 Antibody Cocktail Unlikely To Be Widely Available

The experimental antibody drug cocktail being developed for the treatment of COVID-19 is unlikely to become widely available as it would be impossible to make enough for everyone who needed it, according to Bill Anderson, drugs chief at Roche Holding AG (Basel, Switzerland; www.roche.com). Anderson said that despite Roche's efforts to scale up production of the antibody drug cocktail, the treatment would not be available for everyone who needed it because it was impossible to produce enough for everyone.

Existing Medications Could Speed Recovery of COVID-19 Patients

Researchers at the University of New Mexico (UNM Albuquerque, NM, USA; www.hsc.unm.edu) who combed through a "library" of previously approved drugs believe they have identified a medication with the potential

Cont'd on page 6

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Cont'd from page 5

to help speed a COVID-19 patient's recovery from SARS-CoV-2 infection. The researchers found that an older anti-malarial drug called amodiaquine was effective in eradicating the SARS-CoV-2 virus in test tube experiments. Two other drugs - an anti-psychotic called zuclophentixol and a blood pressure medication called nebivolol - also cleared the virus in the experiments.

Study Identifies What Makes SARS-CoV-2 Highly Infectious and Spread Rapidly

In a major breakthrough, an international team of scientists led by the University of Bristol (Bristol, UK; www.bristol.ac.uk) has potentially identified what makes SARS-CoV-2 highly infectious and able to spread rapidly in human cells. In their published findings, the researchers have described how the virus's ability to infect human cells can be reduced by inhibitors that block a newly discovered interaction between virus and host, demonstrating a potential anti-viral treatment.

Corticosteroids Found to Be Most Effective Treatment for Cytokine Storm in COVID-19

Researchers from The Feinstein Institutes for Medical Research (New York, NY, USA; www.feinstein.northwell.edu) and Northwell COVID-19 Research Consortium have identified the most effective immunomodulatory therapies to treat COVID-19 patients with evidence of cytokine storm and improve patient survival. The researchers hope that the findings are useful for frontline providers to care for severely ill COVID-19 patients and to aid in the future design of large randomized controlled clinical trials, the gold standard of medical research.

Spectral CT Improves Detection of Early-Stage COVID-19

A new study by researchers at the Antony Private Hospital (Paris, France; www.ramsaygds.fr) has found that the use of spectral CT with electron density imaging improved the assessment of lung lesion extent in patients with early-stage COVID-19. With the results indicating electron density imaging improves early assessment of the extent of ground-glass opacities that could be missed by conventional CT, electron density showed the most promising results by enhancing the contrast of ground-glass opacities compared with the normal lung.

Potential Cancer Drug Shows Promise against COVID-19

A potential cancer drug that works by preventing the supply of glucose molecules to the cancerous cells has shown efficacy on COVID-19 patients in clinical trials conducted by drug-maker Dr. Reddy's Laboratories (Hyderabad, India; www.drreddys.com). The drug, 2-Deoxy-D-Glucose oral powder, also called 2-DG, prevents the supply of glucose molecules to the cancerous cells, which are dependent on glucose for survival. The cancerous cells begin to die after the drug stops the glucose supply. 2-DG is not yet approved for cancer treatment but demonstrated efficacy on COVID-19 patients in the Phase 2 trial.

Closed-Circuit Nebulizer Technology to Help Deliver COVID-19 Inhaled Therapies

A closed-circuit nebulizer technology developed by Aerogen (Galway, Ireland; www.aerogen.com) that is being used in hospitals to deliver aerosolized medication to critically-ill ventilated COVID-19 patients, will help ensure safe delivery of inhaled antiviral drugs for the treatment of COVID-19. Aerogen has entered into an agreement with Synairgen plc (Southampton, UK; www.synairgen.com) to provide the Aerogen Solo/Ultra nebulizer system for the delivery of SNG001 directly into the lungs of COVID-19 patients. SNG001 is an inhaled interferon beta that stimulates the innate immune system. Initial investigation of SNG001 as a potential COVID-19 treatment has been promising.

Inhaled Antibody from Convalescent COVID-19 Patients Could Treat SARS-Cov-2 Lung Infection

Aridis Pharmaceuticals (San Jose, CA, USA; www.aridispharma.com) has developed a highly neutralizing monoclonal antibody AR-711, discovered from convalescent COVID-19 patients, that successfully eliminated all detectable SARS-CoV-2 virus in infected animals at substantially lower doses than parenterally administered (injected) COVID-19 monoclonal antibodies (mAb). The potency of AR-711 and its direct delivery to the lungs by inhaled administration may facilitate broader treatment coverage and dose sparing not achievable by parenteral administration.

Aspirin Use Reduces Risk of Death in Hospitalized COVID-19 Patients

A new landmark study led by researchers at the University of Maryland School of Medicine (Baltimore, MD, USA; www.medschool.umaryland.edu) has found that hospitalized patients who were taking daily aspirin had lower risk of ICU admission, ventilation, and dying from the SARS-CoV-2 virus. The study provides "cautious optimism" for an inexpensive, accessible medication with a well-known safety profile that could help prevent severe complications, according to the researchers.

Discovery of Helpful and Harmful COVID-19-Related Genes to Aid Development of New Therapies

Researchers at Yale University (New Haven, CT, USA; www.yale.edu) and the Broad Institute

Cont'd on page 8

Advanced Systems Tackle Challenges of COVID-19 Screening in Hospitals

A newly devised scoring system was designed to help doctors identify COVID-19 patients more likely to develop severe infections with potentially life-threatening complications.

Investigators at the Royal College of Surgeons in Ireland (Dublin, Ireland; www.rcsi.com) evaluated the relationship between the ratio of interleukin (IL)-6 to IL-10 and subsequent clinical outcome in 80 patients hospitalized for COVID-19. They used their findings to create a simple five-point linear score predictor of clinical outcome, the Dublin-Boston score.

The two interleukins are molecular messengers linked to the body's immune response to inflammation. In general, IL-6 is pro-inflammatory while IL-10 is anti-inflammatory.

The investigators associated the IL-6:IL-10 ratio with (a) baseline biomarker levels, (b) change in biomarker level from day 0 to day two, (c) change in biomarker from day 0 to day four, and (d) slope of biomarker change throughout the study. Based on the changes in the ratio of the two biomarkers over time, the investigators formulated a point system where each one-point increase was associated with a 5.6 times increased odds for a more severe outcome.

"The Dublin-Boston score is easily calculated and can be applied to all hospitalized COVID-19 patients," said Dr. Noel G. McElvaney, professor of medicine, at the Royal College of Surgeons in Ireland. "More informed prognosis could help determine when to escalate or deescalate care, a key component of the efficient allocation of resources during the current pandemic. The score may also have a role in evaluating whether new therapies designed to decrease inflammation in COVID-19 actually provide benefit."

The Dublin-Boston scoring system was described in the October 8, 2020, online edition of the journal *EbioMedicine*.

New AI-Based Tool Determines which COVID-19 Patients Need Hospitalization

A new artificial intelligence (AI)-based score considers multiple factors to predict the prognosis of individual patients with COVID-19 seen at urgent care clinics or emergency departments.

The tool, which was created by investigators at Massachusetts General Hospital (MGH Boston, MA, USA; www.massgeneral.org), can be used to rapidly and automatically determine which patients are most likely to develop complications and need to be hospitalized. Recognizing the need for a more sophisticated method to identify outpatients at greatest risk for experiencing negative outcomes, a multidisciplinary team of experts in neurology, infectious disease, critical care, radiology, pathology, emergency medicine and machine learning designed the COVID-19 Acuity Score (CoVA) based on input from information on 9,381 adult outpatients seen in MGH's respiratory illness clinics and emergency department between March 7 and May 2, 2020.

CoVA demonstrated excellent performance in predicting which patients would fall into these categories. Among 30 predictors - which included demographics like age and gender, COVID-19 testing status, vital signs, medical history and chest X-ray results (when available) - the top five were age, diastolic blood pressure, blood oxygen saturation, COVID-19 testing status and respiratory rate.

"While several other groups have developed risk scores for complications of COVID-19, ours is unique in being based on such a large patient sample, being prospectively validated, and in being specifically designed for use in the outpatient setting, rather than for patients who are already hospitalized," said Shibani Mukerji, MD, PhD, associate director of MGH's Neuro-Infectious Diseases Unit. "CoVA is designed so that automated scoring could be incorporated into electronic medical record systems. We hope that it will be useful in case of future COVID-19 surges, when rapid clinical assessments may be critical."

New Technology Enables Touchless Respiratory and Heart Rate Measurement for COVID-19 Health Screening

Researchers have developed a new technology that provides a contactless method to add respiratory rate and heart rate to temperature readings, making it particularly relevant to detecting illnesses such as the flu and COVID-19.

The team of researchers led by the University of Michigan (Ann Arbor, MI, USA; www.umich.edu) has developed a new way to measure respiratory rate, heart rate and heart rate variability. Together with body temperature, these important indicators could identify a respiratory infection early - before a worker or student feels ill. The technology, which was recently issued a US patent, can aid in detecting illnesses such as the flu and COVID-19, but can also be used to detect stress and other physiological conditions. In keeping with social distancing, the system can perform the health screening on masked participants from beyond six feet away. The new software can be deployed in a stand-alone device or in systems that include a time-of-flight camera, such as the latest flagship smartphones from Apple, Samsung and LG.

"Respiratory rate is not typically monitored due to lack of easy technology, but it is often the first sign of deterioration as the body attempts to maintain oxygen delivery to the tissues," said Mohammed Islam, a professor of electrical engineering and computer science who is leading the research. "We're using the very latest technology that is becoming available on smart phones to provide more accurate monitoring of overall health, while protecting caregivers and others tasked with taking health readings from highly infectious diseases."

Cont'd on page 16

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DIRECT X-RAY RULER
Fluke Biomedical

The RaySafe DXR+ is a pocket-sized, fully automatic direct X-ray ruler that operates down to 30 kVp, giving objective, reproducible and immediate read-out. Extremely easy to use as it's powered on by simply exposing the meter.

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Cont'd from page 6

of MIT and Harvard (Cambridge, MA, USA; www.broadinstitute.org) screened hundred of millions of cells exposed to the SARS-CoV-2 and MERS viruses, and have identified dozens of genes that enable the viruses to replicate in cells, as well as those that seem to slam the door on the virus. The pro-viral and anti-viral roles of these genes will help guide scientists in development of new therapies to combat COVID-19, according to the researchers.

Novartis Collaborates with Molecular Partners AG

Novartis (Basel, Switzerland; www.novartis.com) and Molecular Partners AG (Zurich, Switzerland; www.molecularpartners.com) have signed an option and license agreement to develop, manufacture and commercialize Molecular Partners' anti-COVID-19 DARPin program, consisting of two therapeutic candidates, MP0420 and MP0423. The collaboration aims to leverage Molecular Partners' proprietary DARPin technologies and Novartis broad expertise in global drug development, regulatory affairs, manufacturing and commercialization to rapidly advance the program in keeping with the unprecedented global urgency created by the pandemic.

New Technology Enables Touchless Respiratory and Heart Rate Measurement for COVID-19

A team of researchers led by the University of Michigan (Ann Arbor, MI, USA; www.umich.edu) has developed a new technology that provides a contactless method to add respiratory rate and heart rate to temperature readings, making it particularly relevant to detecting illnesses such as the flu and COVID-19. The technology, which was recently issued a US patent, can aid in detecting illnesses such as the flu and COVID-19, but can also be used to detect stress and other physiological conditions.

COVID-19 Patients Produce Strong Antibody Response to SARS-CoV-2 That Lasts For Months

The vast majority of individuals infected with mild-to-moderate COVID 19 mount a robust antibody response that is relatively stable for at least five months, according to new research conducted by the Icahn School of Medicine at Mount Sinai (ISMMS New York, NY, USA; www.icahn.mssm.edu). The study also found that this antibody response correlates with the body's ability to neutralize (kill) SARS-CoV-2, the virus that causes COVID-19.

CTA Scans Offer Fast and Early Detection of COVID-19 in Stroke Patients

Examination of the lungs via computed tomography angiogram (CTA) scans helped researchers at the Albert Einstein College of Medicine (New York, NY, USA; www.einstein.yu.edu) screen for and detect COVID-19 earlier than traditional nasal swab tests in acute stroke patients. In their study, the researchers using CTA scan results in combination with COVID-19 symptom questionnaires were able to detect COVID-19 with 83% accuracy.

AI Algorithm Analyzes Chest X-Rays to Detect COVID-19 in Seconds

A team of researchers at the University of Minnesota (Minneapolis, MN, USA; www.twin-cities.umn.edu) recently developed and validated an artificial intelligence (AI) algorithm that can evaluate chest X-rays to diagnose possible cases of COVID-19. When a patient arrives in the emergency department with suspected COVID-19 symptoms, clinicians order a chest X-ray as part of standard protocol. The algorithm automatically evaluates the X-ray as soon as the image is taken. If the algorithm recognizes patterns associated with COVID-19 in the chest X-ray - within seconds - the care team can see that the patient likely has the virus.

Fujifilm Launches Droplet-Reduction Mouthpiece

FUJIFILM Corporation (Tokyo, Japan; www.fujifilm.com) has launched a new droplet reduction mouthpiece named B1 to potentially increase safety and reduce risks arising from COVID-19 during endoscopy procedures. The mouthpiece B1 incorporating a sponge rubber, a droplet reduction accessory, and a drape shield specifically created to catch and reduce the droplets emitted by the patient during endoscopic examination of the upper gastrointestinal tract, helps minimize the risk to healthcare workers and fellow patients from becoming infected with COVID-19 and various other pathogens.

Nasally Administered Drug Could Generate Nasal Mucosal Immunity against SARS-CoV-2

Tiziana Life Sciences plc (London, UK; www.tizianalifesciences.com) has initiated clinical trial with COVID-19 patients in Brazil with nasally administered Foralumab, a fully human anti-CD3 monoclonal antibody that could generate nasal mucosal immunity against SARS-CoV-2 in the respiratory tract and lungs. Since reduced or defective levels of T regulatory (Tregs) cells in the blood seem to be associated with the severity of COVID-19 and acute respiratory distress syndrome (ARDS), nasally administered Foralumab, by acting locally, could potentially suppress excessive cytokine storm and hyperinflammation in respiratory tract and lungs of COVID-19 patients.

Free AI Software for Rapid Detection of COVID-19 from CT Scans

Novarad (Salt Lake City, UT, USA; www.novarad.net) has launched a new artificial intelligence software for the detection of COVID-19 from Computed Topography (CT) scans that is available for free download world

Cont'd on page 9

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Secondary Body MRI Interpretations Hold Cognitive Errors

Secondary interpretations of body magnetic resonance images (MRI) show a high rate of discrepancies, according to a new study.

Researchers at Los Angeles County+USC Medical Center (CA, USA; www.dhs.lacounty.gov) and the University of Vermont Medical Center (UVMC; Burlington, VT, USA; www.uvmhealth.org) conducted a retrospective study of 357 secondary MRI reports in order to determine the discrepancy rate and the most common reasons for discrepancies between abdominal and pelvic MRI reports obtained from outside institutions, and secondary interpretations of these reports by a radiologist at a tertiary care center.

The researchers then reviewed the outside reports, compared them with the secondary interpretations, and categorized the cases as discrepancy or no discrepancy. Discrepancies were then subdivided based on the most likely reason for the error, using previously published categories, which were also divided into perceptive and cognitive errors. The results revealed that 68.9% of the secondary interpretations had at least one discrepancy. Most of the discrepancies were related to abdominal and pelvic MRI scans.

The most common reason for error was faulty reasoning (34.3%), a cognitive error characterized by misidentifying an abnormality. Satisfaction of search (a perceptive error), was the most common reason for a second discrepancy (15%), suggesting that the MRI scan was probably done to answer a specific question, and once determined, the radiologist likely did not examine the rest of the scan for any other abnormalities. The study was published on October 14, 2020, in American Journal of Roentgenology.

"This difference between cognitive and perceptual errors may be explained by the fact that abdominal and pelvic MRI is frequently not the first imaging modality used, and is often performed to characterize an abnormality detected on CT or ultrasound," concluded lead author Danielle Kostrubiak, MD, of UVMC, and colleagues. "The abnormality has already been perceived by the time MRI is performed. The data suggest that subspecialty interpretations should be encouraged at tertiary care centers, and institutions should provide adequate resources for these interpretations to occur."

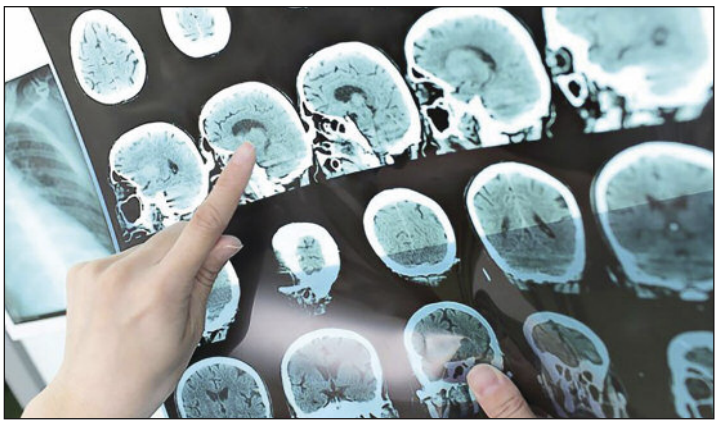

Image: MRI scans should be avoided in COVID-19 patients (Photo courtesy of Shutterstock)

Cont'd from page 8

wide, enabling fast, accurate diagnosis of the novel coronavirus at no cost for healthcare workers around the world. In partnership with Intel Corp., and leveraging Azure, Microsoft's cloud computing service, Novarad is offering free use of its diagnostic system that combines DICOM routing, encryption, an AI processing engine, and secure reporting for the detection of COVID-19 from CT scans.

Scientists Discover Fastest Way to Identify Antibodies against SARS-CoV-2

Scientists at the University of Pittsburgh School of Medicine (Pittsburgh, PA, USA; www.medschool.pitt.edu) have discovered the fastest way to identify potent, neutralizing human monoclonal antibodies against SARS-CoV-2, the virus that causes COVID-19. The method has proved to be successful in animal studies on an antibody called "Ab1" which is on track for human clinical trials by early next year.

Engineered Decoy ACE2 Receptors Neutralize Coronavirus

Researchers at the University of Illinois at Urbana-Champaign (Champaign, IL, USA; www.illinois.edu) have developed a decoy receptor that, in tissue cultures, binds to and neutralizes the coronavirus that causes COVID-19. The researchers conducted a new study which suggested that luring the virus with a decoy - an engineered, free-floating receptor

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DR SYSTEM
General Medical Merate

The Kalos multi-functional direct digital radiography system features a motorized elevating table with a fixed tabletop and floating detector under the top to perform examinations without need for patient repositioning.

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MOBILE DR SYSTEM
Browiner

The MobileGenius mobile DR system features a high frequency generator and X-ray tube with large heating capacity, providing powerful sources for high quality X-ray output. High pixel imaging ensures superior quality digital images.

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VENTILATOR
Ertunc Ozcan

The VELA COMPREHENSIVE ventilator for pediatric and adult patients offers advanced non-invasive ventilation with leakage compensation of 60 liters per minute. It offers patented turbine technology and an internal nebulizer.

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New CyberKnife System Launched Globally

The next-generation of the CyberKnife platform, a robotic, non-invasive radiation therapy (RT) device, can treat cancerous and benign tumors throughout the body.

The Accuray (Sunnyvale, CA) CyberKnife S7 System combines speed, advanced precision, and real-time artificial intelligence (AI)-driven motion tracking and synchronization treatment for the delivery of all stereotactic radiosurgery (SRS) and stereotactic body radiation therapy (SBRT) treatments in as little as 15 minutes, Thanks advanced techniques that deliver sub-milimetric, hypo-fractionated RT, patients can receive very high doses of targeted radiation that is administered in a few days, versus conventional fractionation where treatments often require up to 35 visits.

Patient benefits include a shorter overall course of treatment and a major reduction in the risk of side effects due to patients shifting position, breathes or coughs, muscles that tense and relax, and fluids and gasses that displace internal organs. Since such movements can impact the location of the tumor target, The CyberKnife uses Synchrony motion synchronization technology that adapts radiation delivery in real-time to patient and/or tumor movement by using thousands of unique angles, expanding the possible positions from which radiation beams can be delivered.

"We are proud to be the first center in the world to treat patients with the CyberKnife S7 System, an advanced device that will expand the scope of tumors we can treat," said Anand Mahadevan, MD, chairman of radiation oncology at the Geisinger Cancer Institute (Danville, PA, USA). "Knowing that the system will automatically adapt treatment delivery for patient or tumor movement gives us the confidence to use SRS and SBRT for intra- and extracranial disease sites throughout the body, providing meaningful benefits to our patients during and after treatment."

"The CyberKnife system has continued to evolve since the first patient was treated more than 25 years ago, and it remains the 'go to' device for clinicians who want to confidently deliver precise and accurate stereotactic treatments on a day-in, day-out basis," said Joshua Levine, president and CEO of Accuray. "With the introduction of the CyberKnife S7 System, Accuray is continuing its legacy of innovation. We believe this new system will make it easier for Geisinger clinicians to successfully deliver SRS and SBRT and achieve their patient-first treatment objectives, a priority for their team and ours."

SBRT is emerging as an attractive option for treating cancers in the lung, head and neck, prostate, liver and other disease sites, with the objective of increasing local control of the target lesion while limiting dose to nearby critical structures and normal tissue. Requirements include precise localization of the target lesion in the treatment planning process; accounting for tumor motion due to respiration or other changes in the body; highly conformal dose distribution to the target volume, including a steep dose gradient to minimize radiation to surrounding healthy tissue; and image-guidance at the time of dose delivery for verification and adjustment of the target localization.

MR Imaging of COVID-19 Patients Should Be Avoided

A new guidance statement by the American College of Radiology (ACR; Reston, VA, USA) recommends that radiologists avoid performing magnetic resonance imaging (MRI) exams on patients diagnosed with, or suspected of having, COVID-19.

The ACR guidance, issued on April 8, 2020, recommends that practitioners minimize the use of MRI except where absolutely necessary, and postpone all non-urgent or non-emergent exams. Prerequisites include implementation of site-specific cleaning and disinfecting protocols, including a 60 minute down-time between patients, to be followed by a cleaning protocol with approved cleaning agents that follow a clockwise, linear, top to bottom pattern on all visible surfaces. The ACR cleaning protocols need to be moderated by local policies, and especially the specific clinical needs of the patients and site, and can change over time.

In addition, MRI exams for patients should utilize standard surgical face masks or respirators (non-N95 respirators), that are known to be known MR Safe masks, prior to coming to the radiology department. Alternatively, when this is not possible, al metallic components from a face mask (such as a nose clip) should be removed prior to, or when necessary, upon the patient's arrival. Tape may be applied across the bridge of the nose section after removing the metal strip for fomite control and to maintain the mask's intended function. If the patient has a tracheostomy, a face mask without metallic component should also be placed over the tracheostomy.

For staff and technologists, personal protective equipment (PPE) should be worn when entering a Zone IV area. The only safety concerns are potentially ferromagnetic components in the PPE (such as staples, metallic band inserts, etc.) and possible translational and rotational forces that the static magnetic field and the static magnetic field gradient may exert upon them. For such equipment, potential risks can be mitigated by such components and replacing them with tape. Powered air-purifying respirators (PAPR) should not be brought into Zone IV, due to the potential risks of adverse interactions with ferromagnetic components of the PAPR system.

AI-Enhanced Ultrasound Shortens Scan Time

Cont'd from cover

an embedded AI platform that features SonoLyst, a fully integrated AI tool with a suite of image recognition tools that automatically identify fetal anatomy in over 20 standard views. A scan assistant tool reduces patient scan times by 45% through simplified workflow and personal protocol customization. SonoBiometry measurements, which are 38% faster than in previous platforms, add three measurements that increase system automation by 60%;

Additional features include SonoCNS, part of GE's Edison intelligence platform, that reduces keystrokes for capturing fetal central nervous system (CNS) planes and measurements by 78%; Tricefy, which enables easy connectivity for instant sharing of scans with patients and colleagues, as well as secure archiving; an interface for 3D printing directly from the system; and simple, fast cleaning, as the system has minimal hard keys, solid surfaces, and a large touchscreen.

"Voluson SWIFT has redefined one of the most essential tools obstetrics and gynecology clinicians rely on, delivering a contemporary design, intuitive user interface, and intelligent workflow supported by AI," said Roland Rott, general manager of women's health ultrasound at GE Healthcare. "In today's environment, where cleanliness and time savings opportunities are critical for clinicians, we're proud to offer a solution that makes our customers' work easier and gives them time back with their patients."

"The Voluson SWIFT is intuitive to use and comes with many options to personalize your preferences on the system, and auto-measurement tools that allow you to focus on the examination, rather than time-consuming adjustments," said gynecologist Ralf Menkhaus, MD, of Kinderwunschzentrum (Minden, Germany). "It's like the machine is helping do some of the thinking for you, which has allowed me to seamlessly integrate it for any obstetric and gynecological exams I need to do."

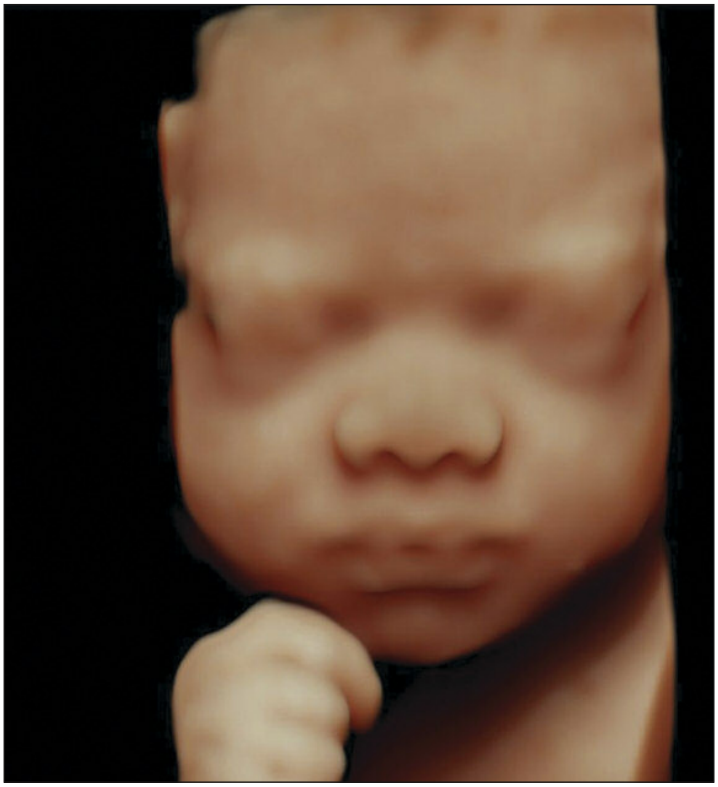

Image: Novel AI algorithms power the Voluson SWIFT OB/GYN ultrasound scanner (Photo courtesy of GE Healthcare)

AI Ultrasound Technologies Advance Fetal Care

New ultrasound workflow solutions improve obstetric measurements and contribute to maternal and fetal safety.

Samsung Medison (Seoul, Korea) BiometryAssist is designed to automate fetal measurements in approximately 85 milliseconds with just a single click, while providing over 97% accuracy. This also helps standardize fetal measurements, which has historically proved challenging. In addition, Samsung Medison is also releasing LaborAssist, which automatically estimates fetal angle of progression (AoP) during labor for a complete understanding of a patient's birthing progress, without the need for invasive digital vaginal exams.

Both BiometryAssist and LaborAssist platforms are artificial intelligence (AI) systems that use an Intel (Santa Clara, CA, USA) Core i3 processor; the Intel Distribution of the OpenVINO toolkit, which facilitates the optimization of a deep learning model from a framework and deployment using an inference engine on Intel hardware; and the OpenCV toolkit, a library of programming functions mainly aimed at real-time computer vision.

"LaborAssist provides automatic measurement of the angle of progression as well as information pertaining to fetal head direction and estimated head station. So it is useful for explaining to the patient and her family how the labor is progressing, using ultrasound images which show the change of head station during labor," said Professor Min Jeong Oh, MD, PhD, of Korea University Guro Hospital (Seoul). "It is expected to be of great assistance in the assessment of labor progression and decision-making for delivery."

"At Intel, we are focused on creating and enabling world-changing technology that enriches the lives of every person on Earth," said Claire Celeste Carnes, strategic marketing director for health and life sciences at Intel. "We are working with companies like Samsung Medison to adopt the latest technologies in ways that enhance the patient safety and improve clinical workflows, in this case for the important and time-sensitive care provided during pregnancy and delivery."

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VENTILATOR
Drager Medical

The Evita V800 ventilator features a brilliant user interface combined with up-to-date glass touch technology to support intuitive operation. It combines high performance ventilation with an aesthetic design.

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ULTRASOUND WAVE DEVICE
Infinium Medical

The PhysioLITE II is a therapeutic ultrasound wave device generating deep heat through ultrasound energy and provides a wide range of pain management treatments. It is equipped with a bright LED screen and head-warming feature.

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DR FLAT PANEL DETECTOR (FPD)
Idetec Medical Imaging

The Digital WiFi Planar Sensor DR is a mobile and light DR flat panel detector that significantly reduces exam time as well as improves image quality. It is available in three different sizes - 10x12 inches (24x30 cm), 14 x17 inches (35x43 cm), 17x17 inches (43x43 cm).

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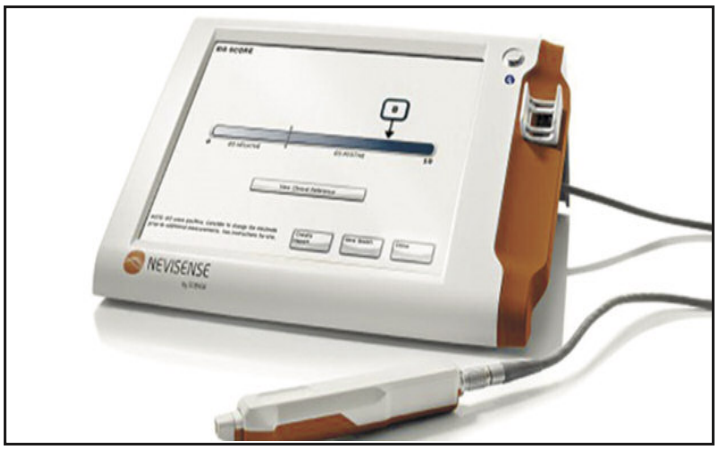
Diagnostic Support Tool Improves Melanoma Detection

A new point-of-care (POC) device helps detect malignant melanoma by gathering and analyzing precise electrical measurements in the skin.

The SciBase (Sundbyberg, Sweden; www.scibase.com) Nevisense device uses electrical impedance spectroscopy (EIS) to extract multi-depth spectra that reflect changes in cellular structure, cellular orientation, and cell sizes. Non-invasive electrodes apply an discreet alternating potential between the bars on the tip of the probe; in order to completely cover the lesion, the measurements are performed in 10 permutations covering both shallow measurements between neighboring electrode bars, as well as deeper measurements between more distant electrode bars.

The EIS measurements at low frequencies are affected by the extracellular environment, whereas both the intra- and extracellular environments affect measurements at higher frequencies. Within seconds, an advanced algorithm classifies the lesion based on measurement data. The results are analyzed and displayed on the



Nevisense screen as an EIS score output reflecting the degree of atypia identified. The result is combined with a visual inspection by a medical professional trained in the clinical diagnosis of skin cancer, and is intended for documentation and not for diagnostic purposes.

In studies to evaluate the differences between practicing dermatologists, physician's assistants, nurses and residents, all clinicians evaluated lesions using visual evaluation only, and then added the Nevisense information. In over 25,000 evaluations, the number of missed melanomas fell from 7% to less than one percent. Overall sensitivity increased on average by 14%, and specificity by 10.2%. In all, clinicians identified 1,343 more melanomas with Nevisense compared to visual evaluation alone.

"Clinicians face difficult decisions every day when they evaluate moles, so it was very positive to see that Nevisense could so significantly improve their accuracy. Nevisense was able to help clinicians of all levels of experience, and especially those who were most in need of support," said Simon Grant, CEO of SciBase. "This is further proof of the potential for Nevisense to improve the standard of care of melanoma detection in the United States and will provide timely support to our ongoing reimbursement process."

Melanoma, an aggressive form of skin cancer, is most often considered fatal once the cells (cutaneous, mucosal, or ocular) convert to metastatic melanoma (also known as stage IV melanoma) and spread through the lymph nodes to distant sites in the body and/or to the body's organs such as the liver, lungs, bones, and brain. Once it becomes metastatic it is usually not amenable to surgical treatment.

Image: The Nevisense EIS device (Photo courtesy of SciBase)

Ambulatory Infusion System Advances Patient Safety

A novel electronic ambulatory infusion pump offers customizable protocols and pump programs for the alternate care market.

The Zyno Solutions (Zyno; Natick, MA, USA; www.zynosolutions.com) Nimbus II Flex ambulatory infusion pump is intended for subcutaneous, percutaneous, perineural, epidural, and intravenous use, including patient-controlled analgesia (PCA) in clinical and other environments, such as the home. A simple-to-use intuitive design facilitates repeated ambulatory continuous low volume infusion protocols, such as in cancer chemotherapy, while the electronically controlled linear peristaltic pump provides delivery rates of 0.1mL/h to 135 mL/h at a maximum infusion pressure of 30 psi, with fluid delivery accuracy of +/- 5%.

Weighing just 174 grams, the Nimbus II Flex features several on-board preloaded ambulatory protocols based on hours and run time. Integrated software and hardware safeguards help prevent programming errors. A range of alarms provide added safety, including cassette loading errors, firmware and system errors, upstream and downstream occlusion alarms, unattended alarm errors, and power warnings. The Nimbus Flex II is powered via a micro-USB port, or by an internal non-rechargeable battery that provides up to 240 hours of battery life or 1,500 mL of volume infused.

"Zyno Solutions is a leader in providing IV infusion technology and is dedicated to delivering intelligent infusion systems that provide the highest quality of care and patient safety," said the company in a press statement. "Zyno Solutions offers technologically advanced products for the alternate care market and provides large volume infusion pumps, ambulatory infusion pumps, integrated wireless infusion systems and IV accessories."

Infusion pumps, used to infuse fluids, medications, and nutrients to the patient's circulatory system, are used in situations where continuous monitoring and treatment by a nurse or other health staff would be expensive, impractical, or unreliable. In addition, they can be used for home-based ambulatory support, where they are used to administer a variety of therapies, including analgesics, narcotics, chemotherapy, and antibiotic or antiviral infusions.

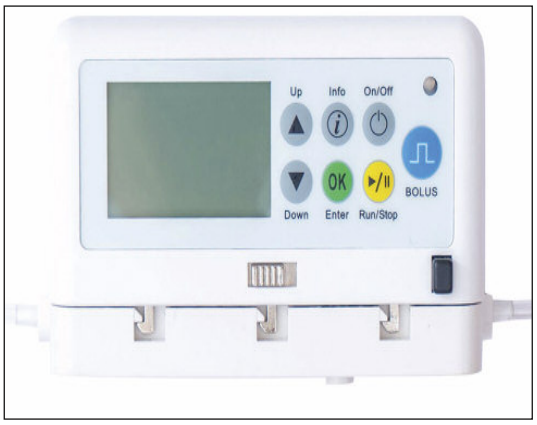


Image: The Nimbus II Flex ambulatory infusion pump (Product courtesy of The Zyno Solutions)

Cont'd from page 9

protein - binds the virus and blocks infection.

Clinical Trial to Test Cystic Fibrosis Drug in COVID-19 Patients

Harvard Medical School (Boston, MA, USA; www.hms.harvard.edu) researchers at Boston Children's Hospital and Brigham and Women's Hospital have begun testing an existing drug, dornase alfa, in patients with severe COVID-19 pneumonia and respiratory failure. Dornase alfa, also known as DNase 1 or Pulmozyme, is FDA-approved for cystic fibrosis to break up thick mucus secretions and prevent lung infections.

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ANESTHESIA WORKSTATION
Heinen & Lowenstein

The Leon Basic "personal anesthesia workstation" combines proven ergonomic design and hygienic concepts with top technology, thus providing optimum support for work, during the initiation and course of operations.

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INFUSION PUMP
Comen Medical

The ME600 infusion pump comes with a sophisticated motor and dual detectors that guarantee infusion precision and stability. Intelligent pulse compensation and heating technology ensure consistency of long-time infusion rate.

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DISPLAY
Philips Healthcare

The Philips IntelliVue AD (Active Display) 85 offers an expanded, real-time view of a patient's vital signs for bedside and remote monitoring in hospital, also supporting infection-control protocols and access to key information.

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Closed-Circuit Nebulizer Delivers Inhaled Medication for COViD-19 Therapy

Cont'd from cover

that will ultimately play in the COVID-19 response. Aerogen is working with pharmaceutical companies worldwide to ensure safe delivery of inhaled therapies for COVID-19. Several of these collaborations are already in clinical trials, with others on track to enter studies on moderately and severely ill COVID-19 patients over the weeks and months ahead.

In one such collaboration, Aerogen has entered into an agreement with Synairgen plc (Southampton, UK; www.synairgen.com) to provide the Aerogen Solo/Ultra nebulizer system for the delivery of SNG001 directly into the lungs of COVID-19 patients. SNG001 is an inhaled interferon beta that stimulates the innate immune system. Initial investigation of SNG001 as a potential COVID-19 treatment has been promising - hospitalized patients receiving SNG001 were at reduced risk of developing severe disease and more than twice as likely to recover to the 'no limitation of activities' level on the ordinal scale over the course of treatment.

The Aerogen Solo is a closed-system, single patient use (vibrating mesh) aerosol drug delivery technology offering superior performance across all hospital ventilation modalities. Designed for the safety of both the patient and the caregiver, Aerogen's closed-circuit design enables the only global aerosol drug delivery system which mitigates the transmission of patient-generated infectious aerosol during ventilation.

"Aerogen is a highly regarded global company known for providing safe and effective aerosol drug delivery," said Richard Marsden, CEO of Synairgen. "Ensuring that SGN001 is paired with optimal delivery technology is a vital component of our work to bring this potential treatment to market at scale. Aerogen is our choice because of its proven reputation for drug delivery efficiency and reliability, suitability for use with a wide range of ventilatory support modalities, established high-volume manufacturing and prior regulatory approvals across the globe."

"In the early days of the pandemic, hospitals were discouraged from using any type of aerosol for COVID-19 treatment – which is understandable given the nature of the virus," said John Power, CEO and Founder of Aerogen. "Now, it's clear to health systems worldwide that aerosol drug delivery can be done with improved safety but is an absolute necessity for managing this global crisis. COVID-19 has only reinforced the important role Aerogen plays in safely and effectively delivering treatments to patients across the world, and we're proud to work with innovators like Synairgen as part of the research and development process for potential COVID-19 vaccines and treatments."

Image: Aerogen Ultra (Photo courtesy of Aerogen)

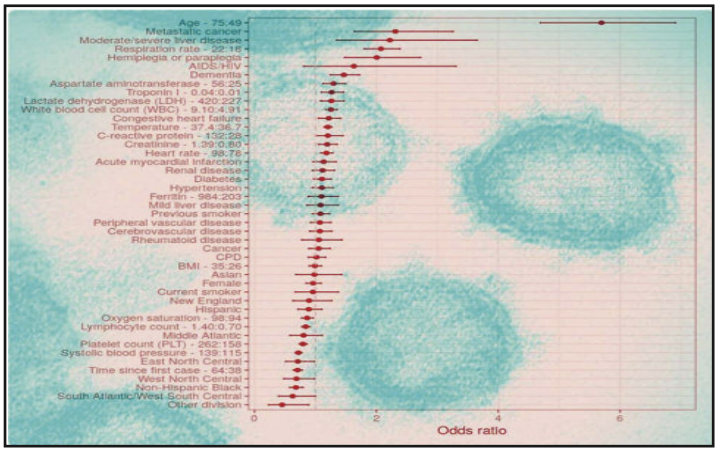
Mortality Risk Factors Identified for Hospitalized COVID-19 Patients

A new study reveals that age is the most important predictor of all-cause mortality in COVID-19 patients, with vital signs and laboratory results also playing a role.

Researchers at Genentech (San Francisco, CA, USA; www.gene.com) conducted a retrospective cohort study in order to develop a prognostic algorithm that could identify and quantify mortality risk factors among patients admitted to the hospital with COVID-19. In all, 17,086 patients hospitalized between February 20 and June 5, 2020 were randomly assigned to either training (80%) or test (20%) sets. The full model included information on demographics, comorbidities, laboratory results, and vital signs. The main outcome measure was all-cause mortality during hospital stay.

The results revealed that age predicted the odds of death very significantly. Laboratory markers such as higher aspartate aminotransferase (AST), troponin, C-Reactive Protein (CRP), and white blood cell (WBC) counts, as well as creatinine and Lactate Dehydrogenase (LDH), were all linked to a higher risk of death, along with thrombocytopenia. In addition, vital signs at admission, such as low oxygen saturation (SpO_2), high respiratory and heart rate, high temperature, and high body mass index (BMI), were also found to be associated with a higher risk of death.

Age exponentially increases the risk of death, with the slope becoming ever steeper as age increased. At 75 years of age, the risk was six-fold higher than at 49 years. For example, the risk of death for a 70-year old and an 80-year-old COVID-19 patient who required hospitalization was 24% and 34%, respectively, but was only 2% for an 18-year-old patient. Other significant risk factors identified were the presence of advanced cancer; liver disease other than in mild degrees; hemiplegia or paraplegia; and dementia. The study was published on September 26, 2020, in *medRxiv*.



"The strong effect of age might be because it not only links to the comorbidities that are listed in the model, but also others that may cause a worse outcome," concluded lead author senior data scientist Devin Incerti, PhD, and colleagues. "Again, advancing age is known to be a predictor of decreased immune function, leading to increased viral persistence, or to an uncontrolled immune response that may cause severe clinical features in COVID-19."

Image: Complete list of odds ratios of mortality (Photo courtesy of Genentech)

ECMO Helps Critically Ill COVID-19 Patients Survive

Extracorporeal membrane oxygenation (ECMO) reduces mortality in critically ill COVID-19 patients to less than 49%, according to a new study.

Researchers at the University of Michigan (U-M; Ann Arbor, USA; www.umich.edu), the University of Toronto (Canada; www.utoronto.ca), the Extracorporeal Life Support Organization (ELSO; Ann Arbor, MI, USA; www.elso.org), and other institutions collated data drawn from the ELSO registry to characterize epidemiology, hospital course, and outcomes of patients aged 16 years or older with confirmed COVID-19 who had ECMO support initiated between Jan 16 and May 1, 2020, at 213 hospitals in 36 countries. The primary outcome was in-hospital death in a time-to-event analysis assessed at 90 days after ECMO initiation.

The results showed that 380 of the patients in the study had died in the hospital, with more than 80% of them dying within 24 hours of a proactive decision to discontinue ECMO because of a poor prognosis. Of the remaining patients, 57% were released to their home, to a rehabilitation center, or were discharged to another hospital or long-term acute care center. The remaining patients were still in the hospital, but survived to reach 90 days after start of ECMO. The study was published on September 25, 2020, in *The Lancet.*

"These results from hospitals experienced in providing ECMO are similar to past reports of ECMO-supported patients, and support recommendations to consider ECMO in COVID-19 if the ventilator is failing," said study co-lead author Ryan Barbaro, MD, MS, of U-M, who also chairs ELSO. "We hope these findings help hospitals make decisions about this resource-intensive option. All of this knowledge can help centers and families understand what patients might face if they are placed on ECMO."

ECMO is a form of veno-venous extracorporeal life support (VV ECLS), an emerging therapy designed to provide a higher level of life support by infusing oxygen directly into the blood using an oxygenator that acts as an artificial lung. A tapered cannula provides omni-directional flow, optimizing gas exchange and reducing stress on the right side of the heart."

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FETAL & MATERNAL MONITOR
Comen Medical

The STAR5000 Fetal & Maternal Monitor is designed for monitoring and diagnosis of the fetus and pregnant women during pregnancy (antenatal) and childbirth. Intelligent three-level audio/visual alarm ensures more accurate analysis.

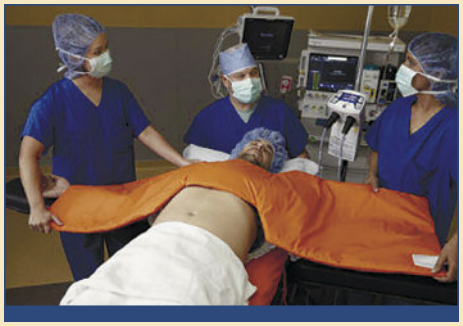
LINKXPRESS.COM HMI-11-20 216

MEDICATION CART
Advantech Europe

The AMiS-850 medication cart includes a medical all-in-one computer, fully integrated cart, E-medication box and intelligent management API. It provides a total solution of delivery, identification, backtracking for CLMA.

LINKXPRESS.COM HMI-11-20 217

PATIENT WARMING SYSTEM
Gentherm



The ASTOPAD™ resistive, reusable patient warming system is safe and simple to operate. It helps prevent and treat hypothermia throughout the perioperative journey for all surgical patients.

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Double-Contrast MRI Detects Small Tumors

Cont'd from cover

TMRET nanoprobe contains nanoparticles of superparamagnetic iron oxide (SPIO) and pheophorbide a-paramagnetic manganese (P-Mn), packaged together in a lipid envelope. Both SPIO and P-Mn give strong, separate signals on MRI, but as long as they are physically close together those signals tend to cancel each other out. When the particles enter tumor tissue, the fatty envelope breaks down, SPIO and P-Mn separate, and both signals appear.

When coupled with a dual-contrast enhanced subtraction imaging (DESI) algorithm, the integrated platform achieves substantially improved contrast enhancement (as compared to fluorescence-based Förster resonance energy transfer). The researchers tested the method in cultures of brain and prostate cancer cells and in mice. With the aid of the TMRET nanoprobe, they achieved a tumor-to-normal ratio as high as 10, which is almost five-fold higher than current methods. The study was published on May 25, 2020, in Nature Nanotechnology.

"This integrated platform achieves a substantially improved contrast enhancement with minimal background signal and can be used to quantitatively image molecular targets in tumors and to sensitively detect very small intracranial brain tumors in patient-derived xenograft models," said senior author biochemist Yuanpei Li, PhD, of UCD. "The high tumor-to-normal tissue ratio offered by TMRET, in combination with DESSI, provides new opportunities for molecular diagnostics and image-guided biomedical applications."

Distance-dependent magnetic resonance tuning (MRET) technology enables sensing and quantitative imaging of biological targets in vivo, with the advantage of deep tissue penetration and fewer interactions with the surroundings tissues. However, applications of MRET technology in vivo are currently limited by the moderate contrast enhancement and stability of T1-based MRET probes.

Advanced Systems Tackle Challenges of COVID-19 Screening in Hospitals

Cont'd from page 7

Portable, Non-Invasive Respiratory Monitoring System Detects COVID-19 in At-Risk Elderly Population

The use of a portable, non-invasive respiratory monitoring system that detects pulmonary gas exchange impairment is proving valuable in monitoring the elderly and those who are at a high-risk of contracting respiratory illnesses like COVID-19.

The AGM100 portable, non-invasive respiratory monitoring system from MediPines (Yorba Linda, CA, USA; www.medipines.com) provides rapid non-invasive pulmonary gas exchange measurements, typically in less than two minutes. The advanced respiratory monitoring system provides a comprehensive respiratory assessment designed to support medical providers with rapid detection of respiratory impairment. The AGM100 has been clinically validated and is FDA cleared and authorized for COVID-19 emergency use by Health Canada.

Elderly and at-risk residents in retirement homes and assisted living facilities are more likely to suffer with comorbidities which can impact the severity and mortality of those with COVID-19. The CDC has also recommended frequent respiratory monitoring of long-term care residents, who are disproportionally impacted by COVID-19. A scientific paper by MediPines outlines the medical rationale behind proper respiratory monitoring. The discussion outlines the use of a non-invasive respiratory assessment for residents who may not be exhibiting classical symptoms (i.e. low oxygen saturation), but still may be suffering from lung damage due to COVID-19, such as "silent hypoxemia."

Digital Tumor Dashboard Improves Case Review Efficiency

A new cloud-based tumor board (TB) integrates all relevant clinical data into a single digital dashboard accessible to everyone.

Developed by Roche (Basel, Switzerland; www.roche.com) and GE Healthcare (GE, Little Chalfont, United Kingdom; www.gehealthcare.com), the NAVIFY Tumor Board is designed to securely integrate and display relevant aggregated patient data, including information from electronic medical records (EMRs), lab results, radiology picture archiving and communication systems (PACS), and pathology reports. All the data is integrated into a single, holistic dashboard for oncology care teams to review relevant patient data residing in disparate systems and inconsistent formats to help determine optimal treatment.

Key features and benefits include active directory (AD) Integration, allowing users to integrate their AD service with the NAVIFY Tumor Board, enabling seamless use of login credentials used throughout the health system; leveraging of the ICD-O-3 dictionary so that clinicians and oncologists can insert patient reviews and notes; and TB timeline event layout improvements, so that the order of the fields on the TB timeline events screen is more consistent with cancer info and patient history screens. On average, the Navify TB can reduce dashboard preparation time by 30%. The biggest time savings are on breast TB, where preparation time is reduced by 69%.

"This dashboard enables easy access to clinical data, which may support optimal decision-making. In addition, it reduces costs for both patients and hospitals. Institutions with dedicated nurses preparing for cases will likely benefit the most," said Professor Richard Hammer, MD, of the University of Missouri School of Medicine (Columbia, USA). "NAVIFY Tumor Board helps physicians collect all of the data in one place so that we can make an informed decision, having all the different factors that might play into selecting the best treatment for the patient."

Multidisciplinary TBs provide an interdisciplinary approach for decision-making in cancer care, and are integral to cancer treatment plans, bringing together clinicians from different specialties to guide patient treatment and improve outcomes. However, TB preparation is time and labor intensive, and requires a concerted effort from multiple hospital staff to compile clinically relevant data from a variety of sources and systems, often from different providers.

Image: A digitized tumor board aggregates all relevant patient data (Photo courtesy of Roche)

Once-Weekly Insulin as Effective as Daily Dose

A basal insulin analogue designed for once-weekly administration has a glucose-lowering efficacy and a safety profile similar to daily insulin in patients with type 2 diabetes (T2D), according to a new study.

Researchers at the University of Texas Southwestern Medical Center (UT Southwestern; Dallas, TX, USA; www.utsouthwestern.edu), Novo Nordisk (Søborg, Denmark; www.novonordisk.com), and other institutions conducted a phase 2 trial of the once-weekly insulin icodec, as compared with the once-daily insulin glargine U100 in 247 patients (randomized on a 1:1 basis) who had not previously received long-term insulin treatment, and whose T2D was inadequately controlled under metformin. The primary end point was change in glycated hemoglobin level (HbA1C) from baseline to week 26.

The mean baseline HbA1C level was about 8% in both groups, with the estimated mean change from baseline level at −1.33% in the icodec group and −1.15% in the glargine group, to estimated means of 6.69% and 6.87%, respectively, at week 26. Mild hypoglycemia was more common with icodec than glargine, but rates of moderate/clinically significant hypoglycemia and severe hypoglycemia did not differ significantly. Most adverse events were mild, and no serious events were deemed to be related to the trial medications. The study was published on September 22, 2020, in the *New England Journal of Medicine (NEJM).*

"Icodec binds to albumin to create a circulating depot with a 196-hour half-life, so the once-weekly injection is designed to cover an individual's basal insulin requirements for a full week, with steady insulin release," said lead author Julio Rosenstock, MD, of UT Southwestern. "It could potentially improve acceptance and likely would facilitate management in T2D patients needing basal insulin, and I think it will be transformational in the way we manage people with T2D requiring insulin."

Insulin is a peptide hormone naturally produced by β cells of the pancreatic islets. It is important for the metabolism of carbohydrates, fats, and protein by promoting the absorption of glucose from the blood. Type 1 diabetes (T1D) occurs when a person's body does not naturally produce insulin; T2D occurs when the body does not efficiently use the insulin that is produced. In either case, a regular dosage of insulin is prescribed to manage the disease, which affects more than 400 million people worldwide.

PRODUCT NEWS

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TREATMENT LUMINAIRE
Derungs Licht

The IRIS LED treatment luminaire is a universal light for every treatment room with a two-stage dimmable illumination strength for providing perfect view of the patient's tissue. LED technology ensures exact color rendering.

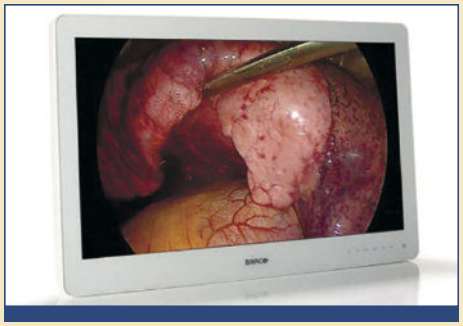
LINKXPRESS.COM HMI-11-20 219

FLUID WARMING CABINET
Enthermics Medical Systems

The EC770L is a large, mobile fluid warming cabinet made of stainless steel that maintains normothermia in high-volume L&D and ER areas, featuring heavy duty cabinets, insulated glass door, and capacity of 54 1-liter bottles.

LINKXPRESS.COM HMI-11-20 220

SURGICAL DISPLAY
Barco



The MDSC-2326 is a 26-inch, near-patient surgical display with LED backlight that delivers excellent image quality with its scratch-resistant optical glass offering durable protection throughout its lifetime.

LINKXPRESS.COM HMI-11-20 221

PEF Cardiac Ablation System Reduces Collateral Damage

An innovative cardiac ablation system utilizes high voltage, high frequency, pulsed electric field (PEF) energy to ablate tissue.

The Galaxy Medical (San Carlos, CA, USA; www.galaxymed.com) Centauri System is an open energy platform that uses PEF technology to improve the safety and efficacy of cardiac ablation by reducing unintentional conductive heating or cooling of extracardiac structures, such as the esophagus, phrenic nerve, and airway. Efficacy is enhanced by creation of full-thickness, transmural lesions, as therapeutic doses of PEF energy are limited to the myocardium. Hardware and waveform control algorithms enable electrophysiologists to continue with their established point-by-point clinical workflow, as used in the majority of cardiac ablation procedures.

Key features of the Centauri System include a proprietary user interface; plug and play interfacing with all cardiac mapping and navigation systems; no-compromise compatibility with market-released focal and contact-force sensing catheters; choice of dose settings when treating variable tissue thickness; a proprietary technology that completely eliminates microbubbles (which may cause cerebral or coronary air emboli during PEF delivery); and automated voltage control to prevent both over- and underdosing. A multicenter trial, the ECLIPSE-AF study, is underway to assess the safety and efficacy of the Centauri System

"Our research has consistently demonstrated that PEF with focal catheters yields predictable and transmural lesions, as opposed to inconsistent ablation depth and intermittent electrical stunning associated with multipolar catheters with variable contact," said Jonathan Waldstreicher, MD, CEO of Galaxy Medical. "We look forward to completing enrollment of the ECLIPSE-AF study and sharing the clinical experience in the near future."

"The Galaxy Medical Centauri System operated seamlessly within my atrial fibrillation ablation clinical workflow," said Ante Anić, MD, electrophysiology lab director at University Hospital Split (Croatia), and primary investigator of the ECLIPSE-AF study. "PEF energy is the future of electrophysiology, and Centauri allowed me to deliver it with a standard focal ablation technique to patients under conscious sedation, and without compromising on the ablation catheter, contact force feedback, or cardiac mapping system."

Cardiac catheter ablation procedures are used to treat a variety of cardiac arrhythmias, especially supraventricular tachyarrhythmias such as atrial fibrillation (AF), atrial flutter, and atrial tachycardia. The procedures involve advancing a catheter into the heart and selectively ablating certain areas of tissue in order to prevent the spread of the electrical signals that give rise to the arrhythmia.

Image: Pulsed electric field ablation preserves collateral tissues (Photo courtesy of Getty Images)

Smart Ablation Catheter Treats Persistent Atrial Fibrillation

An innovative catheter offers a patient-tailored ablation approach that provides long-term efficacy for atrial fibrillation (AF) patients.

The Biosense Webster (Diamond Bar, CA, USA; www.biosensewebster.com) Thermocool Smarttouch SF Catheter is intended for patients suffering from drug-resistant paroxysmal AF, persistent AF, sustained monomorphic ischemic ventricular tachycardia (VT), and Type I atrial flutter. When coupled together with the proprietary CARTO 3 System, which delivers radio frequency (RF) energy to the device and provides the control interface, physicians can achieve stable, consistent application of contact force by providing direct, real-time quantitative feedback during catheter ablation procedures.

In a study that enrolled 381 patients with documented symptomatic persistent AF who did not respond or were intolerant of antiarrhythmic drug (AAD), a tailored radiofrequency (RF) ablation strategy was used, with pulmonary vein isolation (PVI) and additional left atrial ablations (PVI+) performed at the operator's discretion, based on the patient's disease state. The results showed that 80% of persistent AF patients experienced clinical success at 15 months following ablation therapy, and 86% experienced freedom from repeat procedures.

"Atrial fibrillation is a progressive disease that becomes harder to treat as symptoms become more severe," said Uri Yaron, worldwide president of Biosense Webster. "We are committed to advancing clinical evidence in partnership with physicians, and this data is encouraging as we continue on our quest to help people live their best lives possible – making sure AF never stands in the way."

PVI was developed to prevent focal triggers in the pulmonary veins from initiating episodes of AF. The procedure initially involved focal ablation with a catheter directly in the pulmonary veins, but isolating the pulmonary veins by applying ablation energy at their junction with the left atrium was found to be more effective. The PVI procedure is most suitable for patients whose recurring symptomatic episodes of AF that have not been suppressed by AAD, or who do not wish to take long-term anti-arrhythmic or anticoagulation medications.

Imageless Navigation System Assists Hip Replacement Surgery

A hand-held total hip replacement (THR) navigation system reduces overall radiation exposure by utilizing imageless technology.

The Naviswiss (Brugg, Switzerland; https://naviswiss.eu) Naviswiss miniature hip navigation system uses proprietary optical tracking technology to provide real-time intra-operative measurements (down to the degree) to accurately determine anteversion, inclination, leg length, and offset. When needed, ultra-lightweight NAVItag trackers are attached to reference the anatomy. The P-tag is fixed to the pelvis with two 3 mm pins via small stab incisions; it serves as fixpoint for cup navigation. The M-tag is seated on the cup impactor. And the F-tag is attached to the femur via a single pin; it is used for leg length and offset navigation.

Relationships between the tags are documented using the camera. Cup inclination and anteversion are displayed in real-time during alignment and insertion. When reducing the joint, the navigation assists in adjusting leg length and offset. Final implantation parameters are documented in a detailed surgical report. The open platform system works with all major hip implants and surgical approaches, as does the magnetic attachment of the NAVItag, which adheres to the cup impactor. The Naviswiss system is portable, and can be easily transported between operating rooms, supporting multiple procedures.

"At Naviswiss we strive to make hip navigation smarter by putting it in the hands of the orthopedic surgeon. Based on our patented Swiss

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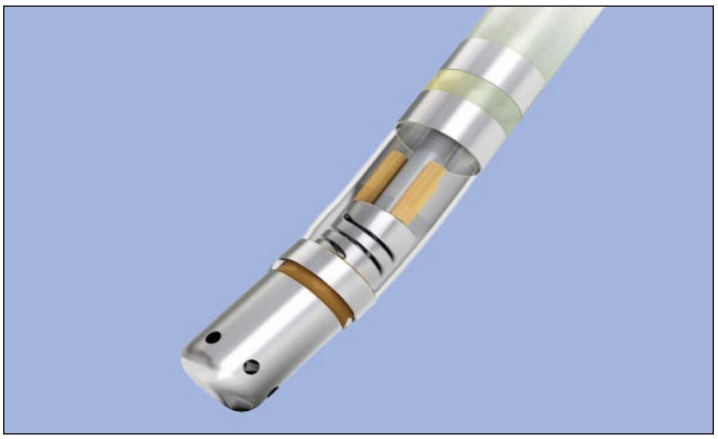


Image: The Thermocool Smarttouch Catheter (Photo courtesy of Biosense Webster)

SUCTION DEVICE
Weinmann

The ACCUVAC Lite is a medical suction device for clearing the airway and features rugged housing and intelligent accommodation of the secretion canister and suction tube, able to evacuate vacuum splints and vacuum mattresses.

LINKXPRESS.COM HMI-11-20 222

EXAMINATION LUMINAIRE
Derungs Licht

The HALUX N50 examination luminaire features a closed design for fast cleaning along with high-quality materials and durable LED technology, making it maintenance free. It offers a light output of 50 000 Lux @ 0.5 m.

LINKXPRESS.COM HMI-11-20 223

SURGICAL MONITOR
FSN Medical Technologies

The FM-D5801DV surgical monitor can show multiple screens at the same time on its large surface area, allowing the staff to view all critical operating room information at once on the large screen display monitor.

LINKXPRESS.COM HMI-11-20 224

Remote Endoscopy with 360° Capsule Camera

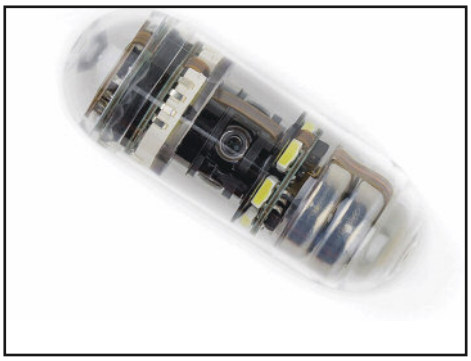
Cont'd from cover

that require a receiver, CapsoCam Plus holds a large-capacity onboard storage system that eliminates the need for external equipment, allowing patients to go to their home and return to their normal activities while the exam data is captured, and also eliminate risks associated with radio frequency (RF) signals.

Once the capsule is expelled from the digestive system and retrieved using a specialized tool, the patient places it immediately into a transport vial and ships it via a prepaid return envelope to the CapsoCloud Download Center, where data is uploaded to a cloud-based exam management system that allows the physician to log on to a secure, HIPAA-compliant portal to access, download, and review patient data. Physicians can also use the same web portal to facilitate data transfer to a host of designated external endoscopy reading services.

"The ability to perform any test remotely minimizes the exposure of patients and physicians, which has become especially important during the COVID-19 pandemic," said gastroenterologist Javier Parra, MD, of Gastro Health (Miami, FL, USA). "Patients can be seen during a telemedicine appointment scheduled at their convenience and in the comfort of their own home, yet still have access to an important cutting-edge diagnostic procedure. In some instances, such as for patients with intermittent bleeding episodes, the timing of testing can be improved, which increases the yield of the test."

"Even under normal conditions, many patients are uncomfortable with or unable to come to the office for endoscopic or capsule endoscopy procedures," said gastroenterologist Ian Storch, DO, of St. Francis Hospital



(Hyde Park, NY, USA). "The FDA's recent special enforcement policy to allow for remote tele ingestions, in response to the COVID-19 pandemic, provides gastroenterologists access to a technology that eliminates the need for patients to make multiple trips to the office, which is especially important for elderly patients and those with comorbidities."

Image: The CapsoCam Plus offers 360° imaging technology (Photo courtesy of CapsoVision)

Tonsillotomy Causes Less Morbidity Than Tonsillectomy

Sub-total reduction of tonsil parenchyma results in far less pain and bleeding than a full tonsillectomy, according to a new study.

Researchers at Flinders University (Adelaide, Australia; www.flinders.edu.au) conducted a retrospective analysis involving 608 children treated for tonsillitis over a ten year period. All children underwent sub-total tonsil reduction (tonsillotomy), or full reduction via tonsillectomy by a single surgeon. Adverse bleeding events were classified using the Flinders modification of Stammberger criteria, and return to normal activity (an indication of pain termination) was defined as resuming a normal diet and return to childcare or day school.

The results showed that children who had their tonsils reduced to leave the tonsillar capsule intact returned to normal activities after an average of about 4.6 days, compared to 11.1 days following a full tonsillectomy. They were also three times less likely to have any form of bleeding, and eight times less likely to have a serious bleeding episode requiring readmission to hospital. The study was published on September 23, 2020, in the *Australian and New Zealand Journal of Surgery*.

"A full tonsillectomy exposes the muscles of the throat, causing pain and a higher risk of bleeding. By removing 90-95% of the tonsil and leaving a small crescent-moon of tissue intact, it leads to much less pain and bleeding, which obviously allows kids to go back to childcare or school so much earlier, as well as reassuring parents there is much less risk of a tonsil hemorrhage," said co-lead author Sara Attard, of the college of medicine and public health.

As tonsillectomy involves the removal of the entire tonsillar capsule, a small portion of pharyngeal muscle is always exposed, resulting in exposure of small blood vessels and free nerve endings. The main risks include hemorrhage and a prolonged return to regular activity due to pain. Tonsillotomy, which is commonly carried out using coblation, microdebrider, diathermy, argon plasma, or laser, leaves the tonsillar capsule intact, providing a less destructive alternative which results in a shorter, uncomplicated recovery period.

Personalized 3D Trials Facilitate Spinal Fusion Procedures

A new oblique lumbar interbody fusion (OLIF) instrument set uses 3D printed trials for safer, more accurate interbody sizing.

The CoreLink (St. Louis, MO, USA; www.corelinksurgical.com) OLIF Instrument Set is a comprehensive solution with nearly 100 instruments and 40 tools made specifically for OLIF procedures, which enable reproducible lateral access to the L5-S1 disc space, eliminating the need to reposition the patient during surgery. Disc preparation and implantation instruments are oblique-angled to provide easy access to the disc space, limiting the need to perform any implant rotation or other instrument maneuvers that may excessively strain surrounding anatomical structures.

The OLIF instrument set includes patent-pending 3D printed trials visible only under fluoroscopy to facilitate interbody sizing, implant selection, and operative workflow. Additional features include a range of 18mm and 22mm Cobbs curettes; distractors, osteotomes, and rasps; rapid access to the intervertebral disc space via a versatile retractor system; and multiple biocompatible interbody materials, including proprietary Corelink CL5 polyetheretherketone (PEEK) and F3D Titanium alloy lateral interbody cages.

"The addition of OLIF instrumentation bolsters our minimally invasive spine surgery options and builds on our robust lateral access, fusion, and stabilization platforms. We've taken the approach a step further with 3D printed surgical steel instrumentation, our latest foray into additive manufacturing technology," said Jay Bartling, CEO of CoreLink. "This allows us to build lightweight instruments with features that would not be possible using traditional subtractive methods. We challenged ourselves to a strong year of product development and our team has been consistently delivering."

Traditional posterior fusion techniques require the dissection and retraction of back muscles, bones, vessels, ligaments, and nerves; whereas the traditional anterior approaches through the abdominal musculature risk injury to major vascular structures such as the aorta and iliac vessels, as well as the very delicate genitourinary structures. The lateral approach addresses spinal pathology utilizing dynamic real-time nerve localizing and monitoring techniques, thus minimizing surrounding tissue trauma and maximizing safety and efficacy.

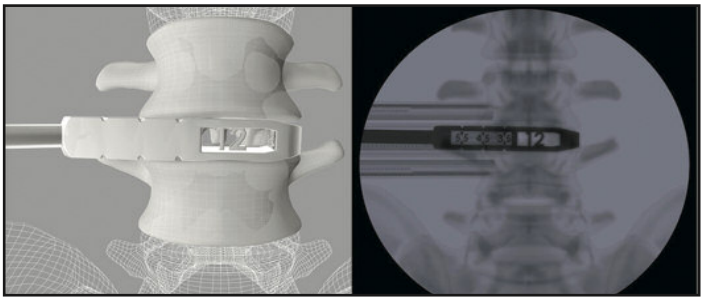


Image: 3D OLIF Trials feature height and length measurements visible only under fluoroscopy (Photo courtesy of CoreLink)

Imageless Navigation System Assists Hip Replacement Surgery

Cont'd from page 19

technology, the Naviswiss system guides the surgeon through three easy steps," said Jan Stifter, CEO of Naviswiss. "The relevant results are provided with digital precision and are used to precisely position the implant and to document the outcome. We are convinced that our system helps improve the quality of surgery to benefit the patient and health care system."

A hip replacement implant is a ball-and-socket mechanism, designed to simulate a human hip joint and mimic its movement. Typical components include a stem that inserts into the femur, a ball that replaces the head of the thigh bone, and a shell that lines the hip socket. Assessment of individual patient pelvic tilt and digital measurement of leg length and offset changes are used to achieve more consistent leg length restoration.

MOBILE C-ARM
Siemens Healthineers

The Cios Spin mobile 2D and 3D C-arm offers optimal 3D and 2D imaging for precise intraoperative guidance and versatility to advance therapy outcomes. It provides more new insights and full control over procedures.

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ENDOSCOPY LED LIGHT SOURCE
M.I ONE Co.

The INSIGHT-iL is a light engine made of optical fiber that illuminates an affected area with a high output, cool white LED source by connecting the source to a rigid endoscope. It has a user-friendly operation, simple design.

LINKXPRESS.COM HMI-11-20 226

SURGICAL MONITOR
Ampronix

The Sony LMD-X2705MD is a 27-inch 4K LCD medical-grade surgical monitor that displays bright, high-quality 2D color images with true 4K resolution from endoscopic/laparoscopic cameras and other compatible imaging systems.

LINKXPRESS.COM HMI-11-20 227

Portable MRI Enables Bedside Scans

Cont'd from cover

that require no power or cooling systems, producing an image using radio waves and weak magnetic fields. The Swoop is controlled via a tablet device, using sequences and protocols selected from a playlist; as a result, it is 10X lower in weight than current fixed conventional MRI systems, costs a fraction of the price, is highly portable, and plugs directly into a standard electrical wall outlet, with 35X lower power consumption.

MRI scans are captured at the patient's bedside; once completed, images can be view directly on the tablet or on a smartphone, and can also be sent to the cloud for sharing and consultation, enabling critical decision-making in a range of clinical settings, including neuro intensive care units, emergency departments, pediatrics, ambulatory, outpatient surgery centers, and more. As a complementary system to the traditional MRI, new users can be trained on system operation, device navigation, and device safety in just 30 minutes, helping clinicians to streamline workflow.

"Six years ago, we had a crazy vision to create a new product category for imaging: an affordable point-of-care MRI system," said Jonathan Rothberg, PhD, founder and chairman of Hyperfine Research. "With this clearance from the FDA, we are launching an astonishing new diagnostic tool for patients and providers in our Swoop Portable MRI, and we are delivering on our mission to democratize healthcare across clinical settings and geographies."

MRI scanners can have ultraweak, weak, medium, strong, and superstrong magnetic fields, as measured in Tesla units. Highest-quality scans are usually taken with the aid of superconducting magnetic systems that generate very strong magnetic fields, providing the highest image resolution. But such high-field systems require liquid helium to keep the superconducting magnets cool, which demands high-power consumption, separate facilities, and improved shielding.

A highly portable magnetic resonance imaging (MRI) system wheels directly to the patient's bedside and is controlled via a wireless tablet.

The Hyperfine Research (Guilford, CT, USA) Lucy Point-Of-Care MRI system is a low-field system that is 20X lower in cost, 35X lower in power consumption, and 10X lower in weight than current fixed conventional MRI systems. It also features ordinary permanent magnets that require no power or cooling, producing an image using low-power radio waves and magnetic fields. As a result, the system is highly portable and plugs directly into a standard electrical wall outlet, consuming a fraction of the power of traditional MRI.

Neither does the system require trained technicians, shielded electronics, or separate hospital facilities. The system is controlled from a standard tablet device, such as an iPad. Users choose the appropriate sequences and protocols from a simple playlist. Once the MRI scan has been completed, the images can be view directly on a tablet or smartphone, and can also be uploaded to the cloud for sharing and consultation with colleagues. Hyperfine is also working to develop proprietary artificial intelligence (AI) and deep learning (DL) software to reconstruct images and assist in diagnosis.

"More than 40 years after its first use, MRI remains a marvel; unfortunately, it also remains inaccessible. It's time that MRI made the jump to point of need, just like X-ray and ultrasound have before it. Going beyond that, nearly 90% of the world has no access to MRI at all," said Khan Siddiqui, MD, chief medical officer of Hyperfine Research. "The Hyperfine system was designed to address the limitations of current MRI systems in order to make MRI accessible anytime, anywhere, to any patient."

MRI scanners can have ultraweak, weak, medium, strong, and superstrong magnetic fields, as measured in Tesla units. Highest-quality scans are usually taken with the aid of superconducting magnetic systems that generate very strong magnetic fields, providing the highest image resolution. But such high-field systems require liquid helium to keep the superconducting magnets cool, which demands high-power consumption, separate facilities, and improved shielding.

New Monitoring System Protects Organs During Surgery

A new intraoperative nerve monitoring (IONM) system and a novel parathyroid probe help reduce the risk of tissue damage during head and neck surgery.

The Medtronic (Dublin, Ireland; www.medtronic.com) NIM Vital system enables surgeons to locate and identify nerves, monitor and control manipulation effects, and confirm integrity prior to completing a procedure, with a large touch-screen and streamlined interface providing an intuitive, guided workflow with enhanced visualization. Electromyographic (EMG) electrodes monitor the muscles innervated by the affected nerve, when a particular nerve has been activated or stimulated, the system provides both visual alerts and audio feedback to minimize trauma to the nerve.

Surgeons can use monopolar and bipolar stimulating probes and dissection instruments with the NIM nerve monitoring system to locate, identify, and map the particular nerve and branches, as well as verify nerve function and integrity. The proprietary technology provides real-time feedback on nerve function during intermittent or continuous monitoring, helping to base an informed surgical strategy, increase operative efficiency and precision, and protect the patients' quality of life.

The PTeye parathyroid detection system is a probe-based device designed to help confirm parathyroid tissue identified visually by the physician during thyroid surgery. During such procedures, it is important for surgeons to identify and preserve parathyroid tissue so that it is not inadvertently removed, which may result in low calcium levels (hypocalcemia), a condition that can result in numbness in the fingers and toes, muscle cramps in legs and feet, irritability, and seizures.

"The addition of these two technologies builds on our 20-year legacy of providing innovative solutions that assist surgeons during critical head and neck procedures," said Vince Racano, vice president and general manager of ENT at Medtronic. "By offering these complementary technologies, the NIM Vital system to protect crucial nerves and the PTeye system to help confirm parathyroid tissue identified visually by the surgeon, we're helping physicians address two of the most common challenges during these procedures."

"Protecting critical structures during surgery has evolved to an extensive system that brings crucial information to the surgeon's hands and eyes," said professor of otolaryngology Gregory Randolph, MD, of Harvard Medical School (Boston, MA, USA) and the Massachusetts Eye and Ear Infirmary (Boston, MA, USA). "There are things we can't do with our eyes and our hands. Both the NIM Vital and PTeye systems empower surgeons to improve their procedures, and Medtronic continues to provide these types of important operative solutions."

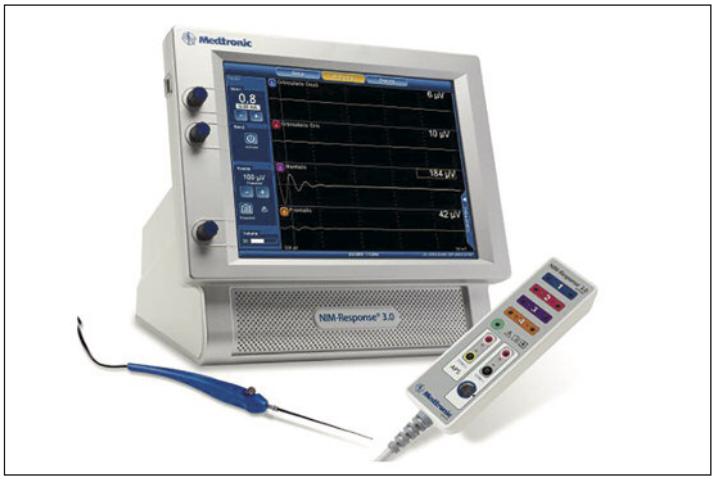


Image: The NIM Vital system monitors nerves during surgery (Photo courtesy of Medtronic)

All-in-One DICOM Recorder Documents Surgical Procedures

An advanced all-in-one surgery recording system works with any current video devices commonly found in suites and labs.

The Nautilus Medical Technologies (Palo Alto, CA, USA; www.nautilusmedical.com) TeleRay Record is designed to provide high-quality medical video recording into digital imaging and communications in medicine (DICOM) format by using MPEG2 and MPEG-4 AVC/H.264 compression. Features include live stream video during the procedure; recording, streaming, playing video, and taking snapshots at the same time; recording multiple low and high definition medical video and snapshots from multiple connected devices simultaneously; and Bluetooth foot pedals for ease of use.

Additional features include flexible patient data assignment by selecting an already existing patient, manually entering patient details, or selecting from the hospital DICOM worklist server; the possibility to start a new study recording, while other video/snapshots are in progress; reviewing medical images and video recordings during the surgery or other procedures; and video trimming. Recorded studies can be stored locally, sent to the hospital DICOM archive, or exported to other storage devices. TeleRay Record can be used with any endoscope, arthroscope, microscope, headset, c-arm, ultrasound, and more.

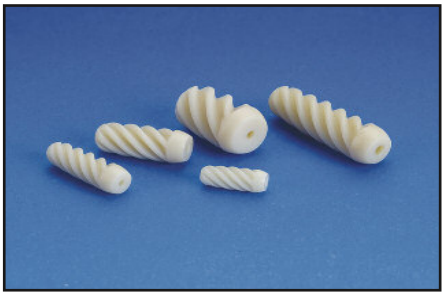
"Providing a lower-cost solution with high-end features is critical in providing clear video into PACs and VNA systems for better clinical decisions and a holistic view of the patient," said Timothy Kelley, CEO of Nautilus Medical Technologies. "Users will be able to store up to 150 hours of HD medical videos from a high-tech medical touch screen PC with a larger screen than prior systems."

Image: Pulsed electric field ablation preserves collateral tissues (Photo courtesy of Getty Images)

Synthetic Screws Enhance Musculoskeletal Tissue Repair

An innovative bioresorbable tendon interference screw system with biological and biomechanical benefits aids tissue attachment during orthopedic procedures.

The Acuitive Technologies (Allendale, NJ, USA) CITRELOCK Interference Screw System is intended to reattach musculoskeletal host tissue during orthopedic surgeries, such as fixation of ligaments or tendon graft tissue repairs of the shoulder, elbow, wrist, hand, knee, ankle, and foot extremities. The system, which is based on proprietary Citregen, a thermoset bioresorbable synthetic polymer made of citrate, a natural anti-microbial and anti-inflammatory molecule that plays a crucial role in bone regeneration by regulating cellular metabolic processes and the formation of mineral structures.



Designed on the molecular level, Citregen guides tissue regeneration by replicating the body's intrinsic cellular biochemical and structural support network, releasing molecules essential for bone formation throughout its bioresorption, leaving behind a biomimetic ceramic structure to be metabolized by the host tissue. This avoids the potential for bulk degradation and chronic inflammation seen in currently available biodegradable polymers. CITRELOCK is available with both reusable surgical instruments and single-use instruments, and in a full range of device sizes.

"Citregen is based on an unprecedented and innovative bioresorbable biomaterial technology developed to support the body's normal healing processes and promote tissue regeneration," said Professor Guillermo Ameer, ScD, founding director of the Center for Advanced Regenerative Engineering at Northwestern University (Chicago, IL, USA). "When used to fabricate devices for reconstruction of tissues such as ligaments, blood vessels, bladder and bone, results have been impressive and beyond expectations."

About 90% of the total citrate in the body is in the bones, which function as its major reservoir. In the bone, citrate is synthesized and excreted by osteoblasts, and it is an important component (1%) of bone apatite crystals. Citrate is released to into plasma during bone resorption.

Image: The CITRELOCK Interference Screw System (Photo courtesy of Acuitive Technologies)

Intuitive Anesthesia Systems Offer Broad Safety Profile

Cont'd from cover

profiles to address different clinical scenarios or use requirements. An automated pre-use system check helps ensure proper function, with a graphical display of errors, and which can be scheduled at any time needed.

Using high flow nasal cannula oxygen (HFNC), the new systems extend safe apnoeic time from 8 to up to 30 minutes to help clinicians intubate more easily. Automatic controlled anesthesia (ACA), an assistive technology that automatically adjusts fresh gas and vaporizer output so as to rapidly reach preset target end-tidal agent and inspiratory oxygen concentration ensures accurate and stable levels of anesthesia. Additionally, powerful protective ventilation toolkits--such as transpulmonary pressure monitoring--are incorporated to reduce the incidence of post-operative complications.

Both systems feature ICU-quality ventilation technologies to protect the patient's respiratory system throughout the perioperative period. Both systems also include a volume exchanger, an innovative sub-system that delivers precise and reliable ventilation to patients with rapid wash-in and wash-out time. Clinical decision-support tools, such as the Optimizer, AA measurement, and AA prediction, suggest the most efficient gas flow to reduce waste. And an electronic anesthetic gas scavenging system (e-AGSS) monitors waste gas scavenging flow rate and indicates anomalies.

"Mindray is committed to improving outcomes by providing all-round safety to patients, clinicians and the environment. We believe these systems are a clear testament to that," said Ralph Zhao, general manager of sales and marketing, patient monitoring and life support at Mindray. "State-of-the-art technologies address the needs of clinicians during the entire perioperative period, allowing them to administer accurate, stable and safe anesthesia to patients, while minimizing the risks of human error, reducing workload, and lowering the environmental impact from the OR."

Both systems can also be physically connected to other Mindray devices to create a highly integrated anesthesia workstation. They can also seamlessly connect to multiple hospital information systems using Mindray's flexible integration solution, so caregivers can check on a patient's status anywhere, anytime.

Image: Then new A9 anesthesia system (Photo courtesy of Mindray)

Imageless Navigation System Assists Hip Replacement Surgery

A hand-held total hip replacement (THR) navigation system reduces overall radiation exposure by utilizing imageless technology.

The Naviswiss (Brugg, Switzerland; www.naviswiss.eu) Naviswiss miniature hip navigation system uses proprietary optical tracking technology to provide real-time intra-operative measurements (down to the degree) to accurately determine anteversion, inclination, leg length, and offset. When needed, ultra-lightweight NAVItag trackers are attached to reference the anatomy. The P-tag is fixed to the pelvis with two 3 mm pins via small stab incisions; it serves as fixpoint for cup navigation. The M-tag is seated on the cup impactor. And the F-tag is attached to the femur via a single pin; it is used for leg length and offset navigation.

Relationships between the tags are documented using the camera. Cup inclination and anteversion are displayed in real-time during alignment and insertion. When reducing the joint, the navigation assists in adjusting leg length and offset. Final implantation parameters are documented in a detailed surgical report. The open platform system works with all major hip implants and surgical approaches, as does the magnetic attachment of the NAVItag, which adheres to the cup impactor. The Naviswiss system is portable, and can be easily transported between operating rooms, supporting multiple procedures.

"At Naviswiss we strive to make hip navigation smarter by putting it in the hands of the orthopedic surgeon. Based on our patented Swiss technology, the Naviswiss system guides the surgeon through three easy steps," said Jan Stifter, CEO of Naviswiss. "The relevant results are provided with digital precision and are used to precisely position the implant and to document the outcome. We are convinced that our system helps improve the quality of surgery to benefit the patient and health care system."

A hip replacement implant is a ball-and-socket mechanism, designed to simulate a human hip joint and mimic its movement. Typical components include a stem that inserts into the femur, a ball that replaces the head of the thigh bone, and a shell that lines the hip socket. Assessment of individual patient pelvic tilt and digital measurement of leg length and offset changes are used to achieve more consistent leg length restoration.

International Calendar

ATTENTION: Due to the CORONAVIRUS PANDEMIC, many events are being rescheduled for a later date, converted into virtual venues, or altogether cancelled. Please check with the event organizer or website prior to planning for any forthcoming event

For a free listing of your event,
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▶ November

Omnia Health Live Americas. Nov 2-6; Virtual Venue; Web: live.omnia-health.com

ExpoMED Eurasia 2020. Nov 5-7; Istanbul, Turkey; Web: expomedistanbul.com

ESO-WSO 2020 – Joint Conference of the European Stroke Organisation & World Stroke Organization. Nov 7-9; Virtual Venue; Web: eso-wso-conference.org

Medica 2020. Nov 16-19; Virtual Venue; Web: www.medica-tradefair.com

EuroAnaesthesia 2020 – European Society of Anaesthesiology. Nov 28-30; Virtual Venue; Web: euroanaesthesia2020.org

ESTRO 2020 – Annual Congress of the European Society for Radiotherapy & Oncology. Nov 28 - Dec 1; Virtual Venue; Web: www.estro.org

RSNA 2020 – Annual Meeting of the Radiological Society of North America. Nov 29 - Dec 5; Virtual Venue; Web: www.rsna.org

▶ December

ECISM LIVES 2020 – 33rd Annual Congress of European Society of Intensive Care Medicine. Dec 6-9; Virtual Venue; Web: www.esicm.org

Zdravookhraneniye 2020. Dec 7-11; Moscow, Russia; Web: www.zdravo-expo.ru/en

Medical Fair Asia 2020. Dec 9-18; Virtual Venue; Web: www.medicalfair-asia.com

▶ January

CACVS 2021 – Controversies & Updates in Vascular Surgery. Jan 21-23; Paris, France; Web: cacvs.org

ESOU21 – 18th Meeting of the EAU Section of Oncological Urology. Jan 29-31; Virtual Venue; Web: esou.uroweb.org

Critical Care Congress 2021 – 50th Annual Meeting of the Society of Critical Care Medicine (SCCM). Jan 31 - Feb 12; Virtual Venue; Web: www.sccm.org

▶ February

APSCVIR 2021 – 15th Annual Meeting of the Asia Pacific Society of Cardiovascular and Interventional Radiology. Feb 26-28; Virtual Venue; Web: www.apscvir2020.com

Medical Japan 2021 Osaka – International Medical and Elderly Care Expo. Feb 24-26; Osaka, Japan; Web: www.medical-jpn.jp

WCE 2021 – 14th World Congress on Endometriosis. Feb 24-27; Dubai, UAE; Web: endometriosis.ca

ICE 2021 – 19th International Congress of Endocrinology. Feb 24-28; Virtual Venue; Web: icevirtualcongress.com

Medical Fair India 2021. Feb 25-27; New Delhi, India; Web: www.medicalfair-india.com

▶ March

ECR 2021 – European Congress of Radiology. Mar 3-7; Vienna, Austria; Web: www.myesr.org

Meditech 2021 – 7th International Health Fair. Mar 9-12; Bogota, Colombia; Web: feriameditech.com

KIMES 2021 – Korea International Medical & Hospital Equipment Show. Mar 18-21; Seoul, Korea; Web: www.kimes.kr

13th SIOP ASIA 2021 – International Society of Paediatric Oncology. Mar 19-21; Mumbai, India; Web: www.siopasia2020.com

SIR 2021 – 46th Annual Meeting of the Society of Interventional Radiology. Mar 20-25; Virtual Venue, Web: www.sirmeeting.org

SAR 2021 – Annual Scientific Meeting of the Society of Abdominal Radiology. Mar 21-26; Virtual Venue; Web: www.abdominalradiology.org

EHRA 2021 – Annual Congress of the European Heart Rhythm Association. Mar 28-30; Barcelona, Spain; Web: www.escardio.org/EHRA-congress

▶ April

Health Asia – 19th International Exhibition & Conference. Apr 6-8; Lahore, Pakistan; Web: www.health-asia.com

ECCC Dubai 2021 – 16th Emirates Critical Care Conference. Apr 8-10; Dubai, UAE, Web: eccc-dubai.com

ECIO 2021 – European Conference on Interventional Oncology. Apr 11-14; Stockholm, Sweden; Web: www.ecio.org

SEACare 2021 – 23rd Southeast Asian Healthcare & Pharma Show. Apr 12-14 Kuala Lumpur; Malaysia; Web: abcex.com

ISBI 2021 – International Symposium on Biomedical Imaging. Apr 13-16; Nice, France; Web: biomedicalimaging.org/2021

141st Annual Meeting of the American Surgical Association (ASA). Apr 15-17; Seattle, WA, USA; Web: meeting.americansurgical.org

WCN 2021 – World Congress of the International Society of Nephrology (ISN). Apr 15-18; Virtual; Venue; Web: www.theisn.org/wcn21

AAN 2021 – Annual Meeting of the American Academy of Neurology. Apr 17-22; San Francisco, CA, USA; Web: www.aan.com

ARRS 2021 Annual Meeting – American Roentgen Ray Society. Apr 18-22; Virtual Venue; Web: www.arrs.org

Charing Cross International Symposium 2021. Apr 19-22; Virtual Venue; Web: www.cxsymposium.com

MedtecLIVE 2021. Apr 20-22; Nuremburg, Germany; Web: www.medteclive.com

EAPS 2021 – Congress of the European Academy of Paediatric Societies. Apr 22-25; Virtual Venue; Web: ww.eapaediatrics.eu

ECTES 2021 – 21st Congress of the European Society for Trauma & Emergency Surgery (ESTES). Apr 25-27; Oslo, Norway; Web: www.estesonline.org

SIOP Europe 2021 – 2nd Annual Meeting of the European Society for Paediatric Oncology. Apr 26-30; Valencia, Spain; Web: www.siopeurope.eu

SPR 2021 – Annual Meeting of the Society for Pediatric Radiology. Apr 27 - May 1; Denver, CO, USA; Web: www.pedrad.org

▶ May

Medical Fair Brazil 2021. May 4-7; Sao Paulo, Brazil; Web: www.medicalfair-brasil.com.br

EuroCMR 2021 – 18th Annual Meeting on CMR of the European Association of Cardiovascular Imaging (EACVI). May 6-8; Seville, Spain; Web: www.escardio.org/Congresses-&-Events/EuroCMR

ESPE 2021 – 59th Annual Meeting of the European Society for Paediatric Endocrinology. May 7-9; Liverpool, UK; Web: www.eurospe.org

ISET 2021 – International Symposium on Endovascular Therapy. May 9-11; Hollywood, FL, USA. Web: www.iset.org

Vietnam Medi-Pharm 2021. May 12-15; Hanoi, Vietnam; Web: vietnammedipharm.vn

CMEF 2021 – 84th China International Medical Equipment Fair. May 13-16; Shanghai, China; Web: www.cmef.com.cn

ATS 2021 – International Conference of the

American Thoracic Society. May 14-19; San Diego, CA USA; Web: www.thoracic.org

ACC.21 – American College of Cardiology's 70th Annual Scientific Session & Expo. May 15-17; Atlanta, GA, USA; Web: accscientificsession.acc.org

Heart Failure 2021 – World Congress on Acute Heart Failure. May 15-18; Florence, Italy; Web: www.escardio.org/Congresses-&-Events/Heart-Failure

ISMRM 2021– 29th Annual Meeting of the International Society for Magnetic Resonance in Medicine. May 15-20; Vancouver, Canada Web: www.ismrm.org

Hospitalar 2021. May 18-21; Sao Paulo, Brazil; Web: www.hospitalar.com

KIHE 2021 – Kazakhstan International Healthcare Exhibition. May 19-21; Almaty, Kazakhstan; Web: kihe.kz

ECE 2021 – 23rd European Congress of Endocrinology. May 22-25; Prague, Czech Republic; Web: www.ese-hormones.org

ASNR 2021 – 59th Annual Meeting of the American Society of Neuroradiology. May 22-26; San Francisco, CA, USA; Web: www.asnr.org

WFUMB 2021 – The 18th World Federation for Ultrasound in Medicine and Biology Congress (WFUMB) & the 33rd Congress of European Federation of Societies for Ultrasound in Medicine and Biology (EUROSON). May 26-29; Timişoara, Romania; Web: wfumb2021.com

EuroAnaesthesia 2021– European Society of Anaesthesiology. May 29-31; Munich, Germany; Web: www.esahq.org

89th EAS Congress - European Atherosclerosis Society. May 30 - Jun 02; Helsinki, Finland; Web: www.eas-society.org

▶ June

58th ERA-EDTA Congress – European Renal Association - European Dialysis and Transplant Association. Jun 5-8; Berlin, Germany; Web: www.era-edta.org

22nd MEDEXPO Africa 2021. Jun 10-12; Nairobi, Kenya; Web: www.expogr.com/kenyamed

26th Annual Congress of the European Hematology Association (EHA). Jun 10-13; Vienna, Austria; Web: ehaweb.org

ESGAR 2021 – 32nd Annual Meeting of the European Society of Gastrointestinal and Abdominal Radiology. Jun 15-18; Virtual Venue; Web: www.esgar.org

SAGES 2021 – Annual Meeting of the Society of American Gastrointestinal and Endoscopic Surgeons. Jun 15-18; Las Vegas, NV, USA; Web: www.sages2021.surgery

IPR 2021 – International Pediatric Radiology Congress. Jun 15-19; Rome, Italy; Web: ipr2021.org

CMEF Indonesia. Jun 17-19; Jakarta, Indonesia; Web: www.cmefindonesia.com

7th Congress of the European Academy of Neurology (EAN). Jun 19-22; Vienna, Austria; Web: www.ean.org/congress-2021

AAEM21 – 27th Annual Scientific Assembly of the American Academy of Emergency Medicine. Jun 19-23; St. Louis, MO, USA; Web: www.aaem.org/aaem21

Arab Health 2021. Jun 21-24; Dubai, UAE; Web: www.arabhealthonline.com

CARS 2021 – Computer Assisted Radiology and Surgery. Jun 21-25; Munich, Germany; Web: www.cars-int.org

ESRA 2021 – 39th Annual Congress of the European Society of Regional Anaesthesia and Pain Therapy. Jun 23-26; Thessaloniki, Greece; Web: esraeurope.org

ESHRE 2021 – 37th Annual Meeting of the European Society of Human Reproduction and Embryology. Jun 27-30; Virtual Venue; Web: www.eshre.eu

EFFORT Congress 2021 – 22nd Annual Congress of European Federation of National Associations of Orthopaedics and Traumatology. Jun 30 - Jul 2; Vienna, Austria; Web: congress.efort.org

▶ July

AOCR 2021 – 19th Asian Oceanian Congress of Radiology. Jul 1-4; Kuala Lumpur, Malaysia; Web: www.aocr2020.com

EAU21 – 36th Annual Congress of the European Association of Urology. Jul 9-12; Milan, Italy; Web: eaucongress.uroweb.org

ISTH 2021 Congress - The International Society on Thrombosis and Haemostasis (ISTH). Jul 17-21; Philadelphia, PA, USA; Web: www.isth2021.org

▶ August

Vietnam Medi-Pharm Expo 2021. Aug 5-7, Ho Chi Minh City, Vietnam; Web: hcm.medipharm-expo.com

WCO-IOF-ESCEO 2021 - World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases. Aug 26-29; London, UK: www.wco-iof-esceo.org

ESC Congress 2021 – European Society of Cardiology. Aug 27-30; London, UK; Web: www.escardio.org

ESTRO 2021 – Annual Congress of the European Society of Radiology & Oncology. Aug 27-31; Madrid, Spain; Web: www.estro.org

40th ISICEM – International Symposium on Intensive Care and Emergency Medicine. Aug 31 - Sept 3; Brussels, Belgium; Web: www.intensive.org

AAOS 2021 – Annual Meeting of the American Academy of Orthopaedic Surgeons. Aug 31 - Sep 4; San Diego, CA, USA; Web: www.aaos.org

▶ September

FIME 2021 – Florida International Medical Expo. Sep 1-3; Miami, FL, USA; Web: www.fimeshow.com

ESOC 2021 – 7th European Stroke Conference. Sep 1-3; Helsinki, Finland; Web: eso-conference.o

WCA 2021 – 17th World Congress of Anaesthesiologists. Sep 1-5; Prague, Czech Republic; Web: www.wcaprague2020.com

ERS International Congress 2021 – European Respiratory Society. Sep 4-8; Barcelona, Spain; Web: erscongress.org

Medical Fair Thailand 2021. Sep 8-10, Bangkok, Thailand; Web: www.medicalfair-thailand.com

WCICC 2021 - 15th Congress of the World Federation of Societies of Intensive and Critical Care Medicine. Sep 11-15; Vancouver, Canada; Web: www.worldcriticalcarecongress21.com

ExpoMedical 2021. Sep 22-24; Buenos Aires, Argentina; Web: www.expomedical.com.ar

EUSOBI 2021 – Annual Scientific Meeting of the European Society of Breast Imaging. Sep 23-25; Valencia, Spain; Web: www.eusobi.org

CIRSE 2021 – Annual Congress of the Cardiovascular and Interventional Radiological Society of Europe. Sep 25-29; Lisbon, Portugal; Web: www.cirse.org

EASD 2021 – 57th Annual Meeting of the European Association for the Study of Diabetes. Sep 27 – Oct 1; Stockholm, Sweden; Web: www.easd.org

ESVS 2021 – 35th Annual Meeting of the European Society for Vascular Surgery. Sep 28-Oct 1; Belfast, UK; Web: www.esvs.org

▶ October

ISUOG 31st World Congress - International Society of Ultrasound in Obstetrics & Gynecology. Oct 2-5; Seoul, Korea; Web: www.isuog.org

UEG Week 2021 – United European Gastroenterology. Oct 2-6; Vienna, Austria; Web: www.ueg.eu/week

REHACARE 2021 – International Trade Fair for Rehabilitation and Care. Oct 6-9; Dusseldorf, Germany; Web: www.rehacare.com

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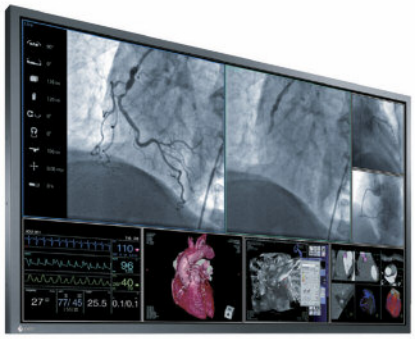

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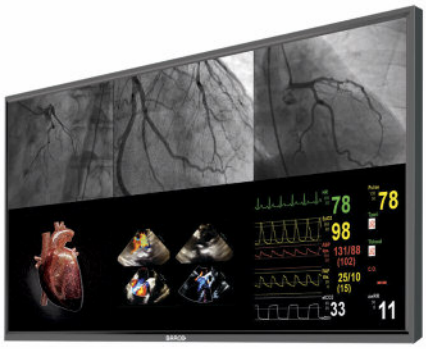

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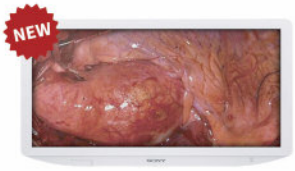

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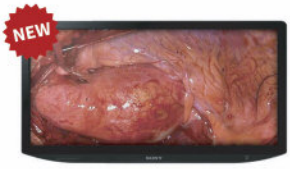

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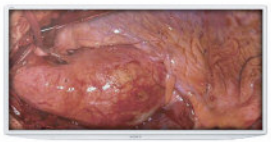

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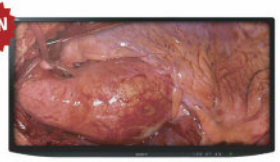

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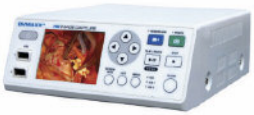

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