

# 12 NOVEMBER 2014



# EUROPEAN HOSPITAL @ ZMEDICA

SPECIAL ISSUE: MEDICAL, TECHNICAL, PHARMACEUTICAL, INDUSTRIAL NEWS

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## Invigorating Medica's Education Conference

Collaboration with Europe's largest specialist medical society brings rewards

Interview: Brigitte Dinkloh

With around 140,000 visitors annually, Medica is doubtlessly the showcase for medical manufacturers. However, although the world's largest medical fair, the venue is not yet very well known for continuing medical education. This is set to change. With the re-orientation of the Medica Education Conference (MEC) in collaboration with the German Society for Internal Medicine (DGIM), the organisers are hoping for a bigger response and an increased number of visitors. We asked Congress President Professor Hendrik Lehnert, Director of the Medical Clinic 1 at the University Hospital Schleswig-Holstein, Campus Lübeck, about his expectations and the programme design.

Explaining how the collaboration with Medica evolved and the importance of the congress for the DGIM, Professor Lehnert said that Messe Dusseldorf sought a new partner for



On November 12 and 13 the Medica Education Conference offers ten events on modern ultrasound for participants to bring their expertise up to date

indication as yet. 'We are hoping for more than 2,000 participants – a good start for us and significantly more participants than in previous years. In the long run we are aiming for between 8,000 and 10,000 participants,' he added.

How can that ambitious target be achieved? Prof. Lehnert pointed out that the high quality confer-

sible.' For 2014, these are infection and inflammation, telemedicine and robotics, gastrointestinal oncology and interventional medicine, involving representatives from many other disciplines, such as surgeons and

radiologists. 'We have a very diverse programme committee who will also cover areas beyond the expertise of internal medicine. Gastrointestinal oncology is obviously a classic topic within internal medicine, but it is also complemented by surgery and radiology. The key topic interventional medicine strongly involves gynaecology as well as urology.'

'We have obviously ensured that the expertise of the programme committee members is taken into consideration. A clearly structured daily timeline with standardised parallel events provides all participants with a diversified, all-day scientific education in combination with a visit to the exhibition.'

'In the first instance the programme is naturally aimed at doctors and interested company representatives, but there are also some programme points that will interest other medical professions.'

10-15% of the programme will be practical seminars and hands-on courses to include, for example, ultrasound seminars, nutrition, endoscopy and diabetes.

Although an hour a day has been set aside for industry symposia, so far



Conference President Professor Hendrik Lehnert explains what visitors can expect from the 2014 edition of the Medica Education Conference.

there has not been much participation. 'However, this is not decisive for the success of the congress,' the professor noted, adding that there will be industry symposia on laboratory medicine. 'Many are probably waiting to see what the first MEC

under our management will be like and then decide to participate next year. Our annual congress includes around 40 industry symposia and I'm sure this kind of participation will develop for the MEC as well.'

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the Medica Education Conference and the DGIM submitted its tender. 'It must have impressed the organisers because we were selected,' he explained. 'We are very pleased to be organising this conference because it gives us an opportunity to prove that we can organise another, large congress with a different aspiration and bigger target audience, alongside our own annual Internal Medicine Congress in Wiesbaden.'

'This is a very exciting opportunity and challenge to go beyond the bounds of internal medicine, to work in an even more interdisciplinary manner than before and to design a programme encompassing many neighbouring disciplines, from surgery to radiology and pathology.'

Asked about the interest shown to date and the potential number of participants, the professor explained that the application procedure is continuing, so there is no popularity

programme is structured in a completely new way and that the organisers have gathered outstanding national and international speakers. It is also backed by advertisements in the specialist press and in daily newspapers.

'Overall, the conference is definitely set to become more international. As yet the English language part of the programme is only about 10% of the total; however, in the future, the plan is to develop a successive transition from German to English as the congress language. To date, education has tended to be side-lined by the large fair; with 140,000 visitors the smaller training and education part has definitely been dwarfed by the exhibition.' He expects change and that the MEC will become very successful.

'There are four superordinate key topics, which have been laid out as broad and transdisciplinary as pos-



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# Scanning technically difficult patients (TDP)



**A new system, with wider bandwidth due to single-crystal technology combined with 3T technology, gives greater penetration and higher resolution**

As the global prevalence and severity of obesity increases day by day, the challenge for physicians to scan for deep structures and abnormal haemodynamic flow becomes greater when faced with limitations in ultrasound imaging. Mindray's new DC-8 Exp, an advanced ultrasound imaging solution, is dedicated to minimising those limitations and maximising the effectiveness of scanning difficult patients.

'Based on the company's new generation mQuadro ultrasound platform, the DC-8 Exp brings together a new set of innovative solutions to enhance the experience of conducting an ultrasound exam and providing a confident diagnosis for patients across all ages and body types,' the firm says. 'The industry's very first ultrasound system to implement a deep vascular detection solution, the DC-8 Exp incorporates a combination of outstanding processing capabilities, featuring Mindray's pro-

prietary transducer technology and user-defined interface that enables an expert diagnosis.'

### Powerful imaging capability

'mQuadro, Mindray's high end ultrasound architecture, empowers the DC-8 Exp to facilitate a fast and reliable diagnosis, making it the optimum choice for examination of Technically Difficult Patients (TDP),' the firm adds.

'The new single-crystal technology combined with 3T technology provides a wider bandwidth that gives both better penetration and higher resolution resulting in the best possible scanning solution for TDP. Moreover, the new matrix-array transducer technology uses multiple rows of crystal to help achieve

superb resolution of detail throughout the field of view.'

### The next level of diagnostic confidence

With the DC-8 Exp, ultrasound practitioners now have the power to handle a comprehensive range of clinical exams easily, including abdominal, cardiovascular, OB/GYN, and small parts, and to obtain extraordinary image quality even on difficult patients. The DC-8 Exp benefits from inventive ART Flow technology for better display of hard-to-detect deep blood flow, and advanced Echo Boost technology for intelligent image optimisation across multiple applications. 'The new architecture-based technology UWN+ Contrast Imaging and Natural Touch Elastography provide enhanced information for more effective diagnosis,' the firm notes.

A wide variety of sophisticated analysis tools including TT QA/LVO/Stress Echo also enhance accuracy and confidence of CD assessment.'

### A new effortless experience

'A series of high-level automation tools significantly improve productivity. The intelligent auto-optimisation Smart Doppler tool enables rapid adjustment of colour, PW placement, and angle steering, while auto-measurement tools help the ultrasound specialist to work smarter with less operational fatigue,' Mindray adds, and explains: 'The fully customisable iWorks greatly reduces keystrokes and improves exam efficiency, all of which combine to allow more focus on the patient diagnosis.'

Details: [www.mindray.com](http://www.mindray.com)



**Mindray is at Medica  
Hall 09 / Stands A74 and A78**

# Fingertips roll your NEXT

Infection, the tightest space and fast scanning are the three biggest things clinicians must tackle today in a point of care (POC) environment. The manufacturer United Imaging Systems reports that NEXT series ultrasound system removes these complexities and barriers. 'NEXT features a sealed, easy-to-clean, tem-



**United Imaging is at Medica  
Hall 16 / Stand F04-2**

pered glass control panel facilitating disinfecting. The ergonomic design, with height adjustable control panel and a large 19-inch monitor on an

articulating arm, makes NEXT easy to position even in the most challenging clinical environment,' the firm explains.

The system also has a small footprint and long battery life for mobility and access at the POC. The most advanced ease of use modes and protocols also ease as well as speed up medics' workload.



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**Challenges for Disaster and Military Medical Service Support: a new future?**

**Chair: Dr Christoph Büttner, Rear Admiral uh MC (ret)**

# Superior image quality meets intuitive operating concept

## Samsung RS80A – the perfect ultrasound system for mamma diagnostics

Visiorad is an association of radiology, radiotherapy and nuclear medicine practices which serve the northwestern part of Hamburg and the adjacent suburban areas. Dr Timo Gomille, partner of Visiorad, and his team focus on breast diagnostics. A mainstay of their daily work is the RS80A – the Samsung ultrasound system which impresses with superior image quality and an innovative operating concept

'The patient is at the centre of all our efforts,' says Dr Gomille, 'but whenever we detect a suspicious finding the patient is immediately worried, whether the concern is justified or not. The better the image quality the more confident is our diagnosis and the easier it is for us to alleviate any fears the patient may have.'

### S-Vision architecture provides detailed and crystal clear images

For breast ultrasound Gomille prefers the Samsung RS80A. 'We use the system for b-mode imaging and the advanced functionalities for mamma diagnostic purposes,' Gomille explains, pointing at one of the major advantages of the RS80A: 'superior image quality'. The technology behind this image quality is the so-called S-Vision architecture: the S-Vision beamformer manages to present both the b-mode and the colour image in high resolution. Moreover, artefacts are eliminated which results in clearer images. The S-Vision imaging engine provides

The Samsung ultrasound system RS80A impresses with superior image quality and an innovative operating concept.



Dr Timo Gomille, partner in Visiorad, uses the Samsung RS80A for breast ultrasound.



Dr Gomille and his team specialise and are in charge of mammography and breast cancer diagnostics.

exceptional depth, detail and resolution for all tissues.

Point in case: the retromamillary region. It is difficult to image due to the awkward beam angle which makes it close to impossible to look at deeper tissues. 'The difference between the RS80A and the previous generation of systems – and even some current-generation systems: the RS80A almost completely compensates attenuation, which is a problem in conventional imaging of the retromamillary region,' explains Gomille. 'When we compared different systems by different manufacturers we also noticed that the RS80A is very good with regard to showing target lesion details.' This advantage, the team of Dr Timo Gomille hopes, will facilitate the decision whether a biopsy is indicated or not.

### An intuitive operating concept for improved workflow

The intuitive operating concept is another feature of the RS80A that impressed Dr Gomille, as it makes working with the system very comfortable. 'Particularly the routine examinations that are a considerable part of our daily workload can generate a certain pressure,' the physician points out. Approximately 30,000 patients present every year at the different locations of the network including those who participate in the German mammography screening program and those who undergo treatment. 'Our teams work at different workstations and with different physicians.

Nevertheless we want every physician to be able to work at any workstation. Therefore we need simple operation and standardized presets so everybody can reproduce his or her usual image parameters.'

The RS80A can easily be adapted to the individual needs and preferences of the user. The control panel

moves in six ways and is equipped with a motorised lift.

The foldable monitor and the tilting 13.3' touchscreen make working with the system safe and comfortable. Gomille's conclusion: 'Our team tested different systems and we looked for the combination of image quality and operating concept. The Samsung RS80A delivered.'

### Innovative advanced functionalities for confident diagnoses

The RS80A features optional innovative functions such as ElastoScan™: Beyond 2D images of the breast tissue, elastography provides colour-coded information on tissue elasticity. 'A crucial advantage of ElastoScan is the fact that it shows the real size of a tumour,' says Wim van de Vooren, Clinical Marketing Manager

at Samsung. 'In radiography and conventional ultrasound the size of a lesion is frequently underestimated. Elastocan however shows the direction in which the tumour grows, a very important piece of information when it comes to tumour resection.'

For Wim van de Vooren the RS80A is a flagship system in the Samsung ultrasound portfolio: 'We are extremely proud of the RS80A as it allows us to provide exceptional performance not only for breast ultrasound practices but also for the hospital and the research segment.'

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# POC ultrasound takes to the skies

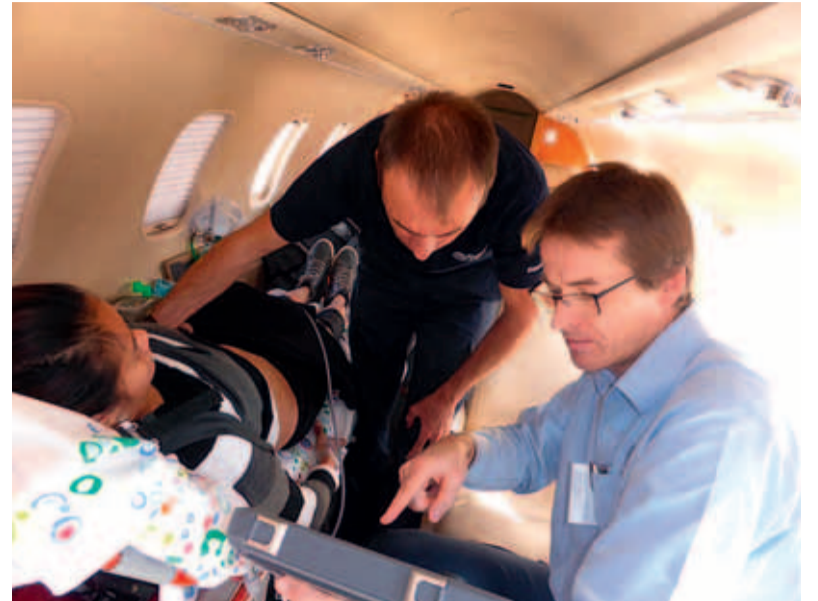
Given their quality, small size, portability and robustness, SonoSite point-of-care ultrasound systems play vital roles in hectic A&E and surgical departments, and also in monitoring patients in transit. Working in Berufsgenossenschaftliche Unfallklinik (BGU), Tübingen, anaesthetist Dr Rüdiger Eichholz believes in the importance of POC ultrasound and has set up a training programme for clinicians who accompany patients with International SOS.

For years, Dr Rüdiger Eichholz has found point-of-care (POC) ultrasound invaluable in anaesthesia, the ICU and trauma medicine for FAST scanning (Focused Assessment Sonography for Trauma), ultrasound-

guided nerve blocks and vascular access, plus general cardiac, chest and abdominal scanning.

At BGU, a trauma, orthopaedic, plastic and craniofacial surgery centre, a large part of his work involves performing regional anaesthesia under ultrasound guidance. As a certified DEGUM trainer, he also spends considerable time travelling, demonstrating ultrasound's advantages and encouraging and training clinicians to routinely use the technique.

As a co-ordinating doctor for the German branch of International SOS, Dr Eichholz talked to patients, assessed their needs and helped to solve all kinds of medical problems. This included undertaking face-to-face consultations and often evacuations or repatriations. Although termed 'emergencies', the SOS flights do not go directly to or from an acci-



Point-of-care (POC) testing aims to gain faster diagnostic results and treatment by assessing a patient at the bedside or during transit. Surgeons, emergency doctors, and sometimes paramedics use Focused Assessment Sonography for Trauma (FAST) to screen for pericardial effusion or fluid around the abdominal organs following trauma.

dent or major incident, but focus on patient transfers. All journeys are elective, with some degree of planning and preparation involved, consent from the patient or relatives, payment and insurance details, and agreement and discussion with the releasing and accepting hospitals. While some patients are quite ill, others are not; sometimes the team moves a fairly healthy patient. Some repatriations are simply about transferring a patient to a more sophisticated medical centre to ensure nothing serious is overlooked, especially if surgery is needed.

he said. 'So, we established a training programme at International SOS, using my knowledge and teaching experience to explain the advantages of POC ultrasound to help flight doctors to make the most of its diagnostic capabilities.'

Based on the AEN (Armbruster Eichholz Notheisen) training concept



Dr Rüdiger Eichholz, anaesthetist, Berufsgenossenschaftliche Unfallklinik (BGU)

and not happy with their knowledge and skill levels.'

To help build confidence, the team introduced pre-flight scans for even healthy, walking, talking patients. 'In this way, flight doctors practise their ultrasound skills, develop a routine pattern of examination, learn to differentiate between normal and abnormal images, and ultimately gain confidence in their scanning abilities.'

The pre-flight scans also give a comprehensive baseline picture of each patient before a flight, and are entered into that individual's electronic file for future reference.'

Several training courses have taken place and a systematic in-flight manual has been prepared, with a checklist and 'how to' guidance on the device, plus specific example guides for the most frequently used techniques, e.g. how to examine the chest, heart or vessels before vascular access.

'My main aim has been to continue to pass on my enthusiasm for ultrasound use. So far so good!' Eichholz concludes. 'The programme has been very warmly received, with the potential to become International SOS worldwide.'

## SonoSite is at Medica Hall 10 / D58

When Dr Eichholz was approached to join the International SOS Abu Dhabi team as a flight physician he found the aircraft was equipped with a new NanoMaxx system, which proved invaluable during patient transfers. 'While I'm very familiar with using POC ultrasound in this setting, I discovered that many of the team only occasionally used ultrasound and were not entirely at ease with the technique, or aware of its full potential in performing diagnostic procedures and needle guidance,'

developed by Dr Eichholz and fellow anaesthetists Dr Wolf Armbruster (Evangelisches Krankenhaus Unna) and Dr Thomas Notheisen (BGU), the teaching programme (English language) is adapted to aero-medical issues; it uses similar methods, 3-D imaging and hands-on sessions with small classes.

The M-Turbo and the NanoMaxx are ideal devices, both for the application and for teaching, as Dr Eichholz pointed out. 'The systems' robustness, portability and quick boot-up time are all very important on air ambulances and, although we have power packs on board, it's also very convenient to have a good battery life.'

'For training purposes, it's important to have a system that's small, simple to operate and easy to understand from the technical perspective, and both these systems, especially the NanoMaxx, fit this profile perfectly. The ease of use has been especially important in establishing the programme because, while most of the doctors could see a role for POC ultrasound, many were cautious



Europe has many air ambulances and commercial aircraft available for patient transfers, but facilities in some geographical regions are more basic and unpredictable. Thus the Middle East Asia branch of International SOS, in Dubai, keeps its own Lear jet ambulances around the region, fully staffed and equipped as intensive care units.

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# Emergency ultrasound

Delivering mobile imaging to the preclinical setting, shock room and ICU

**Resuscitation is always** a desperate attempt by an entire team to save a human life. If a reversible cause can be discovered, a patient's chances of survival increase considerably. All medics therefore know the '4 Hs' and 'HITS'.

Imagine you had a diagnostic tool that could either confirm or exclude four of these very quickly. Wouldn't this be fantastic?

Actually, it's not so much a case of 'wouldn't it' but 'isn't it'. With the help of emergency ultrasound, a cardiac tamponade can be diagnosed or excluded at a glance. Modern ultrasound technology also facilitates the mobile use of devices beyond the hospital. Suitable ultrasound scanners are driven, or flown respectively, to accident scenes in ambulances and helicopters.

Eberhard Reithmeier MD, a consultant in the Department of Anaesthetics and Intensive Care at the Regional Hospital in Feldkirch, Austria, has worked with emergency ultrasound for years.

'This diagnostic discipline brings together radiologists, internists, surgeons and anaesthetists who carry out standardised examinations and "speak the same language", 'despite their different backgrounds,' he says. 'In this, and for training, interdisciplinary cooperation is at the forefront.'

## Ruling out cardiac tamponade

Emergency ultrasound is, for example, used when doctors are looking for the cause of hypotension in a patient. Is the heart not working sufficiently? Is the patient dehydrated? Is it a case of tension pneumothorax?

'You don't have to be a cardiologist to see that the left ventricle is beating empty, Dr Rathmeier points out. 'If this is the case, we rescan the inferior vena cava and will see that this collapses breath-synchronously.'

In this situation, a lack of volume can quickly be differentiated from acute heart failure. A pneumothorax as well as acute right ventricular strain can also be diagnosed with precision.

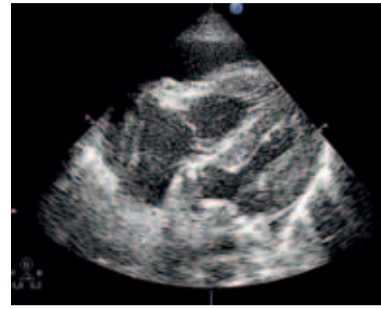
One of the advantages is the availability of imaging diagnostics in locations with no CT scanner. 'This has mainly become possible because of ever smaller and cheaper devices,' says Reithmeier. The scan-

ners are now available from about €8,000 and, thanks to their dimensions, range from real 'handhelds' to laptop size, so are also suitable for preclinical use. 'In a few years I think it will be the norm to have these devices in all ambulances,' he believes. 'Currently, it's down to lobbying by individuals for this type of investment from the respective emer-

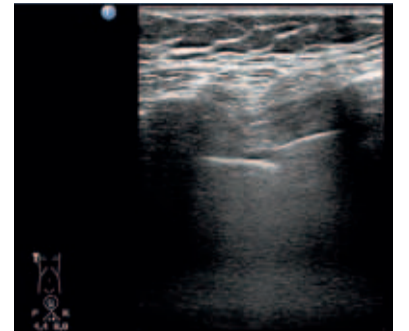
gency medical service providers.'

It is up to each individual hospital how ultrasound and CT are used in the shock room. Ultrasound has an important advantage when it comes to the examination of haemodynamically unstable patients. The significantly faster E-Fast examination can

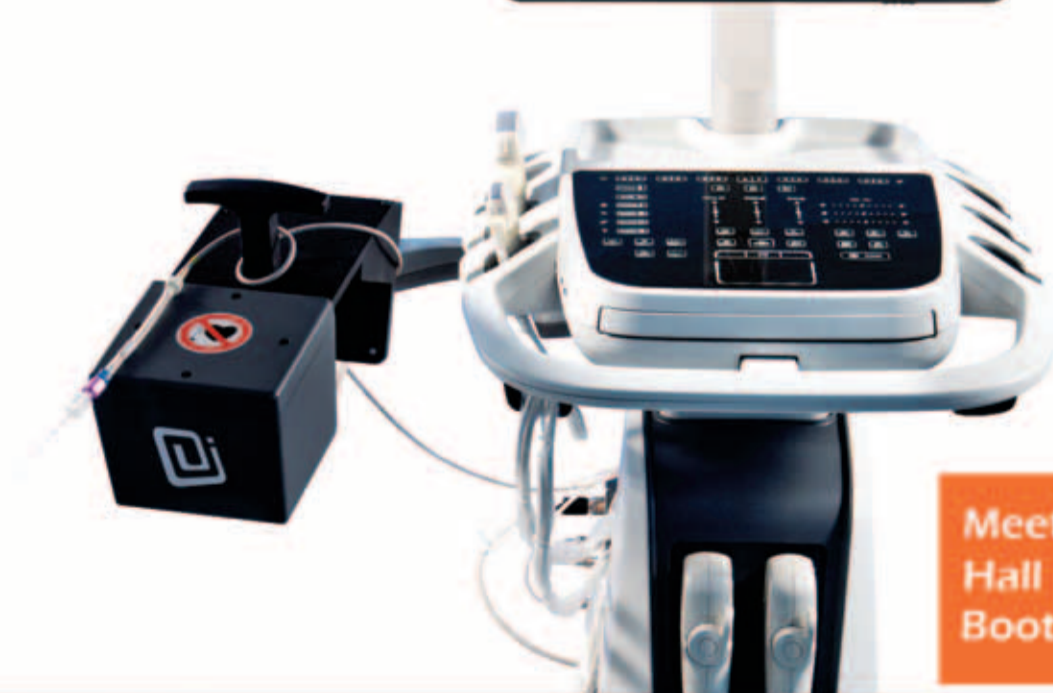
Continued on page 6



Pericardial effusion in subxiphoid 4-chamber view



Ultrasound 'proof' of pneumothorax



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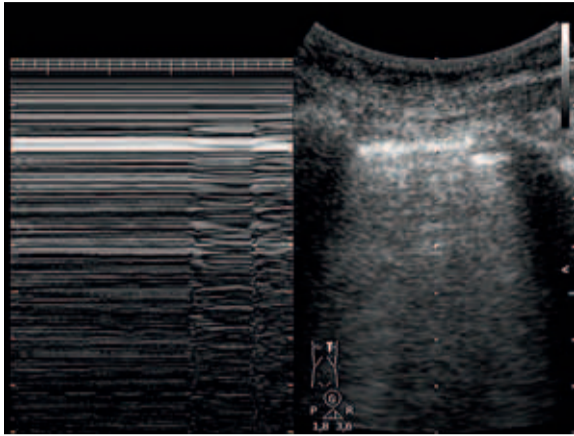


Eberhard Ernst Reithmeier MD a medical graduate and qualified anaesthetist from the University of Ulm, and, in 2005, he qualified as a specialist in accident and emergency care. In March 2014, he became an anaesthetics and intensive care consultant at the Regional Feldkirch Hospital, Austria, and he teaches 'Ultrasound with a focus on Anaesthetics' for the German Society of Anaesthesiology and Intensive Care Medicine (DGAI).

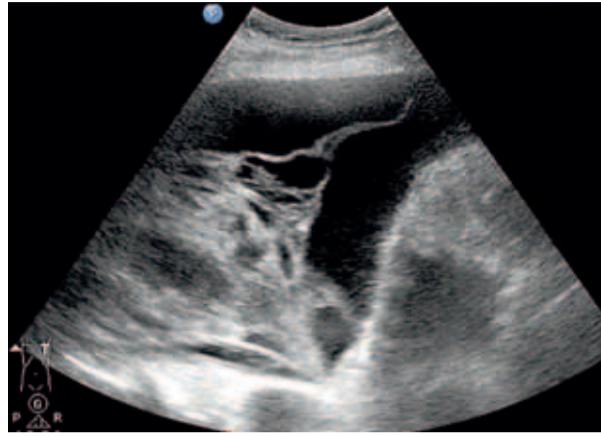
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## Emergency ultrasound

continued from page 5



Stratosphere signs with pneumothorax



E-Fast: Haemothorax left

confirm the presence of free fluid in the abdomen. Many shock room algorithms then point the way directly into the operating theatre with the need to carry out a CT scan.

However, the consultant does not believe that ultrasound is in competition with CT scanning for the majority of patients in the shock room who are haemodynamically stable. 'The current S3 guideline on polytrauma/treatment of patients with severe and multiple traumatic injuries illustrates the problem very well.'

In the intensive care unit (ICU) things look very different: 'We've seen that emergency ultrasound in the ICU can considerably reduce the number of chest X-rays and also the number of CT scans required. Why should I expose a patient to unnecessary radiation when there is an equally good, or even better, and definitely faster procedure available without radiation?'

The fact that emergency ultrasound has an important place on the intensive care ward is now an accepted standard and has therefore become part of teaching. 'A specialist in intensive care must be able to diagnose a pulmonary oedema on an ultrasound scan if he wants to be awarded the European Diploma in Intensive Care (EDIC). 'This is now already part of the test,' the anaesthetist and intensive care expert says.

### Monitoring venous catheter insertion

The general rule is that interdisciplinary cooperation achieves the best results for the patient. During his time in Ulm, the radiologist undertook the ultrasound scanning in the shock room, but in Feldkirch it is in the hands of the surgeon or anaesthetist. 'This is done simultaneously, while the other medics care for the patient based on the shock room ABC,' he explains.

The insertion of central venous catheters is now almost exclusively carried out under ultrasound guidance. The first studies to confirm that the use of ultrasound for the insertion of venous catheters has advantages were published in the 1990s. 'During the first years of my training the so-called landmark procedure was still being used. These days it's almost always the ultrasound guided puncture that's being taught,' Dr Reithmeier reflects.

**A place in anaesthetics** He is pleased that ultrasound also has its place within anaesthetics. 'The entire field of local anaesthesia has been revolutionised by neuro-ultrasound. When nerves in the arms or legs are anaesthetised this is now almost always done with ultrasound guidance. It is quite something, even for experienced anaesthetists, when

they see the needle approach the nerve 'live' for the first time, followed by the dispersal of the local anaesthetic around the nerve. Why wear a blindfold when you can see?'

### Standardised training

As emergency ultrasound scans are performed by representatives of different medical disciplines training standards are needed to assure quality. There have always been calls for this. 'A joint concept for emergency ultrasound covering three different countries was implemented in 2008,' Reithmeier reports. 'Experts from different countries and different medical disciplines came together and agreed on a joint concept, which resulted in a number of emergency ultrasound courses now being offered by the DEGUM, OEGUM and SGUM (Ultrasound in medicine societies in Germany, Austria and Switzerland).

Although not mandatory, there is growing interest in them, because training provides more assurance when scanning and, in times of an increasing need for documentation, training provides a level of support that should not be underestimated. The next important step for the near future will be to integrate these course contents into existing, internal clinical training systems and into specialist medical training.'

# Contrast enhance

## Taking the lead in blunt abdominal trauma diagnosis

In the USA, some patients have bled to death while in the CT scanner because this type of examination takes too long for blunt abdominal trauma diagnosis. For this reason, internist Dr Josias Mattli, at Davos Hospital, Switzerland, introduced contrast enhanced ultrasound (CEUS) for initial traumatology diagnoses – setting the course for diagnosis even before patients undergo CT scans.

Mattli knows of no other institution where contrast enhanced ultrasound is carried out as a primary examination to the same extent as at Davos Hospital.

'Since 2003, I've collected documentation on 470 such cases where no abdominal CT scan was carried out at all, but exclusively CEUS,' he explained. The trauma surgeons only use the CT scanner as a follow-on examination for bone diagnosis.

Ultrasound is available everywhere, takes no longer than five minutes and involves no radiation exposure or side effects. 'It's a very fast diagnostic tool that can be used in the shock room while IVs are being started,' he said. 'This is a particular advantage for smaller hospitals, where often there isn't a CT scanner available.' For this reason, eight years ago Mattli also introduced CEUS as a complementary, Focused Assessment with Sonography for Trauma (FAST) ultrasound at the Santa Maria Hospital in Müstertal, Switzerland's smallest hospital, and an hour away from the nearest CT scanner.

Therefore, contrast enhanced ultrasound has become the primary traumatology scanning system to diagnose blunt abdominal trauma.

### The right diagnosis in just five minutes

The most commonly injured organ is the spleen, followed by kidneys and then the liver.

Most splenic injuries involve tears

to the thin capsule and ruptures with or without injuries to the blood vessels. If the conventional ultrasound image suggests an abdominal trauma, perhaps due to the presence of some free fluid in the abdomen, the traumatologist can quickly escalate the examination to a CEUS scan. However, if an unstable patient is admitted with symptoms hinting at blunt abdominal trauma, such as injuries to the lower ribs or pelvis, CEUS takes an immediate role.

The diagnosis of a splenic injury takes less than a minute. 'We inject the contrast medium and the micro-bubbles arrive in the blood after only ten seconds. We focus the image on the spleen and can usually see the tear very clearly. After three to five



Following his medical degree gained in 1982 at the University of Zurich, Switzerland, Josias Mattli wrote his doctoral thesis in 1986 on 'Patient instruction following surgically treated, complex fresh internal knee lesions' at Davos Hospital, University of Basel. He is also qualified in delegated psychotherapy from the FMPP (Fédération [Suisse] des médecins psychiatres-psychothérapeutes) and ultrasound diagnostics from SGUM (Swiss Society for Ultrasound in Medicine). As an internal medicine specialist, this year he launched his own ultrasound diagnostics practice.

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Launched at this year's Medica, the new Affiniti ultrasound system was developed to help tackle increasing patient volumes and cost pressures, Philips reports. 'We have leveraged more than 45 years of ultrasound innovation to deliver a reliable system that combines the excellent image quality our customers expect for fast, confident diagnosis, with advanced tools to help them improve efficiency and workflow and allow for the very best standard of care,' explains Vitor Rocha, CEO and Senior Vice President of Ultrasound for Philips Imaging Systems.

Built on the same architecture as the company's progressive Epiq ultrasound, for this new system Philips collaborated with hundreds of physicians internationally. Their feedback helped inform Affiniti's ergonomic design, which led to an intuitive, easy-to-use system, the company reports. 'Philips put the system through 4,500 hours of reliability testing with the demands of a busy medical practice and heavy workload in mind.'

Dr Martin Penicka, cardiologist at the OLV Clinic, Aalst Cardiovascular Centre, Belgium, who described the centre's patient volume as high, also spoke of cost pressures and through-

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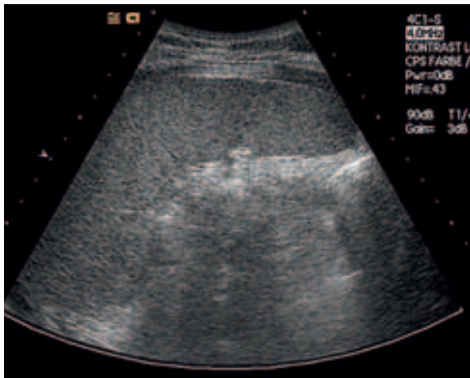
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# Advanced ultrasound



Ruptured spleen with penetrating capsular and parenchymal tear – hard to see in a conventional image but clearly visible in the CEUS image

minutes, we will have examined the entire abdomen, inclusive of the kidneys and liver,' Josias Mattli said. 'It's not only very fast but, above all, a reliable diagnosis.'

'Blunt abdominal trauma often occurs as a result of winter sports accidents,' said Dr Mattli, naturally seeing cases frequently in the Davos ski area. 'If the accident involved a fall on the back this tends to affect the kidneys, if the victim falls on their front it's the liver that tends to be injured, and a fall to the side often results in a splenic rupture.' Blunt abdominal trauma also often occurs as a result of road traffic accidents.

The examination procedure is particularly suitable for children because the radiation exposure associated with CT examinations can be avoided. However, very elderly patients and patients with renal insufficiency should also be examined with contrast enhanced

ultrasound in the first instance.

The procedure involves the injection of microbubbles the size of blood cells into the blood, which have a reflecting effect in the ultrasound scan image.

Following diagnosis, a rupture does not always have to be surgically repaired. 'If the patient is stable and bleeding has stopped the patient can then be monitored in the intensive care unit, with regular follow-up ultrasound scans carried out in short intervals,' Mattli explained.

In the case of splenic tears, the capsule begins to heal after five days. No other procedure can visualise the reinstated blood flow of the regenerated capsule. In most cases, the patient can thus be treated conservatively and does not have to undergo surgery. Out of 66 cases involving splenic ruptures at Davos Hospital only six patients needed surgery. ■

Subcapsular splenic haematoma at the caudal edge, as well as perineal haematoma as an indication of additional renal injury – both diagnoses are far more impressively and clearly visible in the CEUS image



# Affiniti ultrasound system

put demands. 'My facility needs a system that offers high performance, a range of configuration options and low total cost of ownership while still offering superior image quality. Affiniti enables us to get to the level of detail we need.'

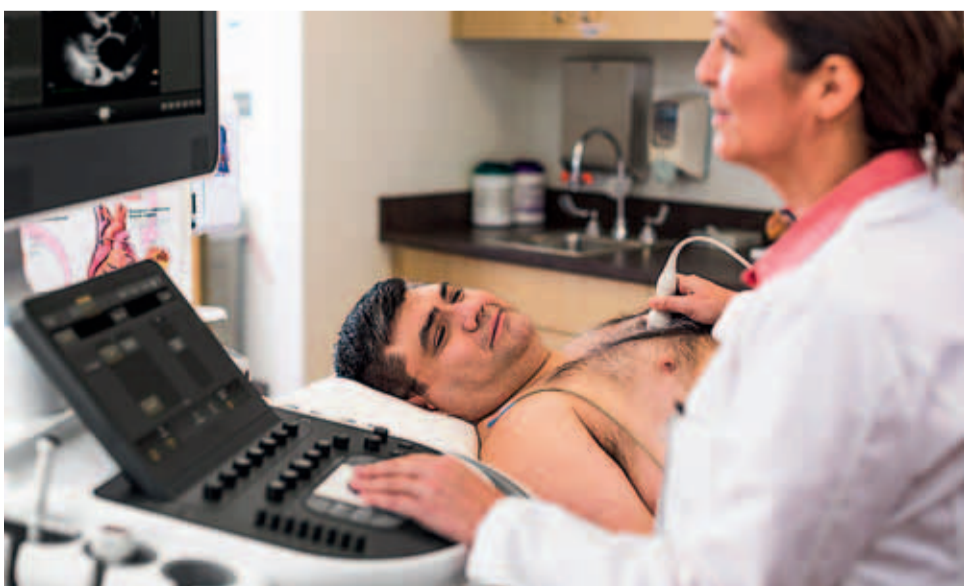
Philips highlights Affiniti's key assets:

- Crisp, clear images that enable fast, confident diagnosis and reduce the need for additional exams.
- Philips' PureWave transducer technology delivers excellent image quality with lit-

tle or no need for image adjustment for technically difficult patients.

- Anatomical Intelligent Ultrasound provides automatic anatomy recognition and quantification, making it easy to perform exams and quickly deliver new levels of clinical information.
- Automation tools, such as AutoScan, Auto Doppler and SmartExam, reduce the number of steps required to complete each exam, enhancing workflow.
- DICOM and PC format capabilities allow seamless information sharing. ■

**Philips is at Medica**  
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# Disaster medicine is not for perfectionists

Global threats from viral agents have entered our list of dangers

Interview: Sascha Keutel

The Ebola epidemic in West Africa, war in Syria, typhoon in the Philippines – over and over, German doctors are among those deployed to help. We interviewed Dr Johannes Schad, Medical Director of the Foundation of the German Institute for Disaster Medicine, about his direct experiences on the ground at the worst of times.

**When did the description emergency change to disaster medicine?**

'In Germany, only a chief councillor or mayor can formally declare that an incident is a disaster – by no means can a senior emergency physician do this. Therefore, for financial reasons (costs are borne by the district or city) the term 'major catastrophic event' is also often used.

'Essentially, when a medical disaster occurs you are dealing with a massive imbalance between the resources available and those actually required. This means that the optimal and excellent individual medical care normally expected for patients can no longer be guaranteed. The applicable medical treatment motto becomes 'do the best for the most'. 'Emergency medicine is the "natural sister" of disaster medicine.

'The objective of disaster medicine is to 'cease to exist', that is to ensure a return to the norm whereby optimal individual medical care can be provided to everyone.

'Unfortunately, as emergency medicine, we tend to be geared towards the provision of individual emergency care to such an extent that we sometimes forget to "flick the switch" in the respective situation



Among other disaster operations, surgeon and senior emergency physician **Dr Johannes S. Schad** was operations director for the German Red Cross Field Hospital and worked in the Basic Healthcare Unit in Haiti in 2010. As an International Committee delegate of the Red Cross (ICRC) in Geneva he became an instructor at Shifa Hospital, overseeing the largest emergency admission of patients in the Gaza Strip. In 2011 he taught emergency medicine for the ICRC, presenting three-week-long courses for doctors and nurses in Nadjaf, Iraq and Sulaymaniyah in Iraqi Kurdistan. Dr Schad is currently studying for a Masters in Disaster Management and Risk Governance at the University of Bonn, a degree course run in partnership with the Federal Office of Civil Protection and Disaster Assistance (BBK).

and to carry out a strategic and systematic initial analysis. Basically, we automatically do what we have learned, are capable of and know.'

**What are the greatest challenges in disasters?**

'The biggest problem in emergencies is communication, the confusion arising from this and the lack of information. Coordination is another

weak point during what we refer to as the 'chaos phase'. This concerns technical aspects such as an overload of the mobile communications networks as well as the responsible control rooms. Essentially, it's important that the command team carries out a confidential, honest and self-critical appraisal of a situation. This is the only way to jointly tackle this type of challenge. Furthermore, (self)-admission of a lack of knowledge is also important.'

**Which concrete tasks must be tackled in a disaster?**

'Disaster medicine includes aspects of decontamination, hospital alert planning, transport logistics, biological and chemical damage assessment and, lately, also aspects of global threats through viral agents.

'In a concrete case the initial objective is to obtain information – particularly about the cause – and thus to devise a strategy to prevent secondary damage or cascading effects. Doctors and nurses also need to look after themselves, so that they don't end up causing additional problems – such as accessing a disaster location in an inappropriate way. 'Emergency doctors are also responsible for the organisation of central assembly points for treatment sites where triage can be carried out for the injured. The past has shown that there is no point in merely relocating the chaos from the disaster site to the nearest hospital.'

**Could work become a daily routine at disaster sites – or are there any routines?**

'The only real opportunity for disaster medicine is in preventative work. Only through practised training can



we help to identify and improve existing weaknesses. Israel, to name an exemplary international case, has an excellent system not only for regular, pre-clinical care but also an

exemplary relationship between civil protection and security agencies. In Germany, because thankfully we tend to be not as affected, the readiness of the government as well as

**The potential use of existing healthcare facilities must be assessed on site**



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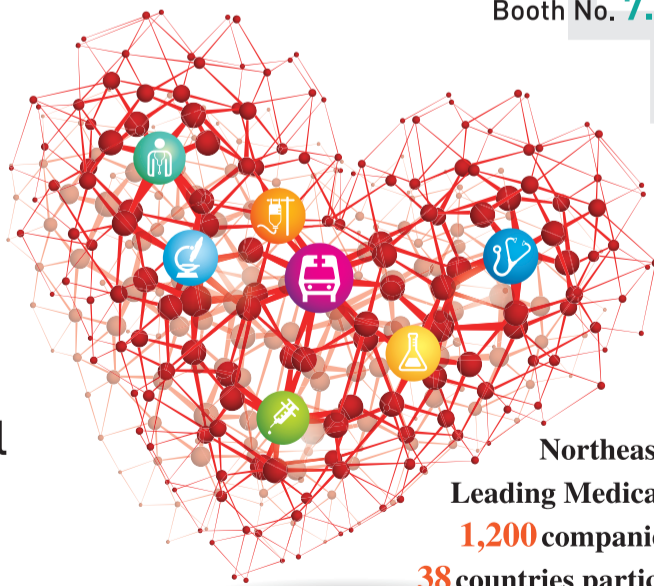
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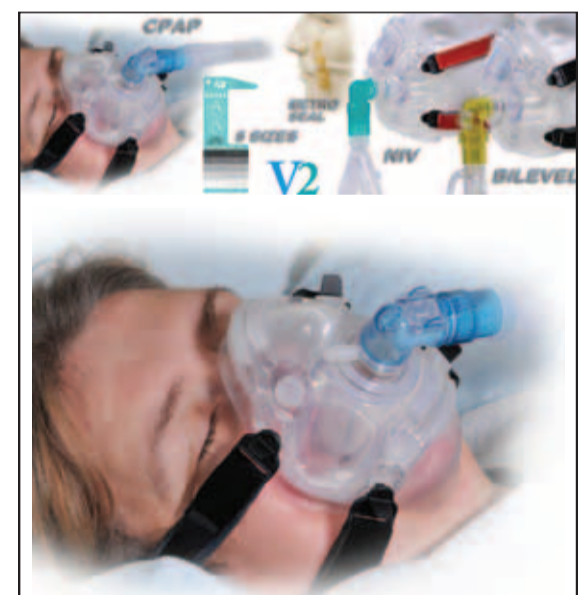
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Field hospital construction (e.g. Haiti 2010) consumes precious time in disasters

the special services to deal with this subject is quite assessable.'

*Why did you, personally, opt for a career in disaster medicine and what experience have you gained?*

'My decision to work in disaster medicine was based on a mix of idealism and a sense of adventure, combined with scientific curiosity and the realisation that modern disaster medicine in Germany still has a lot of potential for further development. There are only few people who are substantially involved with this subject, and this is obviously not a profitable business.

'My deployments for the German Red Cross or the International Committee of the Red Cross, among others to Kenya, Gaza, Iraq, the Philippines and Jordan, were very different in each case. The work calls for a lot of flexibility on the part of the task forces, to quickly adapt to the respective, particular environments. There is no general recipe that fits all deployments.

'The important thing is to provide help to the affected population in the respective country where help is most needed. This can only be determined through an assessment of the situation together with those affected.'

*Which deployments are most memorable and how do you deal with the psychological pressure?*

'Without a doubt, the disaster in Haiti in 2010 and the difficulties involved in the provision of acute aid, followed by rebuilding everything, eclipsed a lot of what I had experienced before.

'This very example illustrates the importance of a political, or stable social, organisational structure. To date, Haiti has still not been able to rid itself of the dilemma of poverty and the associated lack of perspectives. 'You prepare yourself for that pressure and know that the work has to be carried out under suboptimal conditions, otherwise it would be catastrophic.

'Being quite a "tough cookie" is definitely not a disadvantage. However, sometimes working in a team, we achieve a level of motivation that's



hard to find in a more regular working environment. This is also not the right working environment for per-

fectionists because we often just have to find pragmatic solutions. Our local co-workers are frequently our best

Initial assessment of a disaster area, for example using aerial photographs, is often very difficult

support because they know exactly what is important.'

*Can we in Europe think ourselves safe from large catastrophes?*

'After the Cold War ended, the thinking was that civil protection could be scaled down because of a lack of external threats. Unfortunately, this soon proved a wrong decision. The age of technology brings with it modern vulnerabilities. In particular, we are up against the dependency on electricity, transport routes and cyber-technology. We are hardly

armed to deal with this, contrary to all other public statements.

'In Germany, the implementation and utilisation of the risk-analysis by the Federal Office of Civil Protection and Disaster Assistance (BBK) is called for, which allows for the identification of potential weaknesses on our own doorstep. With insights gained from this, we can try to protect critical infrastructures in such a way that a reasonably safe practice can be ensured.

'However, there is often a clash between corporate interests and environmental concerns, or traffic management issues. Achieving a balance of interests will continue to be an interesting challenge.'

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# Endogenous bacteria

## Is chlorhexidine still the best decolonisation method?

Report: Brigitte Dinkloh

For many decades decolonisation – be it selective intestinal, oral or skin decolonisation – has been the accepted procedure to prevent infections by endogenous bacteria. At the 12th Congress on Infectious Diseases and Tropical Medicine, Professor Petra Gastmeier, Director of the Institute for Hygiene and Environment and of the National Reference Centre for the

bacteria preferably colonise the cuffs from where they migrate to the lower airways and cause pneumonia. 'Chlorhexidine is the best researched substance to prevent ventilator-associated pneumonia in intubated patients,' Professor Gastmeier explained at the symposium in Cologne.

In the study by Sonia Labeau chlorhexidine received top marks: the scientist could show that the oral anti-

quite as obvious as with regard to selective intestinal decontamination.

'One possible explanation of the higher mortality rate is the aspiration of chlorhexidine, which may cause changes to the lung. In view of the fact that, day by day, thousands of patients on ICUs receive oral care with chlorhexidine, further research is urgently needed,' the Charité professor emphasised, 'particularly since alternative substances, such as povidone iodine have not yet proven to be particularly well suited.' The end-

opment of hospital-acquired infections. Already in 2001, Christoph von Eiff was able to show that 82.2 percent of staphylococcus aureus bloodstream infections are induced by nasal bacteria rather than by exogenous bacteria,' Gastmeier pointed out.

Standard decolonisation procedures use mupirocin for the nose and chlorhexidine for the skin. The latter antiseptic is available either as a water solution or as pre-packed impregnated washcloths.

Cohort studies looking at the efficacy of bathing with chlorhexidine showed a significant effect: the bloodstream infection rate decreased by 36 percent with cloths yielding slightly better results than chlorhexidine solutions.

### Daily bathing with chlorhexidine

Randomised controlled studies on bathing confirm the positive effects. Climo et al. report that, in their trial encompassing 7,000 Intensive Care Unit (ICU) patients, the rate of bloodstream infections was 28 percent lower in the patient group who had been washed with chlorhexidine compared to the group who had not received this type of care. Moreover, according to this study daily bathing with chlorhexidine-impregnated washcloths significantly reduces the risks of acquisition of multi-drug resistant organisms (MDROs).

A further study published in the US shows chlorhexidine-impregnated washcloths in paediatrics to reduce sepsis by 36 percent.

Susan Huang conducted the largest and best-known pragmatic cluster-randomised trial. More than 70,000 patients in 43 ICUs were decolonised for five days with chlorhexidine cloths and mupirocin. Endpoints were the MRSA clinical isolate and bloodstream infections.



**Professor Petra Gastmeier MD** studied medicine in Halle/Salle and Berlin and has worked as a specialist in Infection Prevention and Control and Environmental Medicine since 1988. Following her habilitation on Infection Prevention and Control at the Free University of Berlin in 1999, a year later she was awarded a C3 professorship for Infection Prevention and Control in the Hospital at Hannover Medical School. Since 2008 she has directed the Institute for Infection Prevention and Control and Environmental Medicine at Charité University Hospital in Berlin, which acts as a National Reference Centre for the Surveillance of Nosocomial Infections.

'The group undergoing universal decolonisation with chlorhexidine and mupirocin without prior screening showed the best results. Even if universal decolonisation will not reduce bloodstream infections, the reduction of MRSA and VRE-isolation days is a major success,' Gastmeier underlined. However, she pointed out, the question of long-term efficacy when all ICU patients are universally decolonised remains to be answered.

### Conclusion

All four recent studies confirmed significant effects of decolonisation on the bloodstream infection rate and on the reduction of resistant pathogens. Even if chlorhexidine works better with gram-positive bacteria than with gram-negative ones, gram-negative ICU patients should undergo skin decolonisation.

Care staff usually accept chlorhexidine bathing since it does not create an additional burden.

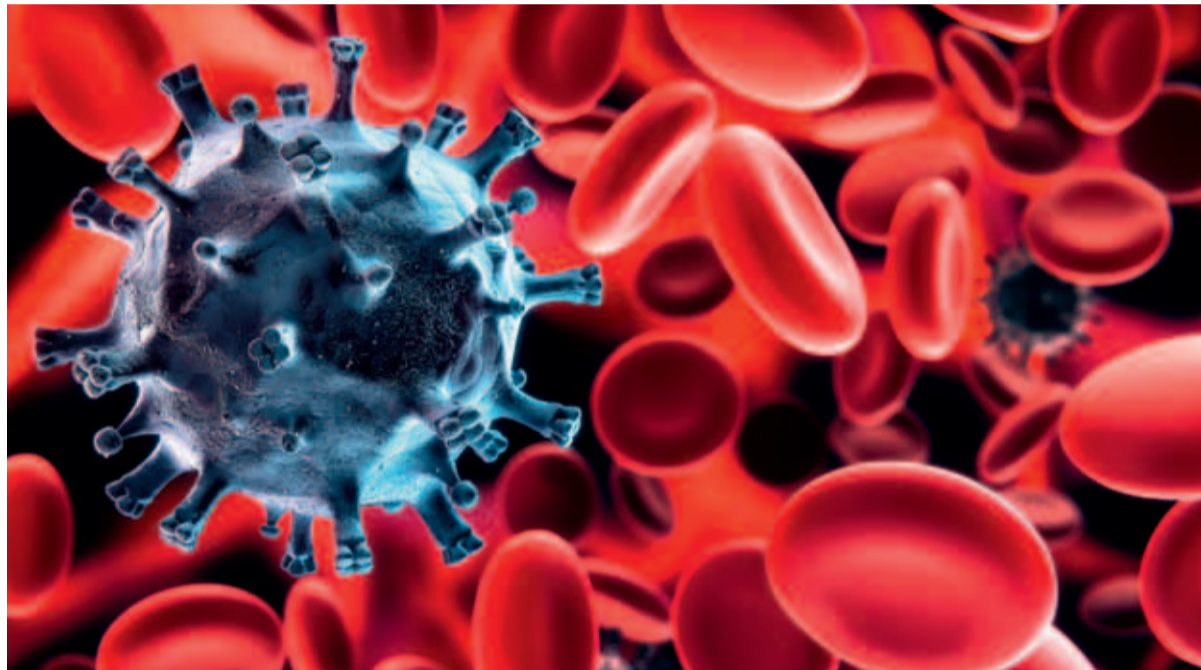
The side effects of the antiseptic are negligible, the Robert Koch Institute, however, reports that in Germany MRSA resistance to mupirocin has increased by seven percent over the past years and even the number of chlorhexidine resistances has been growing.

In Germany, polihexanide and octenidine are available as alternatives, albeit neither of these two substances has been thoroughly tested in clinical studies.

So far no resistances were reported for the cheaper of the two antiseptics, octenidine, and it seems to work better with gram-negative bacteria than chlorhexidine. 'In short: while the evidence on chlorhexidine to prevent ventilator-associated pneumonia is questionable, the evidence on decolonisation to reduce bloodstream infections and the transmission of multi-resistant pathogens is convincing.

'Most likely it is more effective to treat all patients at risk rather than only those with *s. aureus* and VRE.

'Alternative substances have to be urgently tested in clinical studies,' Prof. Gastmeier concluded, 'for us to be able to slow down the development of resistances.'



Surveillance of Nosocomial Infections at Charité Berlin, presented new research on oral and skin decolonisation of bacteria with antiseptics. The title of her talk indicates the results of her study: 'Reduction of endogenous bacteria: an innovative approach to prevention?'

### Oral decolonisation

The problem is as old as artificial respiration: With intubated patients

septic significantly reduces ventilator-associated pneumonia. However, in his recent review, Boston-based Michael Klompas draws a more complex picture. He concluded that, as far as pneumonia risk is concerned, only cardiac surgery patients benefit from chlorhexidine. For all other patient groups an increase in mortality has been recorded. 'With regard to oral decolonisation the evidence of the benefits of chlorhexidine is not

point of future studies, Gastmeier suggests, should be mortality rather than pneumonia risk.

### Skin decolonisation

The skin flora is very different from the oral flora and varies from patient to patient and from body region to body region. Accordingly, decolonisation measures can yield widely differing results. 'No doubt, the skin and its flora play a role in the devel-

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# NICE issues strict new guidelines

The National Institute for Health and Care Excellence (NICE) has issued strict new guidelines on safe nurse staffing levels to all hospitals, Mark Nicholls reports

The issue of patient/staff ratios in England came to a head in recent years following the poor levels of care witnessed at Mid-Staffordshire hospital, and the subsequent Francis Inquiry and the Berwick report, which outlined ways in which the National Health Service (NHS) could improve care. Both reports raised the issue of staffing levels and the latest NICE guidance has been designed to help ensure safe and efficient nurse staffing levels on hospital wards.

NICE acknowledges that, as patients' needs differ from day to day, there is no single staff number that can be safely and adequately applied across the wide range of wards in the NHS. However, the guidance committee concluded that when each registered nurse is caring for more than eight patients this is a signal to check that patients are not at risk of harm, and the guidance sets out 'red flag events' that warn when nurses in charge of shifts must act immediately to ensure they have enough staff to meet the patients' needs on that ward. Red flag events include patients not being provided with basic care such as pain relief or help to visit the bathroom.

Senior management and nursing managers must closely monitor 'red flag events', analyse safe nursing indicator data and take action if that becomes necessary.

Professor Gillian Leng, Deputy Chief Executive and Director of Health and Social Care at NICE, said: 'Safe staffing is more complex than setting a single ratio. The emphasis should not just be on the available number of staff, it should be on delivering safe patient care and making sure that hospital management and nursing staff are absolutely clear on best practice to do this.'

NICE says that, while there may be some upfront costs involved in putting these recommendations into practice, depending on the existing staff levels, this is likely to be offset by the savings that can be achieved

through safer care. It suggests more than a billion pounds sterling can be saved by preventing pressure ulcers,

while reducing the number of infections patients get after surgery could save up to £700m a year alone.

Professor Leng added: 'The current national cost for nursing staff in acute wards is estimated at around £4 billion. Implementing the NICE guideline is unlikely to have significant financial impact in many trusts, as they may simply need to adapt

their processes to work out where nursing staff should be at any given time. 'Nor will any financial impact be felt in a one-year period. Many trusts are already rolling out planned staffing changes, which will spread the cost across a number of financial years. The expected increased training numbers for nursing staff will also see a gradual increase between now and 2017.'

Dr Peter Carter, CEO of The Royal College of Nursing (RCN) commented that nurses have long recognised the importance of safe staffing levels. 'It's good to see this is now being recognised across the NHS,' he added. 'The needs of patients should be the only thing determining staffing levels – not finances.'



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Gillian Leng is the Deputy Chief Executive at NICE, Director of Health and Social Care, and a visiting professor at King's College London. After researching the epidemiology of peripheral vascular disease and specialising in public health medicine, she moved to NICE in 2001, where she set up and runs the clinical guidelines programme, established the NICE implementation function, and set up NHS Evidence and is also responsible for new work on Quality Standards across health and social care.



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The Starled3 NX is suitable for many applications in the operating theatre and diagnoses in, for example, gynaecology, dermatology and general medicine.

'The lamp grants a homogeneous and shadow-less light thanks to its special LED optics created by ACEM Medical Company, which directs light beams at best according to the needs,' the Italian manufacturer reports. 'The visual area is perfectly illuminated assuring both excellent visual comfort and working conditions. Its next generation LEDs produce an unparalleled quality of light with a colour temperature (CCT) of 4.500 °K and a colour rendering index (CRI) of 95.'

Light intensity is 130.000 lux with low energy consumption of 69W, and the life cycle of the LEDs is

around an impressive 50,000 hours.

The model has three reflectors producing a blended and intense cone of light, focused through automatic adjustment of the light spot diameter, the firm points out. 'The slim, practical, compact design makes it perfect for several uses. The lamp is ergonomic, easy to move and to position and suitable for the laminar flows of the operating room.'

The ENDO function (light for endoscopy) enables the lamp's use during MIS.

Functions are touch-screen adjusted via the I-SENSE control panel – covering light intensity, DoF (depth of field), ENDO (for MIS), SIZE (light spot diameter adjustment), SYNC (optional - to synchronise controls of the firm's combined lamps).

Details: [www.acem.it](http://www.acem.it)

**ACEM is at Medica Hall 10 / Stand E31**

## Medical video integration

IPS1000A, a video management system from FSN Medical Technologies, aims to help operating theatre (OT) staff to spend less time on the complexities of video use

This system provides popular OT integration capability such as source selection, advanced windowing features, easy switching, and PIP/PBP mode, the manufacturer reports. 'It can standardise, format, and split video signals based upon the user's needs and/or the user's application, and also upgrade a lower resolution image to full HD 1920 x 1080p quality, ensuring brilliant images from older legacy source devices. To simplify operation, the unit is controlled using FSN's touch screen tablet and simple user interface.'

Handling core needs for integrated surgical video processing, the system

- accepts many signal sources, live and reference, legacy and current.
- Converts, upgrades, and also



**FSN is at Medica Hall 10 / Stand G39**

- maintains signal integrity.
  - Switches signals as needed to monitors and recording devices.
  - Allows for colour control and PIP layout adjustment.
- Additionally, the company points out, it provides high performance at a competitive price; shorter ROI; less extra hardware and cabling; signals

are kept within the OT. There is also a mobile tablet and intuitive touch screen control, and accompanying surgical display monitors and DVRs.

IPS1000A also has a small footprint yet manages a variety of imaging equipment.

\* FSN Medical Technologies, part of Foreseon Custom Displays, Inc., specialises in video signal solutions for advanced operating theatres and procedure rooms. The firm's products include surgical LCD displays, video processing and routing systems, and signal distribution solutions for digital and analogue integrated environments. Details: [www.fsmed.com](http://www.fsmed.com)

## Single use surgical instruments

**DTR is at Medica Hall 16 / Stand F42**

Over in Hall 16, in the Wales Pavilion, an extensive instrument range from DTR, the single-use surgical instrument manufacturer, is on show. Included are precision electro surgery instruments. 'Micro Needle Electrodes (both tungsten and stainless steel variants) offer first time sharpness with fine, precise tissue dissection,' the firm reports. The range also includes diathermy forceps – (an extended bipolar range to include McPherson and Monopolar) and Loops and Balls.

'Further highlights include the CombiHook, an innovative colposcopy device developed alongside a selection of leading colposcopists, that enhances existing procedures specifically in cervical manipulation,

where stabilisation helps to secure the clinician's vision during the entire procedure.'

Since launching at Medica 2013, the DTR's renewably sourced Rotating Cervical Biopsy Punch has been well received by clinicians worldwide, the firm adds. 'A recent independent Life Cycle Analysis (LCA) study supports evidence that the instrument is 2.8 times less harmful to the environment than a standard Tischler. The handle is made from DuPont's Sorona plastic with 20-37% renewable material, utilising a renewably sourced propanediol (PDO) made from technical starch – a truly green innovation!'

Supporting the motto "Visibility, quality and safety in your supply



chain", the firm has integrated machine readable GS1-standard barcode labels across its instrument range, '... for improved product traceability with an increasing number of healthcare providers worldwide adopting an eProcurement strategy,' DTR points out.

Details: [www.dtrmedical.com](http://www.dtrmedical.com)

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The world's first 4D Curved Matrix Array probe



Embryo in 10th week of pregnancy; transparent imaging with HDlive Silhouette

perpendicular sectional planes in real time. Consequently, the detection of complex malformations of the foetal heart is far easier and more accurate, GE Healthcare reports. 'Thanks to the Curved Array technology, a superlative level of spatial resolution is achieved at all depths.'

With HDlive Silhouette mode, the foetus and the inner structures and organ complex are displayed with vitreous clarity, the company adds. 'During the first trimester especially, these new insights are extremely helpful when it comes to assessing brain and organ development.'

'The Radiance system architecture, with four times the speed of parallel processing, means that the level of detail and discernibility of close neighbouring structures is even greater than what has been achievable with the Voluson equipment available to date. This is due to a significant reduction in background noise coupled with a further enhanced spatial resolution, producing impressive 2D, 3D and 4D images.'

'This exceptionally realistic imaging, which has reached new heights with the Voluson E10, has increased the accuracy and therefore the significance of pre-natal screening even further,' the manufacturer adds.

**Voluson E10 from GE Healthcare delivers a new standard in OB/GYN imaging with more clarity, more speed and flexibility**

# A perfectly shining product

The first operating theatre light with HD-SDI camera embedded in the head

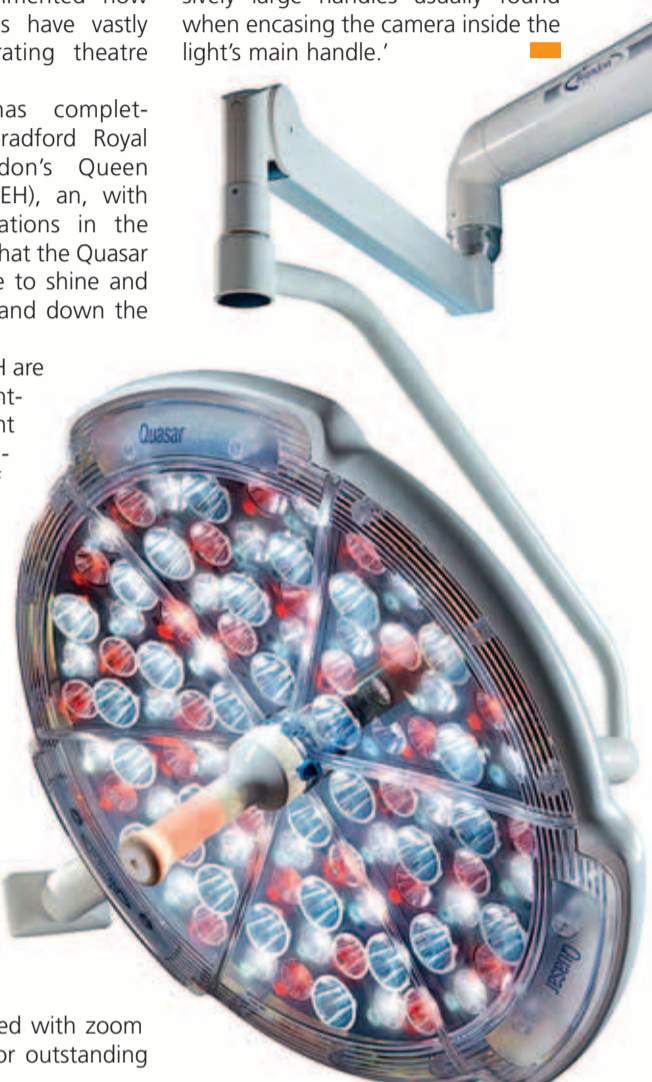
The new surgical lighting, Quasar eLite, has received rave reviews since its launch earlier this year, the manufacturer Brandon Medical reports: 'Orders have been coming in thick and fast for the OR light and end users have commented how the array of features have vastly improved their operating theatre experience.'

The company has completed installations at Bradford Royal Infirmary and London's Queen Elizabeth Hospital (QEH), and, with many further installations in the pipeline, it is hopeful that the Quasar eLite will '... continue to shine and impress surgeons up and down the country'.

Theatre staff at QEH are said to have commented how easy the light heads are to manoeuvre, a direct result of the bespoke spring arm system used in the Quasar eLite.

'To compliment the excellent lighting characteristics, Quasar eLite packs a number of world-class features into its slim, low-weight chassis. It's the first OR light to feature an HD-SDI camera fully embedded into the light head,' Brandon Medical points out, adding that the camera is full HD, equipped with zoom controls and allows for outstanding

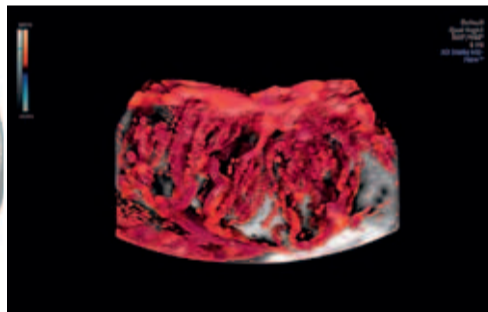
picture quality on even the largest monitors. Further to providing a platform for telemedicine systems, mounting the camera inside the lamp head has more practical benefits in obviating the need for excessively large handles usually found when encasing the camera inside the light's main handle.'



**GE Healthcare is at Medica Hall 10 / Stand A42**



GE's latest and most advanced Voluson system to date offers clinicians completely new ultrasound views thanks to three pioneering innovations, the company reports. These open up new screening prospects, which include the world's first 4D Curved Matrix Array probe, which has been especially designed for pre-natal screening. The system also enables a simultaneous display of two



**Brandon Medical is at Medica Hall 13 / Stand C36**

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# Pioneering ultrasound use in airway management

Ultrasound is playing an increasing role in the management of the upper and lower airways, particularly in interventional procedures and emergency situations. It is also used to enhance patient safety, Mark Nicholls reports

**Dr Michael S Kristensen**, Head of Anaesthesia for ENT and maxillofacial surgery at Denmark's Rigshospitalet, is pioneering the new and expanding role of ultrasonography in clinical decision-making, intervention and management of the upper and lower airways in a way that is clinically rel-

evant, up-to-date and practically useful for clinicians. He has shown how ultrasonography is becoming essential in management of the upper and lower airways, can identify tracheal structures and is offering a primary diagnostic approach in suspicion of intraoperative pneumothorax. 'A

few years ago, ultrasound was not applied at all for airway management. Now, it is used for a whole range of activities,' he explained.

These include screening and prediction of difficult airway management; diagnosing pathology that can affect airway management; identification of the cricothyroid membrane; measuring gastric content prior to airway management; airway related nerve blocks, and prediction of the appropriate diameter of endotracheal, endobronchial or tracheostomy tubes.

Other areas where ultrasound has shown airway management value is in differentiating between tracheal and oesophageal intubation; differentiating between tracheal and endobronchial intubation; confirmation of gastric tube placement; differentiating between different causes of dyspnoea/hypoxia and pulmonary oedema; and prediction of successful weaning from ventilator treatment.

'In interventional procedures or emergency situations the major roles of ultrasound include the localisation of the trachea and the cricothyroid membrane before anaesthesia, so that the clinician will know exactly where to perform an emergency

cricothyrotomy/tracheostomy in case it becomes necessary, and confirming or ruling out a suspicion of an intraoperative pneumothorax before placement of a pleural drain-tube.'

Ultrasound also confirms whether the endotracheal tube actually enters the trachea or accidentally enters the oesophagus, evaluates stomach contents and lung-pathology to distinguish between which treatment modalities that are needed and identifies the localisation of the appropriate tracheal level for dilatational tracheostomy or surgical tracheostomy.

Ultrasound is essential in upper and lower airways management because several indications cannot be performed in a clinically acceptable way, he explained. 'For the primary suspicion of a pneumothorax, ultrasound is by far the fastest method, and it has a much higher sensi-



**Dr Wendy Teoh (left) and Dr Michael Kristensen pioneer ultrasound use in airway management through research, publications, lectures and hands on training internationally**

tivity than an anterior-posterior X-ray in the supine patient. A CT-scan is slightly more precise but is often delayed and is almost impossible to obtain in the intraoperative setting,' he pointed out. 'For clinicians, the benefits are an immediate diagnosis and hands-on guidance in real time, whilst for patients it means faster and safer diagnosis and treatment in relation to airway management.'

For hospitals, ultrasound in airway management is faster and cheaper than X-ray and CT and can lead to better outcome of dilatational tracheostomy and better outcome and potentially lower mortality when the patient needs emergency surgical airway management.

**Ultrasonography is becoming essential in management of the upper and lower airways**

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## Albit ultrasound

From Poland with pride

**Echo-Son S.A. is at Medica**  
**Hall 09 / Stand B42**

**Albit was designed** as an easy-to-use and practical ultrasound device both for general diagnostic applications such as obs/gyn, paediatric, small subsurface organ examinations and specific diagnostic applications such as proctology, TRUS, anaesthesia, vascular surgery or orthopaedics.

The system enables monitoring of and control over the course of many medical procedures, for example in a delivery room, endovascular,

i.e. sclerotherapy, EVLT or biopsy procedures. 'Therefore,' the manufacturer, Echo-Son S.A., of Pulawy, Poland, confirms, 'this ultrasound is an invaluable bedside and mobile diagnostic device for various medical wards, emergency departments and treatment rooms. It is not only recommended for infants and children, but also for the examination of elderly patients.'

'The additional duplex Doppler



function (Colour/Power Doppler) significantly diversifies diagnostic capabilities, simultaneously providing the best quality-price relationship,' Echo-Son adds.

## TODAY – DON'T MISS

**NEW: MEDICA CONNECTED HEALTHCARE FORUM**

**Venue: Hall 15, Stand 15C24**

**Wednesday, 12 Nov 2014, 11.00 a.m. – 01.30 p.m.**

**BIG DATA & HEALTH SYSTEMS**

**11.00 a.m. – 11.30 a.m.**  
Healthcare Delivery in the 2020's  
**Stefan Englet**, Intel Health Life Science Partner Manager, EMEA, Intel

**11.30 a.m. – 12.00 noon**  
STANLEY Healthcare Empowers Healthcare Professionals by Improving Patient Safety & Security, Patient Experience, Workflow and Efficiency  
**Ricardo C. Berrios**, Vice President Emerging Markets & Europe, STANLEY Healthcare

**12.00 noon – 12.30 p.m.**  
Connecting Patients – Healthcare Starts with a Conversation  
**Tony Rich**, Global Marketing Healthcare Solutions, Unify

**12.30 p.m. – 01.00 p.m.**  
Why Connected Devices are Essential in Patient Care  
**Björn Peters**, Head of Segment M2M/IOT, except Secure Solutions and **Jaap Vossen**, Acting Head M2M, Swisscom

**01.00 p.m. – 01.30 p.m.**  
Frictionless Health Care  
**Thomas Olesen**, Commercial Director, Qualcomm Live

# UK researchers focus on ventilator weaning techniques



Report: Mark Nicholls

**Research being conducted** in the United Kingdom is focusing on techniques to help improve the weaning process for patients coming off mechanical ventilation in hospital intensive care units.

Weaning is a fundamental part of intensive care practice for patients that required intubation but while hospitals across the UK have individual strategies for weaning, there are at present no defined national guidelines.

Dr Andrew Bentley, consultant in intensive care and respiratory medicine at University Hospital South Manchester National Health Service (NHS) Trust, said: 'many of those local guidelines will be similar, but there are different strategies and approaches to reduce support from ventilation. 'A factor behind there being no definitive national guideline within the UK is because we still need to understand the position of various aspects of interventions within the weaning process.'

However, research projects are examining ways to improve outcomes and reduce the time it takes for patients to come off ventilation, explained Dr Bentley, who is chair of the Intensive Care Society (ICS) Research Committee. The ICS is the representative organisation in the UK for intensive care professionals as well as patients.

One ICS supported study is BREATHE, which is a pragmatic, multi-centre randomised controlled trial led by Professor Gavin Perkins of Warwick University, Coventry, and designed to evaluate the clinical benefits and cost effectiveness of non-invasive weaning.

## Invasive versus non-invasive ventilation

That follows a systematic review in 2009 which suggested use of non-invasive ventilation to wean critically ill adults off invasive ventilation was associated with decreased mortality and other clinical benefits, however, the net clinical and cost effectiveness compared to other weaning strategies remained uncertain.

Dr Bentley suggested there is some evidence that non-invasive ventilation – delivered through a mask rather than an endotracheal tube or tracheostomy – has benefits for groups with underlying respiratory conditions such as chronic obstructive pulmonary disease. Patients with acute respiratory failure often require invasive ventilation to unload the respiratory muscles and support gas exchange, though invasive ventilation used over a prolonged period of time might lead to complications including ventilator associated pneumonia and increased morbidity. Resulting from that experience, a clinicians aim to minimise the duration of invasive ventilation.

## The consensus document

A 2007 consensus document from the European Respiratory Journal on 'weaning from mechanical ventilation' divides patients into 'simple, difficult or prolonged' withdrawal from ventilation and recommends weaning should be considered as early as possible and that a spontaneous breathing trial be used as the major diagnostic test to determine whether patients can be successfully extubated. Within the United Kingdom there is a common recognition of the document, despite variations in approach, and NHS England has also recognised the need for specialist weaning units for those patients who are difficult to wean

within an acute intensive care environment.

## Weaning in UK practice

Dr Bentley pointed out: 'By far the majority of patients in an intensive care unit are weaned relatively quickly, within the first few days, and the percentage left on prolonged ventilation is relatively small, about 10-15%, but they are the patients that take up a huge amount of resource.' He said the key challenge for clinicians is in understanding the pathophysiology of the weaning process, recognising the underlying co-morbidities and starting the weaning process as early as possible, following resolution of the underlying presenting condition to intensive care.

'Patients that are usually more difficult to wean are those with pre-existing co-morbidities such as cardiac conditions or respiratory disease and those who develop critical illness acquired weakness affecting peripheral nerves and muscles. That is why it is important to have a multi-disciplinary approach through the medical, nursing and allied health professionals within the ICU to address the weaning process.'

Dr Bentley acknowledged that intensive care practices have evolved and improved over recent years, but research supported by the ICS is helping specialists to understand more fully how to manage and improve outcomes better for their patients in intensive care, for example, those with severe sepsis and ARDS (acute respiratory distress syndrome).

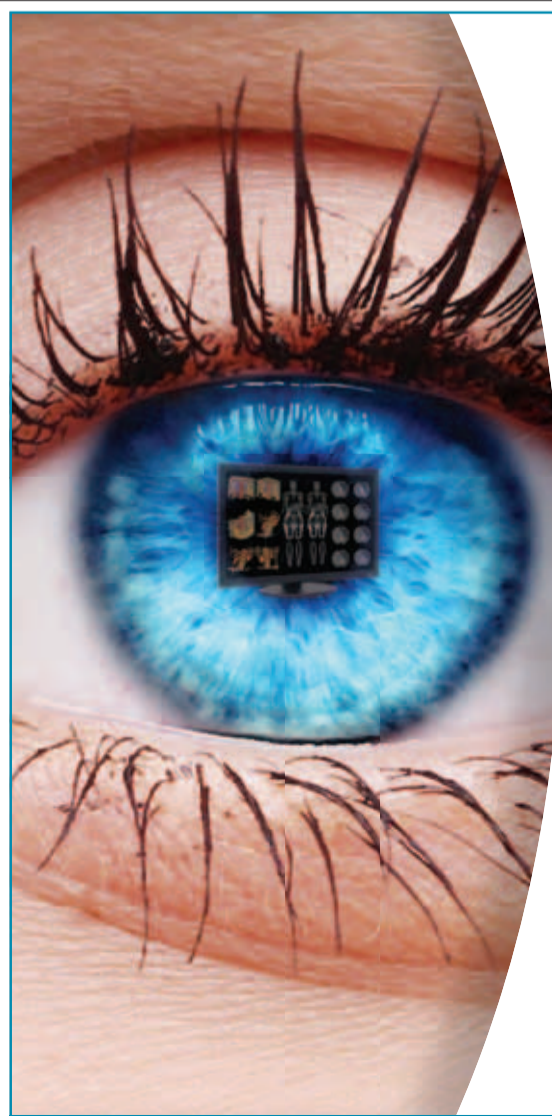
## Multi-disciplinary approach

The introduction of a ventilator care bundle aims to reduce ventilator-associated pneumonia, associated



**Dr Andrew Bentley** is a consultant in intensive care and respiratory medicine with the University Hospital South Manchester NHS Trust and Honorary Senior Lecturer at the University of Manchester, sits on the Intensive Care Society ([www.ics.ac.uk](http://www.ics.ac.uk)) council, and is chairman of its research committee. His respiratory research includes involvement in the BREATHE study and a number of other multi-centre intensive care trials, and he is involved in an on-going study looking at diaphragmatic pacing for patients with Motor Neurone Disease (DiPALS).

morbidity, mortality and length of time spent on a ventilator. It includes a number of interventions that when used together can improve outcomes for patients. These include elevation of the head of the bed, daily sedation breaks and assessment of readiness to wean/extubate, deep vein thrombosis and peptic ulcer prophylaxis and daily oral care. Regular screening for respiratory infection, early recognition of ventilator associated pneumonia, and daily assessment of sedation and readiness to wean can reduce the length of time spent on ventilation, he said.



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# A new tool for biochemical analyses

On the near horizon: telemedicine will bring home care to chronic liver disease sufferers

Although telemedicine could improve the quality of life of patients with chronic liver diseases, viable home care systems are still lacking. However, within the EU-project 'd-LIVER' ([www.d-liver.eu](http://www.d-liver.eu)) scientists at the Fraunhofer Institute for Biomedical Engineering IBMT, in St. Ingbert, Germany, are working with European partners to develop an IT- and cell-based system that will help chronic liver failure patients to receive medical support at home.

The project engineers are programming the IT platform and developing sensor technology to measure the condition of the liver cells in the cell-based system.

As IBMT computer scientist Stephan Kiefer points out: 'Telemedicine is something that would greatly improve the quality of medical care and patients' quality of life.'

With the research team's work progressing, currently their patient management system is at the most advanced stage. For the first time, the scientists are combining classic components of telemedicine – such as remote monitoring for doctors – within a system that assists decision-making. Called the Care Flow Engine, Kiefer explains what lies within it. 'We've created IT systems that can take treatment plans drawn up by doctors and turn them into such

user-friendly automated processes that chronic liver disease patients can receive quality long-term treatment at home.'

To this end, the scientists have developed an IT application called Personal Health Manager, which patients can access conveniently on tablet computers in the form of an app. It amalgamates all the data from devices that measure blood pressure, heart rate, weight, temperature and liver values along with the treatment plans from the Care Flow Engine. 'Its main purpose is to ensure optimum treatment for the typical complications that tend to accompany liver diseases,' says Kiefer.

This can be achieved by means of tests, questioning, exercises, or instructions. For example, patients are regularly asked to weigh themselves, measure their liver values and accomplish a cognitive test. This provides indications as to how much patients are suffering from conditions such as encephalopathy and ascites.

The system automatically evaluates the results, suggests adjustments to medication doses, and recommends courses of action that are then discussed between the doctor and patient.

'Although the technology is currently set up for liver diseases, it's suitable, in principle, for the telemedi-

cal treatment of any chronic illness,' Kiefer points out. 'Adapting the existing system to make this a reality is our medium-term goal.'

Sensors measure cell vitality

The sensor technology for monitoring liver cells was developed by physicist Dr Thomas Velten. 'Our sensors continuously measure the vitality of the cells in a bioreactor – and they do so by analysing the cells directly. This is an important new tool to complement conventional biochemical analyses.'

Thanks to built-in sensors, operators do not have to open the bioreactor for every measurement, thus eliminating the danger of the cells becoming contaminated.

Impedance (the technical term for resistance to alternating electric current) spectroscopy plays an important role in the procedure. When cells deteriorate, their impedance spectrum changes.

So far, scientists have been able to prove this effect in smaller laboratory reactors. At the end of this year, the researchers want to confirm those results using bigger bioreactors that are equivalent to a human liver in terms of volume.

Finally, Velten adds: 'The online measurement of cell vitality is an important part of our IT-based system to support liver treatment.'



# Scientists aim for a self-adjusting buffer

Prosthetics and exoskeletons can cause amputees pain

UT Arlington researchers have been awarded a \$744,300 grant from the Department of Defense Peer Reviewed Orthopaedic Research Program to create an adaptive interface that fits between a prosthetic and a patient's limb so that the fit and comfort of the prosthetic are improved.

Haiping Huang, professor in the Mechanical & Aerospace Engineering Department, and Muthu

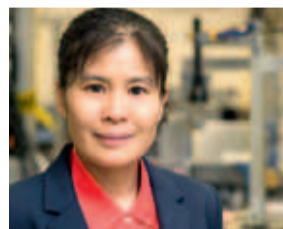
Wijesundara, principal research scientist at UT Arlington's Research Institute, are collaborating on the project. The interface will resemble an inflatable bubble wrap that will be embedded with sensors.

Huang, an expert in sensor technology, explained that four types of sensors will be used with the interface to monitor the fitting of the prosthetic device. The sensors will measure vertical movement of the

limb relative to the socket wall, the pressure on the limb, the changes in the circumference of the residual limb during the day, and the water content in the tissue. 'Eventually, we want to build the socket that can adjust automatically to the patient,' Huang said. 'To do that, we need the sensors to tell us when and how to adjust the socket. We plan to design a warning system first, then the sensor data will teach us how to adjust the interface automatically.'

Prosthetic users frequently experience discomfort, blistering and ulcers between their prosthetics and their residual limbs. The limb's volume changes throughout the day. This unavoidable fluctuation changes how the limb and prosthetic socket fit together. Currently, many prosthetic users manually adjust the fitting between the prosthetics and their limbs by adding or removing socks.

Khosrow Behbehani, Dean of the College of Engineering, said this project could help anyone who uses prosthetics, including military personnel. 'Soldiers who have been injured and have to use prosthetics every day of their lives want



Aerospace engineer Haiping Huang



Biomedical specialist Muthu Wijesundara

the most comfortable, technologically sound devices,' he said. 'This research works to provide the best possible prosthetic to those servicemen and servicewomen.'

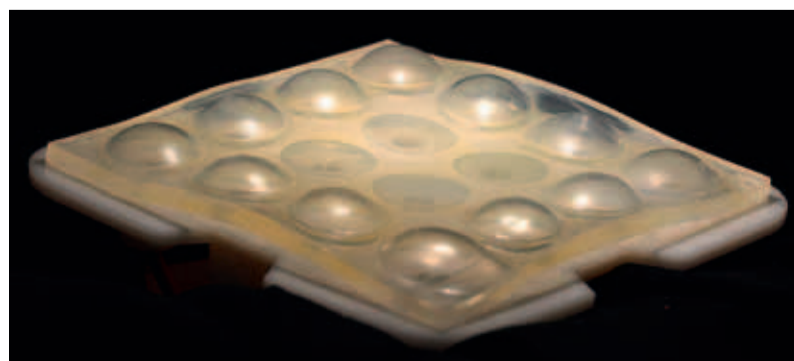
According to a Congressional Research Service report, more than 1,500 American soldiers have had major limb amputations. Many of those are under 35 years old and are more likely to live active lifestyles, thereby needing a prosthetic that fits comfortably.

Specialising in medical devices for applications in tissue regenera-

The researchers are working on a bubble actuator

tion, wound healing, and prosthetic devices/interfaces, Wijesundara said they want an adaptable interface that can improve comfort and the fit regardless of the residual limb conditions and improve daily life for the user. 'We want everything to adjust depending on whether the person is walking, running or simply sitting down,' he explained. 'This interface technology can be applied to various prosthetic devices and exoskeleton applications.'

The researchers predict that it could take three to five years to begin clinical applications of the device.



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# Breathtaking: The enduring respiratory valve

Three generations of Rudolphs focus on patients' breathing needs

Back in 1938, the precision machinist and innovator Hans Rudolph created what is possibly the first respiratory valve specifically for human/animal pulmonary studies. The valve separates inhaled air from exhaled air, showing how efficiently a person's lungs convert oxygen to carbon dioxide. That valve is still the primary product of the company founded by the inventor in 1960.

Today, Hans Rudolph Inc. manufactures a wide variety of products, all for use in respiratory studies and therapy. These include the masks patients wear to measure air flow and equipment to calibrate machines used in respiratory research and testing. The company manufactures and sells masks used by sleep labs during sleep studies to diagnose obstructive sleep apnoea (OSA) and, once a patient is diagnosed, Hans Rudolph sells the CPAP/BiLevel/NIV Masks for them to use at home to treat their OSA.

The company has been perfecting its products for over 50 years – among the latest being the fourth-generation model of the continuous positive airway pressure (CPAP) mask – primarily used to treat sleep apnoea. 'The product is far superior to any other CPAP or NIV mask on the market,' said Wayne Grooters, medical product distributor and owner of Sovereign Medical LLC in North Carolina, USA.

The hospital disposable masks are made of soft materials and do not cause irritation and skin problems, Grooters added. The anatomical design lets it fit, rather than sit, on the face, meaning less leak and more comfort for ventilated patients. Finally, he noted, it's the only mask that allows users to wear glasses.

'We're seeing a huge growth in using the silicone face mask in the pulmonary function lab for stress testing and that sort of thing,' said Kevin Rudolph, the third-generation CEO. 'Then we're making all sorts of custom modifications to adapt these to all the other manufacturers' products. So they buy them from us with a custom adapter and put it in the kits that go out with their instruments, and pulmonary/exercise testing systems, and then we get the after-market business.'

Rudolph said the firm is starting to grab a lot of business from original equipment manufacturers (OEMs) that make a variety of respiratory machines for hospitals and clinics. The OEMs would rather buy a mask

from a specialist than make it themselves. 'We try to specialise in areas that OEMs can benefit from and not impede on their real business, which is the instrumentation and pulmo-

nary testing systems that we don't really get into,' Rudolph explained. 'It transforms us from a competitor into a partner, and that's good business for us.'



**Hans Rudolph Inc. is at Medica USA Pavillon Hall 16 / Stand D20-15**



New Quest Homecare Mask is lightweight, low cost and fits under the chin

GE Healthcare

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For more information, visit [www.gehealthcare.de](http://www.gehealthcare.de)



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## MAKE A NOTE:

**NEW: MEDICA CONNECTED HEALTHCARE FORUM**  
Venue: Hall 15, Stand 15C24

Wednesday, 12 Nov 2014,  
● 01.30 p.m. – 05.00 p.m.

Wearable Technologies moderated by Marije Nieuwenhuis, WT Wearable Technologies

# Continuity, consistency and more clinical value

Raising speed and capacity transforms ultrasound machine into a platinum series



'The new Aplio improves the existing functionalities of the high-end systems, dramatically enhances image quality, increases diagnostic confidence and further streamlines workflow,' the manufacturer reports. 'With the new hardware comes new capabilities as Toshiba introduces an advanced Doppler algorithm called Superb Microvascular Imaging (SMI) and expands its suite of elastography with the addition of ShearWave Elastography (SWE).'

Joerg Schlegel, Senior Manager Product Marketing at Toshiba Medical Systems points out: 'The Aplio Platinum Series is an evolution within the Aplio family, consistent with the revolutionary architecture.'

Christoph Simm, Toshiba's Senior Manager of the European Ultrasound Group adds that the expanded power of the Aplio takes it into the growing fields of ultrasound applications, for example comprehensive liver diagnostics with the unique SWE Smart Map approach; advanced prostate diagnostics with the Smart Fusion for MR-US fusion guided biopsy solutions, gynaecological diagnostics with the firm's FlyThru technology for ultrasound hysteroscopy, and musculoskeletal diagnostics with Toshiba's SMI for assessing

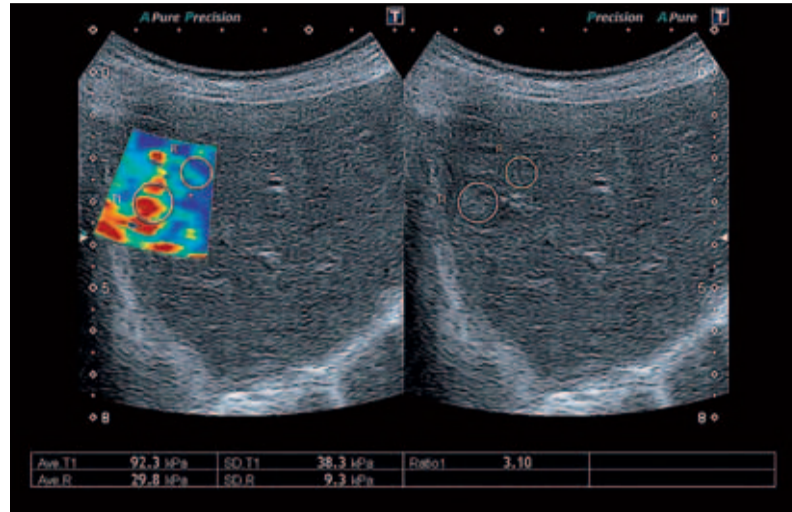
inflammation. Toshiba has also introduced four new probes, including the world's first wideband single crystal transducer created with a new composition of piezoelectric crystals and tissue matching technology to provide an increased bandwidth, a better signal-to-noise ratio and an improved axial resolution and penetration.

The first experiences with Aplio Platinum won praise from a cohort of leading clinicians who applied the new capabilities to advanced investigations as well as clinical routine, the company reports. 'Six leading physicians presented their findings on the impact of enhanced features of the new platform through a series of case studies for specific clinical applications, as well as during a roundtable discussion where they shared experiences.'

Prof. Thomas Fischer MD, who has worked with the system for almost a year at the Radiological Institute at Charité Hospital, in Berlin, observed: 'The dramatic increase in image quality, Doppler sensitivity and Fly Thru rendering accuracy and speed leads to the question of whether there are clinical advantages with all the new tools of this very advanced system.'

### Not just a toy

According to Adrian Lim MD, Consultant Radiologist at Imperial College and Chief of Ultrasound at Charing Cross Hospital, both in London: 'Every time a new technique or technology comes along one needs to ask if it is something useful or just a toy. The innovative features of the new Aplio bring significant changes. Greyscale imaging particularly stands out with very nice homogenous imag-



Toshiba's shear wave technology provides a quantitative measure and dynamic visual display of tissue stiffness in a variety of clinical settings ranging from abdominal to small parts examinations. The highly accurate and reproducible tool provides fully integrated measurement and reporting for seamless integration into the clinical workflow.

es and crisp margins.' An author on 142 published papers, Leopoldo Pérez de Isla MD, explores advanced echocardiographic measures to establish reference values at the Cardiovascular Institute of the Hospital Clínico San Carlos in Madrid, Spain. 'I need a system with a very high temporal resolution and I need a fast system,' he pointed out. 'I can't use a system where I have to push many buttons and wait a long time. This is the first system that works very quickly to analyse a complete left ventricle using Wall Motion Tracking in a very accurate way.'

### Overall speed brings clinical benefits

Accelerated overall processing has delivered a variety of clinical benefits, Toshiba points out. For example, the firm's Fly Thru technology is much

faster in rendering large data volumes. 'Smart Fusion now manages multiple data sets from CT and MRI, the firm adds. 'Differential Tissue Harmonics Imaging has stepped up to a new generation while 3D Multi-Planar Reconstruction has been refined. Thanks to boosted processing, Toshiba Precision Imaging and Precision+ have entered a new dimension with 3D volume capabilities.'

Finally, Toshiba concludes: Delivering more information with accelerated processing in an intuitive, easy to understand display, Aplio Platinum builds diagnostic confidence and helps physicians avoid the need for supplementary exams. Ergonomic with a fully customisable console, this advanced system saves time and expense, enhancing departmental productivity.'

# Shearwave elastography



Pakistan's Sindh province shapes up for liver transplants

Dr Ishrat-ul-Ibad, Governor of Pakistan, has provided 12 Shearwave Elastography machines from 'special funds' to various Sindh province hospitals, including in Karachi, Hyderabad, Benazirabad, Sukkur, Larkana, Khairpur Mirs and Shahdadpur.

Dr Ibad commented that Pakistan is a developing country with many health challenges, because the urban population is rising more than proportionally and, due to this, the government hospitals could not provide such health facilities as are needed, and there are more health problems in rural areas.

'Most people often cannot get treatment for complex diseases, such as cancer, liver and kidney diseases, which not only affect patients but also their families.'

Doctors from Dow University of Health Sciences in Karachi have been selected to visit Maryland, USA, to undertake advanced training in

liver transplantation. Earlier, two doctors had taken a six-month training course in liver transplantation in Istanbul, Turkey.

Dr Ibad: 'Liver disease is expanding speedily and most people are deprived of its treatment, which is very expensive.' In Pakistan, he added, treatment for this disease is limited to Islamabad.

Along with the specialist training in the USA, Dow University is currently preparing a Liver Transplantation Department according to international standards.



USA CEO Center by US Commercial Service, Hall 16, Stand C 04

US companies have come to MEDICA to meet with potential partners from around the globe.

Set up your meeting at Hall 16, C04 or call Christian Koschil at 49-211-947-1013 or email Christian.Koschil@trade.gov

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# Medicine and the Internet of Things

According to Gartner, the IT research and advisory company, the Internet of Things (IoT)\*, excluding PCs, tablets and smartphones, will grow to 26 billion devices by 2020. The broadest IoT definition refers to an ecosystem where all types of electronic devices are linked via the Internet. The excluded connected devices will grow to another 7.3 billion units by 2020. Richard Tobias of Cephasonics reports

A main contributor to this connectivity explosion is the medical sector, where potential benefits to patients include improved healthcare access, better quality of care and reduced cost. We'll survey herein a handful of the emerging medical device innovations in IoT.

Mobisante ([www.mobisante.com](http://www.mobisante.com)) describes itself as one example of a company that is building a specialised medical device on top of a smartphone. It developed software that allowed a Windows Mobile smartphone to connect to an ultrasound probe via USB, turning it into a functional, portable ultrasound system.

However, the continued evolution of IoT driven ultrasound technology doesn't rest on software innovation alone. My first cellular dumb phone was the size of a brick; at that time, the electronics of today's iPhone would have required the capacity of a large filing cabinet.

The current iPhone form factor is the result of generations of embedded system reductions in size while increasing capability and lowering cost. Similarly, we believe it will take investment in next-generation custom semiconductor technology to

produce miniaturised ultrasound devices with high clinical value.

Disposable wireless solutions that monitor vital signs and physiological information are emerging IoT applications that promise to untether patients and improve workflow for



clinicians. Since hospitals and ambulatory care centres are signal-heavy, interference-sensitive healthcare environments, solutions must provide the same link reliability as the current wired cables used today.

HMicro Inc. ([www.hmicro.com](http://www.hmicro.com)) developed breakthrough proprietary radio technology, the REACH platform, which combines a standards-compliant radio with a programmable sensor signal processor on a tiny CMOS IC to provide ultra-high link reliability, low-cost disposable battery operation, and low-power energy efficiency in a small footprint at low overall system cost.

Samsung introduced a wearable health technology concept called Simband ([www.samsung.com/us/globalinnovation/innovation\\_areas/](http://www.samsung.com/us/globalinnovation/innovation_areas/)). Simband is a reference design platform for development of advanced health tech wrist-based sensor modules. It combines an open sensor platform with an open data platform.

Improved patient diagnosis is a key benefit of remote healthcare. The capability for a remote physician or radiologist to view DICOM (digital imaging and communications in medicine) encapsulated images long distance via a PACS (picture archiving and communication system) has been around for about two decades. However, this setup was missing a critical piece: interactivity between the diagnosing physician and the patient being imaged. Cephasonics developed innovative cQLink technology that enables this crucial interactivity. Exploiting current web technologies, we wirelessly decoupled the user interface from the ultrasound machine. cQLink deploys very light clients, such as the iPad mini, and uses a web interface to store images and patient data on the ultrasound server.

Consider this scenario: the radiographer physically scans the patient with a cQuest-based scanner and uses an iPad mini for scan-parameter control and to view the image. On the other side of the world, a physician can view the live scan, interactively chat with the technician for needed adjustments, or even take over control of the machine.

\* The 'Internet of things' Oxford definition: A proposed development of the Internet in which everyday objects have network connectivity, allowing them to send and receive data.



**Cephasonics is at Medica  
Hall 16 / Stand D18-11**

## Really portable and ready for anywhere

Italian firm demonstrates two advanced ultrasound machines

Two new ultrasound machines from Esaote are on show at Medica this year. 'These versatile, valuable and efficient new products are the work of considerable research into the current and future demands of the market place,' explains Carlos Alonso, CEO of Esaote.

Giovanni Altobelli, the Esaote Ultrasound Marketing Product Manager, reinforces that confidence in these ultrasound devices. 'It offers

a premium, yet affordable, solution to customers in terms of user comfort, performance and versatility,' he says. 'Easy workflow and automation of key options maximise patient throughput without compromising diagnostic confidence.'

MyLab Six and MyLab Gamma address key sectors of the imaging market – from application-specific to fully shared services, the Italian manufacturer adds: they meet the rigor-

ous demands of the sonographer's working environment, being high on vision, low on noise, and these are "green" ultrasound systems with remote service capabilities.

MyLab Six is a complete cart-based system for use across a range of applications from general imaging to women's health and cardiovascular, the company adds, and incorporates advanced scanning features producing high-res images, advanced software, a range of probes, from dedicated-to-application to fully-shared service solutions.

MyLab Gamma is really portable as well as battery-operated and offers fast boot times and a rapid resume from standby mode, so the machine is ready to use within seconds. Wireless connectivity, 'a class leading feature for a system of this size and price - facilitates easy, one-click networking with local networks as required,' the company confirms. 'MyLab Gamma finally sets ultrasound free,' believes Joop Geijsen, Ultrasound Project Manager at Esaote. 'We now bring superb quality images and fast, accurate diagnosis right to the point-of-care in any situation - wherever and whenever.'

\* Esaote officially introduced MyLab Six and MyLab Gamma to the EMEA market at ESC (Barcelona) in August, followed by ESRA (Seville), ISUOG (Barcelona) in September, JFR (Paris) in October and MEDICA (Düsseldorf) in November.



## The UF-760AG

Portable and small yet meeting multiple needs

The Fukuda Denshi Group specialises in medical instruments, providing '... products and services that utilise the company's accumulated wide-ranging resources in the medical field to offer total support from medical examination to medical treatment and first aid, and even home medical care,' the manufacturer reports.

'A high performance portable colour ultrasound unit designed for a

wide array of specialty markets, the UF-760AG unit is extremely versatile, offering advanced imaging technologies to improve diagnostic confidence.'

The wide array of clinical applications that the system is highly suited for include, cardiac (adult and paediatric), peripheral vascular, abdominal, paediatric, small organ, neonatal/adult cephalic, transcranial, breast, musculo-skeletal, obstetrics and gynaecology exams.



**Fukuda Denshi Group is at Medica  
Hall 09 / Stand E67**



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