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How to overcome future staff shortages

Professor Ulrich Montgomery, President of the German Medical Association

The Medica Education Conference has been realigned and also tackles current issues from the worlds of politics and management, amongst others in a symposium on occupational and educational politics. In this context, Professor Ulrich Montgomery, President of the German Medical Association, will speak about the next generation of medical staff under the heading 'Calling, a profession or a job?' During a European Hospital@ Medica interview, Brigitte Dinkloh asked him to discuss the demanding issues in medical training.

Complaints about workloads among doctors, including a recent statement from Prof. Vogt of the German Society of Surgery, are continuous. The obligation for documentation, quality assurance and tumour boards consume considerable hospital time. How bad is the workload really and how can we ensure that the medical profession remains attractive to young people?

'It's true: there are workload increases, lack of time and the pressure to perform. This isn't my conclusion; it's the result of a study recently introduced by the University of Applied Sciences Gelsenkirchen.

'Despite rising numbers of patients, every second doctor surveyed stated that there had been cuts to physician numbers in their departments. Half of them also believe that there is not enough training on the wards and too little time for patients. Therefore, it's good to see that the reigning coalition partners are becoming serious about the hospital reform announced in the coalition agreement.

'We need to overcome serious staff shortages and the associated high workload. We need a continuous adaption of hospital funding to the actual costs incurred, and we also need to find a sustainable solution to the problem of insufficient investment funding by the German federal states. If we achieve this, the framework for hospital medical professionals will become more attractive again.'

How can we ensure that all the necessary 'ancillary' work does not lead to negligence in the actual work with patients?

'Unnecessary bureaucracy is the bane of many a doctor's life. A survey by the Medical Association's Hamburg branch has shown that bureaucracy is the most pressing problem for doctors in private practice, as well as hospital doctors – even more so than economic issues. Even though de-bureaucratisation is a never-ending task, policies and self-governance need to liberate doctors from unnecessary administrative tasks – and obviously we need to take a close look at which tasks really need to be performed by doctors and which can be delegated to other medical professions, whilst the overall medical responsibility remains with the doctors.'

Generation Y is more insistent on a work/life balance than previous generations. A recent study in the USA has now found that the quality of specialist medical training decreases with shorter shifts and that the quality of patient care suffers as a result.

What possibilities do you see for the regulation of work schedules in such a way that both entitlements are being met sufficiently, i.e. high quality patient care as well as a contented and not overworked specialist medical staff?

'Initially, the objective is to verify the degree of evidence in the study you mentioned. You say Generation Y and the demand for a reasonable work-life balance. In this case, it doesn't make sense to call for an extension of daily working hours if many young doctors reject these endeavours.'

In the long term, how might the hospital staff issue be resolved?

'In Germany it starts with the reform of the rigid, inflexible case rate payment scheme. Hospitals in areas of low population density can hardly cover their costs with the payments received based on the diagnosis-related group (DRG) system, which also increasingly affects the available staff. Therefore, we must move away from an approach based 100% on this flat rate per case system.

'Hospitals and hospital administrators need more scope for discretion in their budget negotiations, to safeguard local hospital treatment in structurally weak areas, as well as the financing of cases involving extreme costs. We also need a benchmark that's methodically sound and which helps to determine how increasing expenditure through adjustments of tariffs, increased premiums for indemnity insurance, and energy costs, can be refinanced.'

Specialist medical training is leaning towards increased specialisation; similar to the USA this means that doctors in Germany could end up being responsible for just one organ/one body part. What are the pros and cons of this?

'The scientific and technological advances in medicine do indeed result in an increased specialisation in the individual specialties. However, even the highest specialisation is built on a "fundamental" subject. The establishment of medical advanced training terminology within the regulations on further education takes into account medical developments as well as requirements for adequate care for the population.

'However, it's not just about specialisation. Increasingly, medical training and advanced medical training also focus on a holistic approach, inclusive of "talking medicine". This can, for instance, be seen in the respective configuration of the communication-based parts of the National Competence-based Catalogue of Learning Objectives for Medical Degrees, or in the planning for an obligatory qualification in professional doctor/patient interaction in the context of further training.'

In your view, are there any exemplary degree and training courses, and are there any other nations from which the German specialist societies could learn?

'Doctors who have undergone basic or further medical training in Germany have an excellent reputation abroad. We assume that the specialist medical societies keep an eye on international developments. We also value the organisation of advanced medical training through the medical associations in the respective Federal states as an important quality characteristic, because these "neutral" umbrella organisations have their eyes on medical issues beyond the boundaries of individual medical specialties.'

Simply Superb Micro-vascular Imaging

One of the most stunning additions to Toshiba's Aplio platform is the enhanced Superb Microvascular Imaging (SMI) capability, the company reports

By removing anatomical background information the monochrome mode reveals the finest vasculature with high sensitivity.

Color-coded SMI demonstrates flow and greyscale information with high temporal and spatial resolution simulteanously.

'An intelligent imaging tool, Superb Microvascular Imaging (SMI) moves beyond conventional colour Doppler technology by applying a unique algorithm allowing visualisation of small vessels with low velocity, while maintaining high resolution, minimal motion artefacts and high frame rates,' Toshiba proudly reports.

Jiro Hata PhD MD, who works at the Clinical Pathology and Laboratory Medicine Department and is Professor at the Kawasaki Medical School in Okayama, Japan, supports the firm's enthusiasm. 'SMI ensures vascular imaging with outstanding detectability for low-velocity blood flows, even in studies performed without the use of a contrast medium,' he said. 'This technique is of great value for early diagnosis and treatment planning in patients with cancer, tumours, rheumatoid arthritis and many other medical conditions.'

The principle underlying SMI is a powerful and intelligent algorithm that effectively separates flow signals from overlaying tissue motion artefacts, preserving even the subtlest low-flow components with unmatched detail and definition, Toshiba points out. 'SMI analyses clutter motion and uses a new adaptive algorithm to identify and remove tissue motion and reveal true blood flow.'

The system comes in two modes, greyscale and colour, the latter displaying B-mode and colour information simultaneously, whilst the greyscale mode focuses only on the vasculature by subtracting the background information, thus improving sensitivity.

According to Dr Hata, SMI has demonstrated significant clinical value in the evaluation of the density and shape of tumour vessels, and the visualisation of blood flow within superficial lesions is an excellent application of SMI.

In his investigation of the clinical utility of Superb Microvascular Imaging for assessing musculoskeletal inflammation, Dr Lim commented: 'Our early experience with SMI shows that it has excellent depiction and fine detail of the microvasculature not seen with routine Doppler technology. With significant increased sensitivity SMI has great potential in identifying low-grade inflammation that was not possible previously.

The improved diagnostic confidence with this technology would have a significant clinical impact and influence clinical management of patients.'

Comparing power Doppler to SMI in a study of 29 patients with low-grade inflammation of joints and tendons, Dr Lim reported that there were 16 patients where vascularity was only seen using SMI and the ability to assess the microvascularity led to a change in treatment management for 12 of those patients.

Applying SMI to an analysis of the microvascular tree in reactive and suspected malignant lymphadenopathy in advanced stages of malignant melanoma, Professor Fischer summarised: 'SMI, which can be used with or without contrast agents, constitutes a novel and promising technique for visualising microcirculation. In particular, SMI provided relevant information that allowed the evaluation of small lesions, subcutaneous masses and structure in the region of the scar.' He suggested SMI could be used to help assess carcinomas and scan lymph nodes.

SMI can be combined with contrast-enhanced ultrasound (CEUS) to enhance sensitivity and accuracy further in exams. Yet a significant clinical contribution would be the possibility for diagnostic assessments using SMI without CEUS, Toshiba points out.

In a roundtable discussion, Dr Lim told colleagues: 'The combination of SMI with contrast is very powerful. Many times we have asked in clinical routine if we can avoid using contrast, because of the time and expense, and we are finding occasions where we really can do so, using SMI with images that are not distorted and are normal and patterned. I would very much like to see this as a comparative study.'

While contrast-enhanced ultrasound increases the detectability of blood flow, it does have a number of drawbacks in that CEUS is not readily available everywhere, it is subject to certain restrictions regarding contrast agent use and it places an additional cost burden. SMI is a perfect tool helping clinicians to overcome these drawbacks.

A new chapter in vascular studies

After delivering their conclusions on diverse applications for Superb Microvascular Imaging (SMI) with the Aplio Platinum Series, three physicians arrived at a similar opinion regarding the potential this new capability presents for expanding an understanding of blood circulation in microvessels.

Horst Kinkel MD, Head of Ultrasound at the Academic Teaching Hospital in Düren, Germany, used SMI in conjunction with several probes, including a new laparoscopic transducer.

Assessing the liver, he said: 'When I switch on SMI, I can be very sure of my diagnosis. Even without contrast there's a better result than with conventional Doppler. With SMI I can see small vessels that were not visible before, so we'll probably have to write a new chapter in the book.'

In presenting his findings from studies, Prof. Fischer made a similar suggestion that '…because we see much, much more of vascularity with SMI, such high, brilliant contrast with edges like we have never seen before, we actually have to learn how to interpret these images in order to understand'.

Jader Cruz MD, also agree with this. An obstetrician with the Centro Hospitalar in Lisbon and a leading authority in foetal medicine, Dr Cruz said that, with SMI, 'We can see things we are not used to seeing. We're learning how to look at the images, to interpret them and asking how we can apply these assessments in the future.'

In a unique application of Superb Microvascular Imaging, Dr Cruz examined the microcirculation in the tiny hearts of foetuses at 12 weeks and found the monochrome mode the most effective in this assessment. 'While SMI was not developed for this exam, it works very well here because it removes the clutter in the ultrasound image,' he explained. 'You cannot see these hearts very well with 2-D ultrasound, but now, with SMI, I can see the structures very well – a view of the four chambers, the vessels, everything. I can see the chambers filling, even the crossing of the vessels. Most impressive for me is to see the septum, a clear view of the septum, and as I sweep down I can see the aorta coming out. This is amazing.'

Ultrasound's new iuStar600

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

Busy practice, technically-challenging patients and limited budget are the three biggest issues for many clinicians. 'Today you don't need to worry anymore. The new iuStar600 gives you all the answers,' says United Imaging. 'A truly high performance workhorse will help you for fast and confident diagnosis of even the most technically challenging patient. One system is designed for a wide range exams, easy to learn and very simple to use. 'Featuring the new generation hybrid uMatrix beam-forming engine and uCrystal HD probes from United Imaging Systems, the new iuStar600 ultrasound system reinvents the excellence in the mid-high segment. The system is also equipped with a variety of advanced automation tools assisting you to work smarter and more comfortably every day.'

Complete portable ultrasound

Siemens Healthcare's Acuson P300 ultrasound system, a compact portable device, integrates high-performance hardware and software and offers 13 multi-frequency transducers for high clinical versatility. 'The system also features advanced image optimisation technologies to support both routine and specialty application needs,' the company reports. 'The portable Acuson P300 ultrasound system is designed to meet the diverse imaging needs for a wide spectrum of patients, body types and clinical disciplines – from radiology and general imaging to cardiovascular imaging, from obstetrics and gynaecology (ob/gyn) to specialty imaging including muscoloskeletal, breast and small parts.

Siemens is at Medica Hall 10 / Stand A20

TODAY

NEW: MEDICA CONNECTED HEALTHCARE FORUM

Venue: Hall 15 Stand 15C24

Friday, 14 Nov 2014

● **2.00 p.m. – 5.00 p.m.**

Telehealth

02.00 p.m. – 02.30 p.m. Accelerating the Standard of Care with TeleHealth - a panel with QCL Ecosystem Members moderated by **Thomas Olesen**, Commercial Director, Qualcomm Live
02.30 p.m. – 03.00 p.m. Energy Sources for TeleHealth. **Philipp Miehlich**, General Manager Marketing and Sales, VARTA Microbattery
03.00 p.m. – 03.30 p.m. From Hospital Networking to a Full Stack Communications Provider. **Dr. Heinz Behrens**, Consulting Systems Engineer Networking, Avaya
03.30 p.m. – 04.00 p.m. Living Independently with Smart Care Technologies. **Barak Katz**, VP of Business Development, Essence and Haim Cohen , VP Business Development, Natali
04.00 p.m. – 04.30 p.m. Innovative Real-Time Locating Solutions for Safety and Workflow Optimisation in Hospitals and Carehomes. **Michael Szücs**, Director Marketing & Business Development, 9solutions
04.30 p.m. – 05.00 p.m. IT-Supported Aid Organizing in Discharge Management – New Approaches in Collaboration and Communication. **Dr. Dominik Deimel**, Managing Director, com2health GmbH

Liver lesions are most often benign

At least 60% of them can be characterised purely by ultrasound

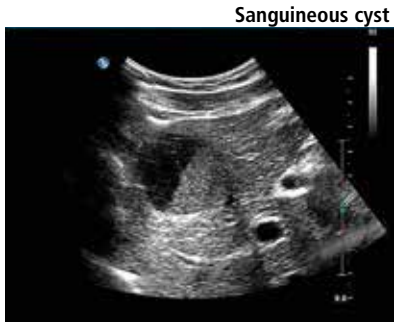
Screening and examinations of supposedly healthy patients often result in an accidental discovery of liver lesions. According to Dr Antonius Schuster MD MBA, Head of the Department of Radiology at the LKH Bregenz, (Vorarlberg). 'The prevalence of such changes is around 20% of patients examined'. Depending on a patient's age, around 70% of these liver lesions are benign and 30% malignant. Even in tumour patients between a quarter and half of all changes diagnosed in the liver are benign. 'If you find a liver lesion the probability is high that it is a benign change,' he said.

What happens next depends on morphology ultrasound and the clinical context. The course of action for tumour patients is more clearly governed than the treatment of incidental liver lesions in healthy patients. The examiner is on his own when it comes to deciding the next steps, because there are no recommendations from specialist medical societies and associations on how to proceed, Dr Schuster pointed out.

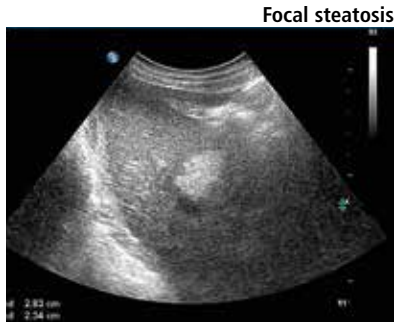
To ensure patients do not become unnecessarily concerned, and to avoid further expensive examinations, or possible complications that can occur in the course of these examinations, it is important that as many as possible benign changes are also diagnosed. At least 60% of the lesions can be characterised purely with ultrasound. Those that cannot be safely diagnosed in this way should be examined with the help of contrast-enhanced ultrasound (CEUS), ideally during the same examination. 'Contrast enhanced ultrasound is a tool that can be used to diagnose and differentiate changes between benign and malignant with extremely high certainty,' Schuster emphasised: 'However, how much certainty depends on the experience and expertise of the examiner.'

Adenoma

CRC metastases in hepatic steatosis (fatty liver)



Sanguineous cyst



Focal steatosis

In cases where a CEUS exam does not lead to a clear diagnosis, or when it is not available, the next step would be a scan via CT, MRI, scintigraphy and aspiration as a last resort.

Schuster: 'To avoid over-diagnosis, one should check a benign incidental diagnosis after three months and only proceed with further evaluation in case of a change to the initial findings.'

However, in his lecture he will give recommendations based on clinical practice. Briefly summarised: In cases of unclear ultrasound diagnosis, please carry out CEUS or a control scan; after that, only when there is still uncertainty should a CT or MRI scan be performed.

He offers a further tip: 'Patients with a tumour anamnesis can be given a CT scan straightaway, because in any case the oncologist will be interested to see where else metastases might be.' This is where ultrasound has its limitations – it cannot be used to scan the lungs or the bones.

Classification of liver lesions from the perspective of a doctor using ultrasound

Echogenic changes: The most common is haemangioma, with a Doppler scan or a Doppler contrast-enhanced ultrasound able to provide additional information. Frequently, focal fatty changes are discovered, and sometimes a focal nodular hyperplasia (FNH) can also be echogenic. Only in rare cases can metastases of a renal cell carcinoma or a neuroendocrine tumour look similar. A normal change – although in can be easily confused – is a diaphragmatic slip. Calcifications, air in the biliary tract, stones in the bile ducts or in the gallbladder, and foreign bodies are obviously all highly echogenic.

Changes of low echogenicity: These include focal fatty sparing, atypical haemangioma, abscess, haematoma, complicated cysts, adenoma and sometimes also FNH (focal nodular hyperplasia). Amongst the malignant, echopenic changes, metastases and liver cell carcinoma are the most frequent, with lymphoma being less common.

Antonius Schuster MD MBA heads the Department for Radiology at the regional hospital in LKH Bregenz. After gaining his medical degree and specialist training at Innsbruck's University Hospital and being a specialist registrar there, in 2002 he moved to Feldkirch Hospital, where he became a specialist in 2005, and was then appointed Senior Consultant in the Department of Radiology.

Dr Schuster is a member of the Austrian Medical Examination Board for Radiology and has published 22 original papers as primary, senior and co-author. In his work and research his focus lies on interventional radiology, multimodal oncological imaging, contrast-enhanced and musculoskeletal ultrasound as well as cardiovascular imaging (cardiac CT, cardiac MRI).

Seekin

Physicians need to be self-critical about their diagnoses and scanner use

An atrioventricular canal – a large hole between the ventricle and atria; unlike HLHS this can be corrected

Congenital heart defects are the most common congenital disorders found in newborns – around one in a hundred babies are affected. This type of heart defect can be reliably diagnosed with ultrasound, usually during the detailed foetal scan carried out halfway through the pregnancy.

'Experts can rule out up to 90% of heart defects prenatally,'explains gynaecologist Dr Kai-Sven Heling, who runs a practice for prenatal diagnostics in Berlin-Mitte.Heart with colleague Professor Rabih Chaoui. 'Defects can be detected from the first trimester during nuchal translucency screening, particularly in cases involving a missing heart ventricle or valve. However, ventricular septal defects can only be accurately diagnosed from the 22nd week of pregnancy,'

Common heart defects

Before birth, heart defects are not normally relevant; they only become critical once the child's circulation has to work independently. Generally, the more defects there are, the worse the prognosis for the baby. Therefore, timely diagnosis has a crucial impact on the chances of survival because it prevents discharge as supposedly healthy and then the baby develops problems at home. 'This can easily be avoided because, as soon as the diagnosis is clear, we can increase the baby's chances of survival, by inducing the birth in a specialist clinic, for instance.'

Ventricular septal defects (VSD), also known as a 'hole in the heart' and which cannot be completely ruled out prior to birth, are among those that patients can grow out of; indeed, in some cases the holes are so small that they are not necessarily visible, and sometimes they grow together again spontaneously. A hole

Hypoplastic left heart syndrome (HLHS) in the B-mode confirm lack of function of the left ventricle (b).

g congenital cardiac defects

Following medical studies at Humboldt University, Berlin, **Kai-Sven Heling MD** trained as a specialist at the University Women's Clinic Charité, where then became a consultant there. The subject of his doctoral thesis was the foetal heart. Since 2005, he has worked in his own surgery, the Friedrichstrasse Practice, in Berlin. He also manages the Gynaecology/Obstetrics section at the German Society of Ultrasound in Medicine (DEGUM) and holds a Level III DEGUM qualification.

between the two atria is also not necessarily a pathological diagnosis, as this will only close up after birth. Only when this hole doesn't close in the postnatal phase can a heart defect be diagnosed.

'A stenosis of the pulmonary artery is a much more common defect seen after birth than we see prenatally,' Dr Heling pointed out. 'We quite often misdiagnose this and, even when there is a diagnosis, we don't always treat this defect, despite the fact that the children sometimes have clinical symptoms and turn blue under stress. Yet, sometimes children also grow out of this problem without the development of any noticeable, clinical symptoms.'

Surgery for heart defects

Immediate intervention after birth is essential for a number of cardiac defects, particularly where no, or clearly too little, blood flows into the lungs, i.e. where the child has no oxygen supply. This is normally the case with transposition – a reversal of the great arteries. Prenatal intervention is still an experimental concept here and not yet a gold standard of medicine. This procedure is currently being controversially discussed, with the largest expertise in this field within Europe, found at the Linz centre.

Prenatal interventions are particularly relevant when the aorta is too narrow and the left ventricle cannot develop correctly. If this occurs, in the long term it can lead to a lack of left ventricle functionality and eventually to single-ventricle circulation. 'To avoid this, the valve is opened with the help of a catheter. However, this only helps to restore normal cardiac function with two working ventricles in a third of cases. In any case, only a small group of patients can be considered for this type of intervention because the prenatal, high-risk operation can only be considered before the ventricle loses functionality.'

The three-step Norwood procedure is more promising. After birth, the circulation is initially maintained with the help of medication to counteract the impaired left ventricular function, so that these newborns do not develop clinical symptoms. In the next step, an intervention is carried out to switch the arteries to ensure that a sufficient amount of blood flows into the circulation from the right ventricle. This is followed by more surgery after three months and then after three years. The child still only has a right ventricle, with the blood being passively passed into the lungs.

As yet there are no conclusive evaluations to confirm how promising the Norwood procedure is; however, reports suggest that the problems are merely delayed from childhood into adulthood.

'There are heart defects that can definitely be corrected,' Dr Heling said. 'Therefore, from our point of view, it's therefore tragic when these children still die nowadays because the defects were not detected during a detailed diagnosis. There are other heart defects that are now operable but which entail a life with limitations for the patients.

'Nevertheless, this must still be considered positively and the patients do benefit from the fact that the defects can be diagnosed prior to birth, so they can be operated on in a stable condition.'

Therefore, Heling sums up, '… it's important to be self-critical with one's own diagnoses and to utilise the technology in the best possible way. An ultrasound image is only ever as good as the examiner and what he or she concludes, or suspects respectively.'

image (a) and with colour to

Contrast enhanced ultrasound expands at POC

Once considered an add-on examination, CEUS expands diagnostic capabilities and is leading to new insights, John Brosky reports

Where contrast enhanced ultrasound (CEUS) is restricted to radiologists, or performed only by trained technicians, its utilisation has stabilised, taking its place among more established imaging modalities.

In the hands of physicians, especially those on the forefront of patient care, however, the use of CEUS is expanding as clinicians across a range of specialty practices for internal medicine, gastroenterology, nephrology, surgery and endocrinology and others.

In Italy, ultrasound has been routinely used by frontline physicians since the 1970s, so that the adoption of CEUS has been more widespread and Italy is more advanced with its use at the point-of-care (POC) than other countries, according to Fabio Piscaglia MD, Professor at the University Bologna and head of the Unit of Ultrasound in Internal Medicine at the university hospital.

A member of the Board of Directors of the International Contrast Ultrasound Society (ICUS), and Past President of the European Federation Societies Ultrasound in Medicine and Biology (EFSUMB), Prof. Piscaglia will speak about the uniqueness of the Italian experience with CEUS at the Three Country Meeting of the German, Austrian and Swiss Societies of Ultrasound in Medicine.

Germany is the other main European nation where CEUS is largely used by clinicians rather than radiologists, he explained. 'The use of CEUS by radiologists tends to be restricted to specific indications in which use of alternative techniques could harm patients, such as undue exposure to ionising radiation for benign lesions. This is because radiologists can choose from different imaging techniques and, if they need to discuss a case with a surgeon, it is easier for the surgeon to read CT images to which they are used, rather than a CEUS image,' he explained. Furthermore CEUS has to be performed directly by the physician and not by technicians and only read by radiologists.

Conversely, in a clinical setting, CEUS is becoming more widely used and this is increasing because there is no alternative that can improve diagnostic capabilities while being directly accessible to clinicians and easy to use.

'Anyone using ultrasound in the POC setting would immediately be able to use a contrast agent, and prone to use one because it can answer a specific clinical question immediately,' he explained.

At the point of care, the availability of equipment and access to medical imaging becomes a critical factor. In smaller hospitals, often there is no CT scanner, and in other hospitals it is not accessible during the night shift.

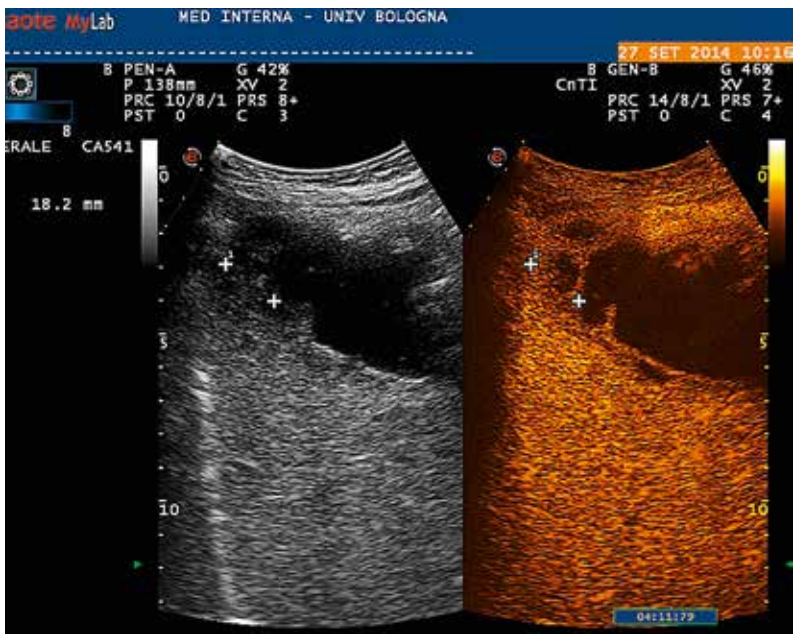
'You can do a CEUS exam right away whereas you might have to wait two days for a CT scan, or wait two months for an MRI exam. Just the other day a patient complained of pain immediately after a paracentesis and we could go with the equipment to the bedside, not moving this patient to the radiology suite. We were able to diagnose and localise an active bleeding with CEUS within five minutes from onset,' Prof. Piscaglia said.

Whereas in the past ultrasound was considered to be a supplemental diagnostic procedure to support MRI or CT findings, increasingly CEUS is becoming a primary exam. There are also new applications for this emerging modality.v'One area where we are very interested in applying CEUS is assessing the response to chemotherapy in new anti-angiogenetic drugs,' he explained.

'There is a great clinical need as many patients undergo a treatment that is extremely expensive and difficult, only to learn after two or three months that the treatment was not effective. If CEUS can give an answer much earlier about which patients are responding, this would be very valuable for patients who are taking the drugs but not getting any benefit, only adverse events. And this would be valuable for the healthcare system because it could save the expense of an ineffective treatment.'

'Another application we are pursuing is the use of CEUS to establish a diagnosis of portal vein hypertension, which is a complication of cirrhosis,' said Prof. Piscaglia. 'Currently there is only an invasive procedure with a catheter to measure portal vein pressure, which is expensive and poses risks for the patient. With the University of Barcelona, and with funding from the European Union, we are investigating whether an analysis of micro-bubbles circulation inside the liver can predict the level of portal pressure.'

In conclusion, he said: 'The most important things to say about CEUS are that it is an extremely safe procedure that is of great benefit for patients. It can be performed even at the bedside. Moreover it is the most patient friendly technique since the clinician remains close to the patient in direct contact with him, which becomes even more important when working with children, who do not require sedation and who can remain in direct touch with parents, differently from CT and MRI.



Acute cholecistitis


A medical graduate from the University of Bologna (1992), **Fabio Piscaglia MD** now heads the same university's Centre for Ultrasound in Internal Medicine, and today is an internationally recognised expert in the use of ultrasound and CEUS to detect and evaluate liver tumours and other abnormalities. He frequently publishes and lectures in this field and is a peer reviewer for more than 15 scientific journals.
From 2011-13 he presided over the European Federation of Societies for Ultrasound in Medicine and Biology.

High reliability, easy operation

The Dräger VarioGard 2300/2320 IR is a fixed gas warning device for monitoring potential leakages or workplace exposure limits. Traditional areas of application include laboratories and hospitals. Its precise infrared sensors with long-term stability are initially configured for the desired gas and the measuring range. This ensures that the device is immediately ready for use. The VarioGard 2300 is ideal for monitoring methane and liquefied petroleum gas, while the VarioGard 2320 is perfect for carbon dioxide. The VarioGard 2320 can either display the measured values in ppm, to monitor the workplace exposure limit, or in vol. % for leakage detection. All these adjustments can be easily made using the included VarioGard PC software.

The Dräger VarioGard's standardized 4-20 mA signal means that it can be combined with any evaluation unit and also integrated into existing plants. Installation and commissioning is easy and only requires a small number of tools.

Dräger is at Medica
Hall 11 / Stand F26

Single use surgical instruments

Over in Hall 16, in the Wales Pavilion, an extensive instrument range from the single-use surgical instrument manufacturer, is on show from DTR Medical Ltd. 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 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

DTR is at Medica
The Wales Pavilion
Hall 16 / Stand F42

Light up your exams and minor ops

LED Soled15 lighting supplements the Starled Series of lamps manufactured by Acem Medical Company from Bologna, Italy.

The firm reports that this model has '… excellent light intensity; IR-free light beam; colour temperature (CCT) of 4.500 °K; a colour rendering index (CRI) of 95; long life and low power consumption.

'The high technological level combined with the use of high-powered LEDs allow Soled15 to have a very linear yield and a negligible performance decay for its entire life duration,' Acem adds. 'Thanks to the high efficiency achieved, Soled15 has a light intensity of 65.000 Lux (80.000 Lux with "Boost" function) and a low power consumption (16W).

'The LEDs layout gives visual comfort and produces a uniform, homogeneous and shadowless light.'

Soled15's roundness contributes to its easy movement and suitability for diagnostics and test labs and the easy-to-grip, removable, autoclavable handle makes it suitable even for critical sanitary applications, the firm points out.

All the lamp's functions –light intensity adjustment, parts selection (SEL), brightness increase (Boost), are controlled via the I-Sense touch panel. That 'SEL' function is new. Using it, you can select single parts of the light beam and activate the desired LEDs in a sequential way according to your needs.

'Boost' is used to reach a maximum light intensity when the light field is wide. This approximate 20% increase deactivates automatically after five minutes.

Soled15 can be ceiling, wall, trolley mounted (battery on demand) – just make your choice.

ACEM S.p.A. is at Medica Hall 10 / Stand D31

Medical device marketing that works

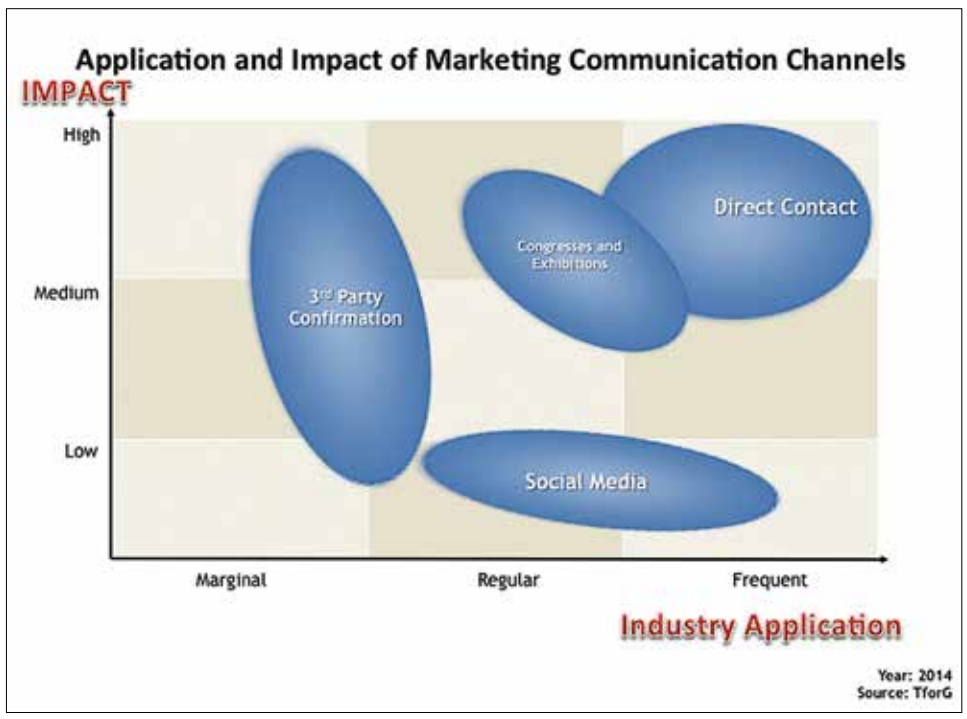
A report examining the marketing communications channels available to device manufacturers today, by TforG for Encompass Content Solutions, was compiled from results of numerous interviews with device industry leaders, including senior managers in sales, marketing, operations and health care providers – from medical practitioners to hospital staff and hospital administrators.

Findings show that in both mature markets (Shift Markets) and emerging markets (Growth Markets), traditional channels – specifically, face-to-face contact by industry representatives, including those on congresses and exhibitions – still represent the most important way to reach customers.

'However,' TforG comments, 'in mature markets particularly, the relevant target audience is broadening to an increasingly diverse group of decision makers, requiring device companies to consider the impact this shift has on content needs, sources and channels.

'As a result, third parties – such as evidence-generating organisations and HCTA institutes – have significantly impacted the decision-making process, while social media maintains a limited application, except in specific situations such as large (patient) communities.

*** For a free report download go to TforG (www.tforg.com) and Encompass Content Solutions (http://encompass.transperfect.com).**

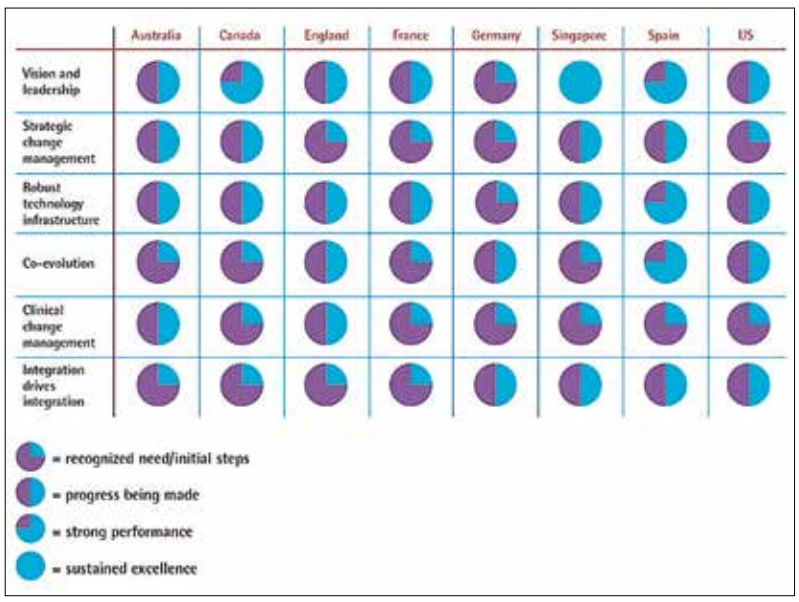


Germany's healthcare IT is 'average'

Many decision-makers do nothing due to EPR and IHE solutions uncertainty

'Germany has realised that something must be done,' Professor Britta Böckmann of Dortmund University of Applied Sciences and Arts, concludes, referring to a 2012 study from Accenture that showed this country to be only average in expandable healthcare networking compared with other countries. However, the health informatics expert did have some good news at this year's PACS and More! Symposium in Mainz: 'Germany is at the forefront in many areas, such as in the use of IT in the hospital in general, in radiology and in the provision of PACS systems.'

Another area of the study, 'Co-Evolution', refers to the extent to which top-down-strategies and grass roots projects are being implemented. 'We have good individual projects, good technologies and also, in some regions, great solutions. However, what we haven't managed to achieve yet is to make these solutions generally available in a standardised way.'



More joint efforts

Let's take the examples of telemedicine and tele-monitoring: Whether or not a patient is offered these new services and methods usually depends on where they live and whether or not there is a respective pilot project in the immediate vicinity. It obviously also depends on whether the patient's health insurance is partnered up with the pilot project. 'This level of healthcare in Germany does not meet our requirements,' Prof. Böckmann says. 'Healthcare services provided via the internet are another area where other countries are showing us the way.'

In Switzerland some providers enable patients to send e-mails describing their symptoms with photographs attached. They then receive expert answers advising how to deal with their problems and whether they need to consult a doctor. 'I'm not saying that I can see Germany providing medical treatment only via the internet,' she points out, 'but I find it very frustrating that there are no efforts here to see and try how far we can go and to what extent medical care can be supported with the help of IT and the internet.'

Why? 'We have no funding concepts based on caring for patients comprehensively and, as yet, there is no agreement as to which data can be exchanged across different sectors. These processes depend on the individual indication. Disease management programmes are a good example. The concept of the electronic patient record (EPR) will also not move forward without central, standardised initiatives.' Prof. Böckmann would like to see more joint efforts.

'It's not that Germany lacks standards; to the contrary - if anything, there are too many. What we lack is an agreement about who should be in charge of a central, comprehensive electronic patient record. There is also no agreement on what should be in the record, who should input the data and who should be allowed to access and extract it.'

Advancing IT solutions

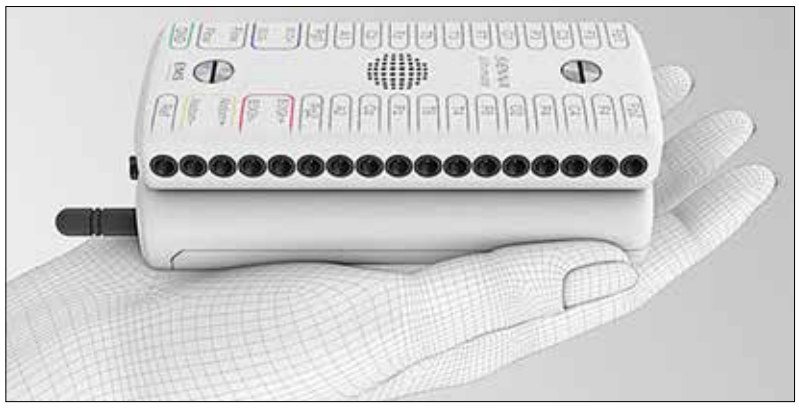
Prof. Böckmann sees three levels of benefit through healthcare IT. Germany is on the first level. The country is fairly advanced in in- and out-patient data collection and utilisation compared with other European countries. 'Doctors in private practice also tend to use their electronic practice management systems for much more than billing purposes,' she observes.

The second level includes electronic letters exchange between doctors and information on medication, or joint case files – considered the best way to exchange data and avoid treatment mistakes. 'This is an area where we are still not performing very well,' she believes. 'Hospitals are the only institutions that have specialist personnel and IT know-how and the potential to advance development.' She would therefore like to see these institutions develop a joint E-health strategy and determine which areas need networking and which unified platform should be used for the implementation.

Prof. Britta Böckmann, Dortmund University of Applied Sciences and Arts

'However,' she points out, 'nowadays what actually happens is that hospitals have to discuss the issue of IT platforms and data protection anew with every new project.' This has led to a certain amount of reluctance in the market: 'Many decision-makers would rather not do anything because they are not sure if the EPR will become established, or whether Integrating The Healthcare Enterprise (IHE will be the solution). Against this background of uncertainty we are only making slow progress. If comprehensive standardisation is achieved,' Prof. Böckmann concludes, 'Germany can progress to the third level and aim to transform healthcare with the help of new technologies, and maybe choose very different approaches for future patient care.'

New EEG by EMS



The Sienna Ultimate, a brand new EEG produced by EMS, is a new hybrid LTM and Ambulatory EEG Amplifier has 32 unipolar or bipolar channels, integrated Lithium-ion battery, 32 GByte Memory card, SaO2 and WIFI interface. The device has a unique Intercom feature that allows direct communication between a patient and nurse station and vice versa in hospital or a home care environment.

'Real-time battery charge information is transferred to the nurse station allowing the operator to reduce consumption (switch off WiFi) or to advise the patient to recharge the Amplifier should battery charge get low,' EMS reports. 'EEG real time display is available at the nurse station, even if the patient is outside the building (HSPA+).

'The Sienna Ultimate hybrid LTM and Ambulatory EEG Amplifier can be configured easily with head boxes for LTM, Sleep, CFM, 10/20 and 32 channel bipolar EMG for Sports Medicine, simply by replacing the head boxes.

'The 150 gram lightweight amplifier has a patient alarm button as well as a body position sensor, which can transfer 'fall over' information to the nurse station.' In ambulatory care, the EEG can record for up to four days.

EMS is at Medica Hall 17 / Stand C20

Computer-assisted

'Pie in the sky?' asks Cornelia Wels-Maug

Every hospital does it, but how accurately and consistently coding is done has a major effect on the quality of treatment and also on the bottom line. Traditionally so-called 'coders' determine which code to apply for a specific medical service. 'In the case of digital records, coders typically use software that enables them to key in a certain medical condition or treatment and then the software comes up with a selection of codes to choose from', explained Markus Stein, Director Patient Management at the private Ethianum clinic in Heidelberg. Once the codes are assigned, a claim can be issued.

How accurate the billing is depends on a number of factors, but particularly on the completeness of the documentation, the legibility of records, the consistent application of coding rules, and the use of a harmonised medical terminology. The fact that the documentation is often done after a patient's discharge does not help the accuracy of the process.

Volker Gertler, General Business Manager Western Europe of 3M Health Information Systems confirmed this: 'Often coding is delayed and is only done ex post, in tandem with patient discharge; inevitably some procedures will not be documented.' This negatively affects an institution's profitability because not all rendered medical services can be charged.

Given that 'in Germany, 17% of all statutory health insurance claims are investigated for their correctness', Gertler explained, an institution has every incentive to get the documentation and coding right.

Computer-assisted coding

The growing adoption of electronic health records (EHR) facilitates a more automated processing of digitised patient data that can be applied, among other things, to coding as well as billing.

Computer-assisted coding (CAC) is software that scans medical records in the EHR, identifies key terminology as defined in the International Classification of Diseases (ICD) and Current Procedural Terminology (CPT) and suggests codes for a particular procedure or service. Then a human coder reviews the codes.

CAC can also analyse the context of key words to determine whether they require coding. For example, the term 'diabetes' requires coding when it's a diagnosis, but not when it is referring to a 'family history of diabetes'. Additionally, CAC solutions can diagnose if a data source lacks information, e.g. in lab results, and will request the missing data.

CAC implementations are particularly driven by the transition to ICD-10 in the USA, which must take place by 1 October 2015. Hence, it was no surprise when Gertler explained that 3M developed a CAC solution, its KODIP Suite, first in the US, for the US market. 'We have been selling it for

Healing with software

An internet-based treatment is the first in Germany to be reimbursed by a health insurer

Report: Cornelia Wels-Maug

Barmer GEK, Germany's second largest statutory health insurer, is covering the expense of a web-based stimulation therapy developed by Caterna Vision GmbH, a spin-off from the University of Dresden.

Used by visually impaired children suffering Amblyopia, commonly known as 'lazy eye', the app allows young patients to play computer games featuring a striped pattern moving across the screen in the background. If prescribed and monitored by an ophthalmologist, the health insurer will cover the treatment costs – a unique situation in this country and also rare across Europe and beyond.

At European Hospital we know of only two other reimbursable internet-based treatments: All Dutch health insurers cover the costs for Interapy if prescribed by a medical doctor. Developed by the Faculty of Psychology at the University of Amsterdam, Interapy is an online-based solution offering psychological help for Dutch-speaking people living outside the Netherlands.

In the USA, WellDoc's BlueStar, a solution for managing Type 2 diabetes, has been available as a doctor-prescribed app since January 2014. This advises patients in real-time when to test their blood sugar level and which medication to take in response to the measurements.

Catching up with the 21st century

Launching a prescription-based health app is a major milestone that marks the beginning of the therapeutic software era – with software used like a drug. Coming at a time when the number of mobile health apps is proliferating this signifies that medical treatment has caught up with 21st Century technology as well as consumer habits.

Caterna's health app in action

In May 2014, the US publication MobiHealthNews counted 'more than 35,000 unique, health-related apps available in various app stores'. However, consumers are not the only people using them; doctors increasingly employ health apps within their professional toolkit. MobiHealthNews reckons 'about 10,000 apps available today are intended for use by medical professionals' (http://mobihealthnews.com/32972/in-depth-top-200-paid-iphone-apps-for-medical-professionals/).

Apps use in the medical world does not stop there. It is now common practice for European health insurers and health systems to offer health-related apps free on their websites. For instance, Techniker Krankenkasse, the number 1 statutory health insurer in Germany, offers apps that assist members to locate the most appropriate doctor or the nearest insurance office among others.

In addition, England's National Health Service (NHS) provides a Health App Library, with an extensive selection of apps ranging from Calorie Checker, BMI calculator and tracker, to an interesting Stop Smoking assistant.

The potential of health apps to deliver healthcare in future is significant and many issues still need to be addressed – significantly, for example, how to safeguard data privacy and data security, and how to ensure apps collect data in compatible formats so that patients can transfer data from one app to another.

The topic interests the European Commission keenly. Just a few days after Barmer's announcement (10 April 2014), the organisation launched 'a consultation to Ackley gather ideas about how mobile technology could be used to improve health services in Europe'.

Neelie Kroes, Vice-President of the European Commission and EU Commissioner for Digital Agenda is asking for suggestions as to how smartphones, tablets, patient monitors and other wireless equipment, as well as health apps, can be improved. She particularly enquires after the legal requirements for lifestyle and health apps relating to security and performance. These questions need good answers for eHealth to progress.

coding

the past two years, winning approximately 1,000 clients,' he said.

However, with a lower EHR adoption in Europe, the current prospect of an uptake of CAC solutions is less compelling, as the investment into CAC will be much harder to leverage.

Stein reckons: 'A fully automated coding process such as computer-assisted coding is still a pie in the sky, at least in German-speaking countries'. Nevertheless, Gertler revealed that, as of September 2014, 3M planned to market the product in Germany and a bit later in the year in Spain.

This will not be the only CAC solution on the German-speaking market, as the Berlin-based company ID GmbH & Co. KGaA is also developing solutions in automated coding. It is good news for the market to have multiple players competing in a region because this will help to further increase awareness of CAC systems, plus bring some downward movement in pricing.

Will coders become jobless?

Stein answers this question with a resolute 'No, the role of a coder will not become obsolete!' Although CACs perform most of the task associated with coding, especially on routine procedures, coders address more complex scenarios and audit the suggested codes from a CAC system. 'If anything,' he concludes, 'coders' roles will become more demanding.'

Hospital renovation

The newly integrated operating theatre

For image management, they progressed from a video-based routing system to a system that uses the network. Dr Victor Fonze, the hospital's medical director, explained: 'With the commissioning of the new infrastructure, combined with the image management platform NUCLeUS from Belgium-based company eSaturnus, CHR Huy has jumped from the 20th into the 21st century. Expectations for the new infrastructure are mainly a higher efficiency of the operating rooms.' Dr Fonze continues. 'The previous infrastructure had six rooms. Beginning in 2014, we will have one additional surgical suite that will be used for out-patient surgery.'

The other six OTs have extended features, with medical images sent to PACS for transmission anywhere within the hospital.

According to the decision makers the most important benefit of the digital OT is the increased information that can be added into the medical patient record. The combination of a medical file, anaesthetics and laparoscopy contribute to the quality of surgery, the hospital pointed out. 'Finally,' Dr Victor Fonze added, 'we chose NUCLeUS because it increases ergonomics using the easiest user interface on the market.'

After renovating its radiology and emergency departments, the Centre Hospitalier Régional de Huy in Belgium (CHR Huy) tackled its operating theatres (OTs), which had opened in the 1970s. The rise of new technologies pushed the CHR Huy to construct a new building using advanced technology.

The main aim was to access medical information more easily, and an integrated OT should go beyond video transmission of video within the room. By extending the accessibility of these images, data become a valuable asset for scientific research, eSaturnus underlined. 'The hospital in Huy is convinced that their choice for NUCLeUS will contribute to its general quality of care.'

eSaturnus is at Medica
Hall 11 / Stand F48

Biologised medical technology

'This is a vast, uncharted territory for basic material scientists to map out new roads,' observes Bettina Döbereiner

New approaches, solutions and outlooks on biologised medical technology developed in the Berlin metropolitan region were presented at this year's annual Treffpunkt für Medizintechnik (Medical technology meeting place) in Berlin, which presents the latest research, new product developments and best practice examples from the greater-Berlin area. Five of the 15 sessions were dedicated to the heart.

The rather young discipline of biologised medical technology deals with the combination of biological or pharmaceutical agents with conventional, primarily mechanical medical devices. Located at the interface of natural sciences and engineering, the field offers a stream of innovative ideas to treat diseases and for organ replacement. Thus, Professor Karl Max Einhäupl, CEO of Charité, Berlin, emphasised in his keynote speech that biologised medical technology could truly be considered one of the markets that will shape Berlin's economic future.

A trailblazer in biologised medical technology: heparin coating

Lars Dahms, developer at Berlin Heart, explained the already classic example of the combination of biological material with a medical device: heparin coating. The use of heparin, a molecule that is naturally produced in humans and animals to reduce thrombosis, dates back to the 1960s. Today, Dahms covalently bonds the thin heparin film (Carmeda) to the smooth and flow-optimised blood contact surfaces of the pumps in Berlin Heart's ventricular assist device (VAD) Excor Adult to offer protection against thromboembolic complications.

Polymer-free, bio-resorbable stent coating

Engineer Dr Jorge Calisse, Director of Research & Development, Vascular Systems, at B. Braun Melsungen AG, Berlin, presented a new medical device featuring a pharmacological agent.

Coroflex ISAR, developed in close cooperation with Professor Kastrati of the German Heart Centre in Munich, is a drug-eluting stent (DES) with polymer-free coating to treat complex cardiovascular stenosis. Sirolimus, an anti-inflammatory and anti-proliferative agent, is delivered via a probucol matrix. According to Dr Calisse the coating and the agent are resorbed completely within three months reducing the risk of inflammation compared to conventional DES with polymer coating. The device received the CE mark earlier this year.

Biological vascular replacement

Biologised products not only have mechanical properties supplemented by biomolecules or biological or pharmacological agents, so-called bio-functionalised products, but also bio-implants and cell implants developed and used particularly in regenerative medicine. Ernst Weigang, Medical Director at the Clinic of Vascular Surgery and Endovascular Therapy at Evangelische Krankenhaus Hubertus in Berlin presented two such products: vascular patches derived from bovine pericardium (Vascu-Guard/ Synovis Surgical Innovations, USA) and a biosynthetic vascular graft that is a composite of cross-linked ovine collagen with a polyester mesh endoskeleton (Omniflow II/Bio Nova International, Australia).

However, both the bovine patches and biosynthetic vascular graft are only used in Professor Weigang's clinic when no autologous material, such as a vein, is available. The innovative products have major advantages compared to the conventional approach, says Professor Weigang, such as a high degree of biocompatibility and good microvascularisation, which reduces the infection risk. Additionally: antibiotics are more effective. Moreover, the biosynthetic vascular grafts have proven to result in higher long-term patency and limb conservation rates than conventional alloplastic grafts.

A dream coming true? A biologically regenerated heart

Professor Christof Stamm ventured a look into the remote future of medical technology. Senior physician at the Clinic for Cardiac, Thoracic and Vascular Surgery at the German Heart Institute Berlin (DHZB) and leading researcher of the working group Myocardial Regeneration in Ischemic Heart Disease at the Berlin-Brandenburg Centre for Regenerative Therapies (BCRT), he shared his vision. One day we will be able to stimulate the heart to regenerate destroyed heart muscle tissue in vivo.

'Today, the human body cannot sufficiently replace destroyed tissue, for example in the course of a myocardial infarction. Therefore, scientists have been trying for more than two decades to reproduce tissue, or to trigger the heart to reproduce its own tissue. So far, however, without significant clinical success.'

Professor Stamm and team try to directly reprogramme fibroblasts into cardiomyocytes – a process called transdifferentiation. While this can already be done in vitro, the scientists aim to transform fibroblasts into cardiomyocytes in the beating heart. To do so, certain genes that trigger the formation of cardiomyocytes in the maternal body are, for example with the help of viruses, implanted into the cardiac fibroblasts.

According to Stamm research results indicate that this approach works in mice. Now it remains to be seen to what extent the method and results can be reproduced in humans. For now, possible clinical studies are still a long way off.

All the sessions at the event illustrated that – despite all these innovations – biologised medical technology is a vast, uncharted territory, where inter alia basic material sciences research will find ample opportunity to map out new roads.

An important market for the future – biologised medical technology – was the focus of the 28. 'Treffpunkt für Medizintechnik' held this September in Berlin. According to Berlin Partner für Wirtschaft und Technologie GmbH, the event's organiser, 280 Berlin companies specialise in medical technology, generating annual revenues of €1.5 billion euros (2011 figures)

The operating theatre management system

Richard Wolf's core nova

Hospital management seek more economic viability and efficiency in the operating theatre (OT) when deciding on the procurement of advanced Management Systems. The special software/hardware of systems achieve shorter operation and documentation times with uniform intervention outcomes.

Richard Wolf is at Medica Hall 10 / Stand C41

Medical technology company Richard Wolf developed its `core nova´ as the first fully network-based OT Management System to reduce the organisational and administrative burden on all personnel involved in running operating theatres (OTs), the company reports. 'This includes benefits such as installation within minutes and absolutely seamless connection of existing hospital information and OT planning systems, as well as patient records. The burden on surgeons and OT personnel is reduced as a result of the shorter changeover times in the OT possible, with the system, the central touchscreen control of all equipment in the OT, digital access to all preoperative OT planning data, and direct documentation of operations. These benefits are also effective right from the first operation because the system can be operated intuitively and the induction time is correspondingly short,' explained Jürgen Steinbeck, Managing Director of Richard Wolf GmbH.

core nova is reported to be equally interesting to hospitals and medical practices for use in new and existing operating theatres, because the system is freely scalable and can be adapted to the appropriate individual needs, integrated within existing IT and service infrastructures, or deployed in a mobile setting on a conventional video cart.

'The compact design of the mobile alternative for core nova is particularly appropriate for medical practices and older operating theatres without any existing server infrastructure, says Steinbeck, adding, 'This came as a welcome surprise to many prospective customers.'

Medical grade carrier arms

Meeting hygiene and ergonomic needs

Cim MED is at Medica Hall 13 / Stand C21

Medical grade carrier arm systems by CIM med feature integrated cable management. In contrast to open cables, for instance, the firm's carrier systems avoid fostering germs at the monitor connections. 'The integrated cable management also protects the cables from damage,' the company reports. 'CIM med's solutions contribute a great deal to achieving stringent standards of hygiene.'

The height-adjustable triple-articulated arm model is particularly efficient in daily hospital work, CIM adds. 'First and foremost, the carrier arm model ensures absolute sterility.

'Outstanding ergonomics are another feature. Monitors and medical devices can be accurately positioned thanks to easy adjustability and maneuverability. If a larger distance is required between the mounting point of the carrier arm and the monitor itself, then our carrier arm system is the perfect solution. It can be swivelled 360 degrees, but an internal mechanism stops it from being turned too much. This prevents damage to the cables inside the system – and, if need be, staff members can easily switch cables. Additionally, because there is no tangle of cables, the devices can be cleaned more effectively.'

The models ranges from stationary carrier arms, to mobile device holders including accessories; all meet EN 60601-1 standards, 3rd edition, and are certified by the TÜV for safety. The carrier arm systems comply with the regulations of MDD 93/42 and have the CE mark. CIM med offers OEMs customised solutions.

In addition, the company develops, constructs and manufactures tailor-made mounting systems for all manufacturers.

MAKE A NOTE:

NEW: MEDICA PHYSIO CONFERENCE
Venue: CCD Süd / CCD South
Friday, 14 Nov 2014
● 12.30 p.m. – 16.30 p.m.
Topic: Pain Treatment in Physiotherapy

imaging

of experience and success in R&D, manufacturing and distribution of Cone Beam devices. 'They represent the Italian tradition of specialised manufacture and fulfill all the requirements and needs of our clients –5G, recommended for maxillofacial, small joints, cervical and ENT diagnosis; VGi evo, the evolution of Head & Neck diagnostics, and GiANO, the hybrid device for dental diagnostics,'

NewTom, the company asserts '…is the unrivalled benchmark in radiology thanks to highly effective research standards, flawless reliability and sheer quality.'

Further details: www.newtom.it

Architecture soothes the sick

Future Healthcare symposium examines healing buildings

Might spatial atmosphere play a key role in patient recoveries – or are the expertise of doctors and nurses and exquisite medical equipment the only important issues in healing? Architecture plays a vital role in healing, according to the majority of participants in the session Healing, Architecture and Communication, held in Berlin this March during the one-day 5th Symposium for Future Healthcare. Bettina Döbereiner reports

Danish architects 3XN won the Rigshospitalet extension tender for Copenhagen University in 2012, a project set for completion in early 2017. The series of folded V-structures, linked by a transversal thoroughfare, will have five plant-filled atria, creating recreational spaces for patients and staff. Daylight and the outdoor atmosphere, with the long facade stretching from east to west, should help patients and staff to orientate by sunlight. 'It was important to us that they will orient themselves in our building and won't feel lost, as seen in the most purely functional and non-transparent buildings of the late 60s and 70s' explained 3XN architect Bo Boje Larsen, during his symposium lecture.

Parametric rooms: Developed and realised by a multidisciplinary team including Charité University of Medicine, Graft-architects, Mediadesigner Art+Com, the completely redesigned ICU-rooms in ward 8i of the Charité were inaugurated in 2013. The ceiling screen can simulate natural daylight changes to stabilise patients' circadian rhythm, thus improving deep sleep and decreasing stress. The screen can also be used to show visual arts programmes (not yet tested).

Maggie's Centre in Nottingham, designed by architect Piers Gough and opened in 2011, has a library area on the ground floor and, at its core, a kitchen and office. Two private rooms above serve for one-to-one sessions and individual support. At the building's rear are a breakout area, quiet room and large room for group exercising and other sessions.

In just a day, architects, physicians, other healthcare providers and scientists managed to present and discuss their latest findings on healthcare-related buildings and interiors as well as plans for the future.

Thirty years ago a study from architect Roger Ulrich had already scientifically suggested that the layout of a building has an impact on medical outcomes for patients. The 'View from a window may influence recovery from surgery' study indicated that surgical patients overlooking a natural scene received fewer negative evaluative comments in nurses' notes, took fewer potent analgesics and had shorter postoperative hospital stays than those who looked out onto a brick wall. Since this relatively small size (46 patients), nevertheless a path-breaking study that was published in Science magazine in 1984, more scientific research has been done and is being carried out in this field, by now known as Evidence-based Design (EbD).

Nowadays, Roger Ulrich's early insights appear to be implemented in hospital planning. At least the presentations at the symposium lead one to conclude that. For example, architect Bo Boje Larsen, from Denmark, showed his and his office's draft for the extension of Copenhagen's main hospital, the Rigshospitalet, funded by the capital Region of Denmark. When designing, he said, the main issue was to offer staff and patients as much natural daylight and as many greenery perspectives as possible – within and outside the new building. Thus, to allow for as many windows as possible, the planned structure has a kind of zigzag-footprint.

One of the most outstanding and ambitious EbD research-projects - progressing far beyond Ulrich's early findings – was presented by architect Thomas Willemeit, who spoke on the total modernisation of two ICU rooms at the Charité University Hospital in Berlin. In October last year the so-called Parametric Room Concept, a pilot project of Charité, Graft architect's office, Mediadesigner Art+Com and other partners, was inaugurated at the ward 8i of the Charité Campus Virchow-Clinic.

Background: Charité anaesthetist and project leader Professor Claudia Spies, and colleagues found in their various studies that cognitive dysfunction and delirium in ICUs also appear to be induced by stress factors, such as noise, but also the usual lack of daylight in ICUs, the unnatural and permanent presence of artificial lights, the resultant chaos in melatonin-oppression inter alia provoking an irregular sleep/wake rhythm, the frightening and impersonal surroundings, jungle of cables and so forth. Hence a multidisciplinary team developed a concept for an ICU that should particularly reduce patient stress.

What had been done to realise this aim? The loudness of alarms was reduced and avoided if possible; technical devices are hidden behind a wooden wall, with noise re-absorbing materials used, e.g. wood; each patient has a small, intimate space, or notch, in the form of an elevated storage shelf at the bedside. In addition, the ceiling above the patient's bed is a big screen, to provide different kinds of light to imitate natural changes, hence supporting the natural melatonin-suppression and consequently promoting a better wake/sleep rhythm. There are also many additional tools. The effects of this forward-looking design are now being studied in a research project co-funded by the German Federal Ministry for Economic Affairs and Energy.

Former cancer nurse Laura Lee presented not a scientific, EbD-driven approach, but a personal one to enhance patients' health and well being through architecture. Recounting the story of the formation of the first of Britain's Maggie's Centres in Edinburgh, Scotland, in 1996, she spoke of her late patient Maggie Keswick Jencks, who had personally experienced how frightening, disorientating and isolating a cancer diagnosis can be.

In 1993, 47-year-old Maggie was given the news that she had just 2-3 months to live. A designer and passionate gardener, with husband Charles, a writer and landscape architect, she found herself absorbing the awesome verdict under neon lights in a dreary corridor and they quickly realised something had to be done to help cancer patients to cope better with their diagnoses. The couple developed ideas for cancer care and, with input from Maggie's then nurse Laura Lee, as well as others, a concept for a special centre was born on the grounds of the National Health Service (NHS) cancer hospital where Maggie was treated. Unfortunately, she died before the opening of the centre.

Since that time, 17 Maggie's Centres have opened at major NHS cancer hospitals in the UK, and abroad, to provide free practical, emotional and social support to cancer patients, their families and friends. One of the unique features of the centres is that world famous architects, including their friends Zaha Hadid and Frank Gehry, have given each an extra-special design.

Laura Lee, who became CEO of Maggie's Centres, explained the organisation's aims: 'The essence of our brief for architects, landscape-planners and interior designers is to build a home for people with these feelings: loss of control, hopelessness and helplessness and feelings of isolation. We believe that kindling curiosity and imagination is fundamental to feeling alive, people sense: Hey, you are in this building, you are alive, life's worth living today,' she added. The positive feedback from patients and relatives, as well as physicians, proved the concept of the charity-driven Maggie's Centres was sound.

As two other lectures at the symposium demonstrated, Maggie's has been the model for at least two designs: the Copenhagen Centre for Cancer (completed in 2012) and plans for a new facility for the Prince & Princess of Wales Hospice in Glasgow.

The success story of Maggie's Centres illustrates that EbD doesn't have to be a precondition to point the way forward. Initiatives based on personal experience and the courage to play out/realise one's visions can also pave the way to future healthcare.

* The Symposium for Future Healthcare was organised by the department of hospital and healthcare building design, located at the faculty of architecture faculty at Berlin's Technical University (TU).

Electing Health – the Europe w

The 17th European Health Forum Gastein

For a long time the influence of the European Union (EU) on healthcare policy was considered marginal – but this has changed radically since 2010, says Professor Scott L Greer, political scientist at the University of Michigan and specialist in European healthcare policy. 'The EU has become a major part of health policy making, not because of the extension of the health mandate in the Treaty, but because of the extension of EU fiscal powers into health,' he explained. 'The EU has become a healthcare policy actor because health is expensive and today the EU monitors compliance with EU fiscal policy, Prof. Greer explained during the 17th European Health Forum Gastein, in October, themed 'Electing Health – The Europe We Want'.

Then how do we measure the efficiency of healthcare systems? This question lay among the major posers for experts at the Forum – and, coincidentally, health system performance was one of the three health policy focus areas the EU recently announced..

Measuring the efficiency of healthcare systems is tricky: 'We have evidence that certain measures work,' said Dr Peter Smith, Emeritus Professor of Health Policy at London's Imperial College Business School. 'For instance, sharpening competition among providers can lead to improvement and better IT systems in hospitals lead to better performance. New models of integrated services work well, particularly for chronic diseases; if stroke patients are well looked after by their primary care physician, this significantly improves not only life expectancy but also health costs.'

Nevertheless, this is puzzling. Some countries perform much better than the OECD average, but the experts, Professor Smith concedes, 'often find it difficult to identify the exact underlying mechanisms'.

The next step towards more efficient healthcare systems is 'a new generation of health data', said Francesca Colombo MSc, Head of the OECD Health Division. 'This is a topic that all governments are working on – the huge opportunities created by linking a large variety and volume of data from medical health records, biological data and administration data.' However, we must understand, she stresses, that it is not necessarily the data as such that are of interest, but the overall picture that is generated when these data are interlinked. That's easier said than done. Very often, we lack the structures to compile the data from several sources and we lack the resources to analyse the data, said Michel Van Hoegarden, MSc, Programme Manager of the Joint Action on Health Workforce Planning and Forecasting: 'It's not that we have too little data, we have too much data.'

One solution might be the quick implementation of eHealth – another ubiquitous issue at this year's EHFG. 'There is now an urgent need to implement available solutions in eHealth and telemedicine. It's time to stop hesitating.' This was the parting message from Dr Pēteris Zilgalvis, Head of Unit Health and Wellbeing

When will the alcohol pricing battle end?

Scotland has one of the highest cirrhosis mortality rates in Western Europe

Economist Alex Neil is Scottish Health Secretary and the Scottish National Party MSP for the Airdrie and Shotts constituency. He previously served in the Scottish government as Minister for Housing and Communities

Report: Mark Nicholls

The danger posed to well being by alcohol consumption has been brought into sharp focus by head on clashes between health professionals and the drinks industry, with Scotland's Government aiming to implement a minimum unit price (MUP) for alcohol. The drinks industry – particularly Scotland's whisky industry – opposes such a move.

Supporters of the legislation maintain there is strong evidence regarding the link between alcohol price, income, affordability and consumption: as alcohol becomes more affordable, consumption increases and with increased consumption comes increased harm to health.

However, whilst there has been action and legislation against smoking in the UK and across Europe – with plain packaging, a ban on smoking in public places and restrictions to shop displays to try to reduce the harm tobacco causes – there has not been such similar action against alcohol, which is why the MUP plans have triggered such opposition within the drinks sector.

Figures show that alcohol is now 45% more affordable than in 1980 and consumption increased by 10% in Scotland between 1994 and 2011 and is 20% higher than in England and Wales. The negative impact of this, in terms of a burden on health services, police and the economy is put at £3.56 billion each year, or £900 for every adult in Scotland.

In 2012 this resulted in a call for a policy to set a minimum price for a unit of alcohol – e.g. 50 pence per unit – below which it cannot be sold. However, the flagship legislation has been delayed after the Scotch Whisky Association (SWA) with other trade bodies for international alcohol producers – The European Spirits Association (Spirits Europe) and Comité Européen des Entreprises Vins (CEEV) - took their legal challenge to the European Court of Justice in Luxembourg, arguing that the legislation breaches European law.

The finer points of the debate were discussed in Brussels on 5 September. During the event, under the banner Scotland the Brave! - Alcohol Policy in Scotland, speakers outlined why Scotland introduced this measure and heard opinions of health officials and trade experts, plus an update on the latest position in the battle to implement the MUP.

Speakers included Donald Henderson, Head of Public Health, Scottish Government; Dr Peter Rice, Chair, SHAAP (Scottish Health Action on Alcohol Problems); Paul Bartlett, Group Marketing Director, C & C (Producers of Tennents Lager) and Paul Waterson, Chief Executive, Scottish Licensed Trade Association.

Meanwhile, among the pubic in Scotland, people are slightly more in favour of introducing MUP than against. The Scottish Social Attitudes Survey 2013 questioned about 1,500 people and found 41% in favour of the Scottish government policy to charge a minimum unit price for alcohol. The research found 35% were against the policy and 22% had no strong view either way.

While the Scottish Government says MUP is needed to tackle Scotland's problems with alcohol misuse, the country's Health Secretary Alex Neil welcomed the decision being considered by the highest authority on EU law. 'The evidence shows that minimum unit pricing is an effective way to tackle alcohol-related harm, because it targets heavy drinkers in particular, as they tend to drink the cheap, high-strength alcohol that will be most affected by the policy.'

SWA chief executive David Frost countered by stating: 'We believe MUP would be ineffective in tackling alcohol misuse and would damage the Scotch whisky industry in the UK and overseas.'

The clash between government, health professionals and the drinks industry is proving a drawn-out battle. However, with Scotland being one of the first countries to introduce the measure its progress is already being carefully monitored across Europe.

MUP cannot come into force until the legal process is complete. The ECJ will now await written submissions from EU member states, trade bodies and the Scottish government, as well as the European Commission. This is expected to happen towards the end of 2014 or early in 2015.

TODAY:

NEW: MEDICA CONNECTED HEALTHCARE FORUM

Venue: Hall 15, Stand 15C24

Friday, 14 Nov 2014

● **11.00 a.m. – 02.00 p.m.**

CONNECTIVITY IN HEALTHCARE moderated by Till Osswald, Cisco

11.00 a.m. – 11.30 a.m. From epSOS to Health Information Exchange. **Martin Tiani**, CEO, Tiani Spirit

11.30 a.m. – 12.00 noon The Internet of Things in Healthcare. **Manfred Kube**, Head of M2M Segment Marketing / Director Business Development Health, Gemalto

12.00 noon – 12.30 p.m. Improving Patient Safety and Clinical Workflows. **Peter Ickert**, Sales Director, Honeywell Intelligent Life Care

12.30 p.m. – 01.00 p.m. Netcare – a Telemedicine Service in over 200 Specialized Swiss Pharmacies Opens up New Potentials. **Martin Rüfenacht**, Manager Healthcare, Cisco

01.00 p.m. – 01.30 p.m. Innovative M2M Solutions in Medical Services – Connected Care. **Guido Walcher**, Director Quality and Intellectual Property, Telit

01.30 p.m. – 02.00 p.m. The Future of Operating Room Integration **Johan Stockman**, VP Strategic Marketing, Surgical Imaging, Barco

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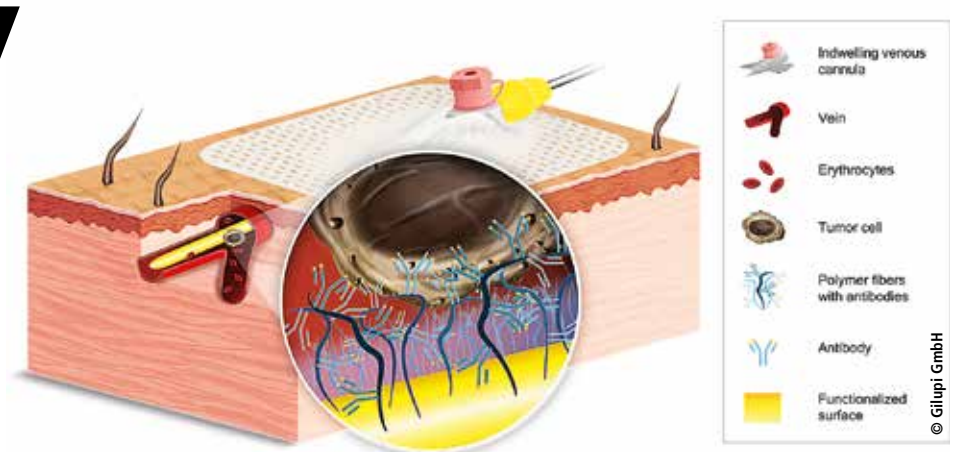
in the European Commission's DG Communications Networks, Content and Technology (CONNECT). He is convinced that eHealth can be a crucial driver of increased quality, cost efficiency, productivity and growth in the healthcare sector. 'Telemedicine is a key element in forward-looking healthcare systems faced with an increased prevalence of chronic diseases and cost-intensity of health services from growing demand and resource scarcity. eHealth can be the driving force in implementing innovative models and products that enhance equality of opportunity in accessing health facilities as well as their management.'

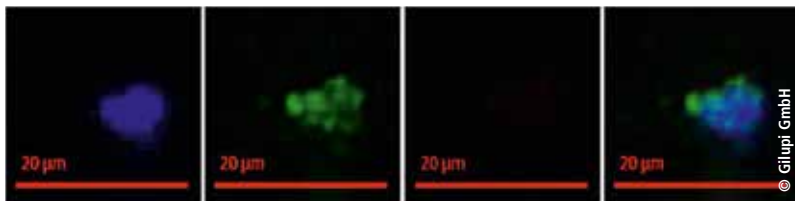
Liquid biopsy

New technology for in vivo isolation of circulating tumour cells

It sounds amazingly simple: a structured medical Seldinger guidewire is inserted via a peripheral venous catheter to 'fish' for circulating tumour cells (CTC) in the blood of cancer patients. The new technology called Gilupi CellCollector has a unique feature – its high degree of sensitivity. Since the isolation of the CTCs is done in vivo a large sample volume of up to 1000 ml blood can be used for screening purposes – which was impossible even with the current gold standard for cell isolation, the CellSearch technology. EH correspondent Bettina Döbereiner, spoke with Dr Claudia Chudak of Gilupi, the firm that developed and markets the system.



The first 20 mm are plated with a gold layer. Subsequently, a hydrogel layer is attached to the gold layer. The latter allowing for functionalisation via covalent coupling of an antibody directed to the epithelial cell adhesion molecule (EpCAM) present on the surface of most CTC. The 2014 CE-certified second generation Gilupi CellCollector has – unlike this drawing – a coiled tip and consequently a bigger and more effective surface than the former solid tip of the first Gilupi CellCollector (CE-Certification in 2012). Up to now the Gilupi CellCollector was used in around 850 applications.



Immunofluorescence image of an isolated CTC. Hoechst+/Cytokeratin+/EpCAM+/CD45- cells were counted as CTCs. A: Hoechst33342 staining, B: Cytokeratin/EpCAM staining, C: CD45 staining, D: merge.

Circulating tumour cells (CTC) are the objects of intensive research because their detection is considered crucial for the diagnosis and therapy of solid epithelial tumours.

What we do know about CTCs is their prognostic value as a biomarker: the CTC count per millilitre blood provides data on a potential metastatic relapse and cancer progression and thus on overall survival. Moreover the CTC count is a monitoring device to evaluate therapy response and molecular analysis of the CTCs offer insights into the molecular 'ductus' of the primary tumour and the metastases. In short: the CTCs fully map the tumour's heterogeneity. This is particularly important for the so-called targeted cancer therapy since mutations or resistances that have developed during the therapy can be detected quickly and medication can be adjusted accordingly.

Dr Claudia Chudak, marketing and sales specialist at Gilupi GmbH, studied biology at Free University Berlin, Germany. She became a junior researcher on HIV and other retroviruses at Robert Koch Institute in Berlin and wrote her dissertation of the identification and functional characterisation of L-domains of the human endogenous retrovirus K.

The 'fishing for CTCs' procedure, also called liquid biopsy, has several advantages as Dr Claudia Chudak, marketing and sales specialist at Gilupi, explains: it is minimally invasive if you consider drawing blood an invasive procedure; it can be repeated and performed at any time.

The only true challenge to be mastered is the actual detection of CTS, since very few of them actually circulate in the blood. Scientists estimate there is one CTC on 107 white blood cells in one millilitre of blood. The current gold standard to isolate CTCs – the US-American product CellSearch – is an in vitro procedure and can therefore be performed on a sample of at most 7.5 ml, the standard blood-taking sample.

Gilupi CellCollector, which received CE approval in 2012, has two major advantages compared to CellSearch says Dr Chudak: the CTS are isolated in vivo instead of having to be separated from the other blood components in a complicated ex vivo procedure. The crucial advantage, however, is the fact that the CellCollector can screen up to 1000 ml of blood in the 30-minute procedure.

The technology itself is straight forward: the Gilupi CellCollector, which is inserted via a peripheral venous catheter in the cubital vein, features a rounded tip with a 2 cm long layer of pure gold. The gold layer is coated with a functionalised polymer, which in turn is covalently bonded with anti-EpCam antibodies. They dock onto the epithelial cell adhesion molecule EpCam, which is present in most CTS (see Figure 1). Studies have shown that the system can isolate CTS in more than 70% of all patients diagnosed with cancer of the lung, breast, prostate or colon. Further studies, including head/neck, renal and neuroendocrine tumours, are being conducted.

The CTCs detected by the Gilupi CellCollector undergo simple post-processing and can then be analysed using the standard microscopic or molecular diagnostic procedures (see Figure 2).

According to Dr Chudak liquid biopsy is significant for targeted cancer therapy because it offers a good and easy to use option to map the status of the primary tumour and metastases. It is particularly useful when a conventional biopsy is too dangerous, or when the primary tumour has already been removed. A molecular analysis of the CTS can also provide early information on mutations and resistances that have developed over the course of the therapy. Thus, second or third line medication can be designed more efficiently.

To date the sole limitation of the Gilupi technology is the fact that not all CTCs can be detected in the blood since not all of them feature the protein EpCam at all, or in a sufficiently expressed form such as mesenchymal or anaplastic phenotypes. However, this limitation applies not only to the Gilupi technology but also to most technologies to isolate CTCs, including the above-mentioned CellSearch.

Dr Chudak hopes that advances in antibody research will allow the tip to be fitted with additional antibodies or substances to detect non-EpCam positive CTCs.

The Gilupi CellCollector is not limited to cancer applications, he adds: it is considered to be a technology platform for the detection of a wide variety of targets in the blood, for example bacteria. Indeed, the inventors Professor Michael Giersig, Dr Klaus Lücke and Professor Ulrich Pison, whose initials of their last names form the company name, had initially designed the cell-collecting device for prenatal diagnoses, as an elegant alternative to the dangerous amniocentesis. While the production of that device was stopped due to lack of demand, the scientists at this medium-sized enterprise have developed two further prototypes – for cardiology and intensive medicine.

In cardiology the Gilupi CellCollector is intended to detect circulating endothelial cells that provide reliable information on the presence of acute micro-infarcts (AMI), which the current standard test for troponin cannot always do. In intensive medicine, in vivo cell enrichment is supposed to quickly detect infections or rather their specific pathogens. This can, for example, facilitate the recognition of sepsis.

* Ref: Nadia Saucedo-Zeni et al. A novel method for the in vivo isolation of circulating tumour cells from peripheral blood of cancer patients using a functionalised and structured medical wire, International Journal of Oncology, 2012 (DOI: 10.3892/ijo.2012.1557).

Detecting fetal and maternal h

The new Philips Avalon CL's cableless design enables mothers to move more freely during labour and uses Smart Pulse technology to automatically detect the coincidence between maternal pulse and foetal heart rate, even for twins and triplets.

Conventional foetal monitoring solutions often present limitations for physicians and patients. Studies show that upright positions and walking are associated with a reduction in the length of the first stage of labour and women in upright positions may be less likely to have an epidural. Further to this, observational studies suggest that maintaining a supine position in labour may have adverse physiological effects on the mother and her baby (Lawrence A, Lewis L, Hofmeyr GJ, Dowswell T, Styles C. Maternal positions and mobility during first stage labour. Cochrane Database of Systematic Reviews 2009, Issue 2. Art. No.: CD003934. DOI: 10.1002/14651858.CD003934.pub2). 'With Avalon CL, mothers can reap the benefits of mobility by having more flexibility to move during labour due to its cable-less design and consistent monitoring ability,' Philips reports.

Philips is at Medica
Hall 10 / Stands A22 & B22

One of the world's first installations of the new cable-less technology took place in the Gloucestershire Royal Hospital. Assistant Divisional Director of Midwifery, Dawn Morrall, said: 'We want to ensure that mothers-to-be and their babies benefit from the advantages of being mobile and upright in labour, while also providing the best possible birth experience.'

This hospital now has six Avalon CL units throughout the hospital's delivery suite. The team will also conduct a year-long research project, M.U.M. (Mums Up & Mobile) which will provide invaluable insights on the benefits of making labour more mobile and help better inform decisions for women giving birth, and their babies.

Among Avalon CL features:

- Coincidence detection: The Smart Pulse technology allows continuous coincidence detection between the mother's pulse and baby's foetal heart rate, or rates

Zero percent and other illusions

The majority of nosocomial infections cannot be avoided

Interview Ralf Mateblowski

Professor Tobias Welte MD, President of the 24th International Congress of the European Respiratory Society, gave EH@MEDICA some personal views on the symposium 'New perspectives in the management of nosocomial pneumonia'

'A load of nonsense!' Such was the professor's spontaneous response to calls for complete avoidance of nosocomial infections. 'You always have to differentiate between nosocomial infections that are acquired and those which come from patients themselves,' he explained. 'When patients suffering chronic colonisation with nosocomial pathogens in the bowel have to undergo abdominal surgery then infections sometimes simply cannot be avoided - and the majority of all infections are based on this endogenous, intrinsic mechanism. It is therefore an illusion to believe nosocomial infections can be entirely avoided. On the contrary: The majority cannot be avoided!'

Nevertheless, there are noteworthy successes in prevention. 'For a long time the focus was on MRSA; ten years ago we had an increasing prevalence in Germany of 22-25%. Since then, we have seen a slight drop to currently around 17-20% because of more standardised infection prevention and control procedures. A further decrease is possible, but it would be an illusion to believe that the figure can be cut to below 10%.'

The main reason for this is that staphylococcus bacteria are different from other pathogens in their biology and disease mechanisms. 'Resistant coli, for instance, are almost never transmitted via the hands but, in the case of staphylococcus, hand hygiene is the key issue! The clean hands campaign, supported by the Federal Ministry of Health, was very successful.

Tobias Welte MD is a specialist in internal medicine, pulmonology, critical care and infectology. Early on in his career he was a house officer and registrar in Lehrte and Hannover, before spending a decade as head of the Pulmonology and Critical Care Medicine Division, at Otto-von-Guericke University, Magdeburg.
The professor has directed the Department of Pulmonology at Hannover Medical School since 2004 and is the current president of the German Respiratory Society.

Standards were developed for many procedures where staphylococcal infections play a part, such as for inserting catheters. It's all the more incomprehensible then that the coordinating manager of the national reference centre, Professor Gastmeier, is currently having to look for private sponsors because the federal government no longer finances this campaign!'

The symposium in Munich also featured discussions about HAP (hospital acquired pneumonia) and the American programme 'zero VAP', aimed at reducing the number of ventilator associated pneumonia cases to zero. Says Welte: 'The Americans have now realised that this measure is absurd: with a patho-mechanism that causes such complex cases of pneumonia you can only influence some individual factors, but not patient-inherent ones. As yet, there are no significant procedures for this.'

A lot has been invested over the last few years to accelerate infection diagnosis. This has two major implications, says the pulmonologist: 'The classic, microbiological diagnosis has become much faster; resistant pathogens can now be isolated and identified in just a day. Additionally, modern PCR systems help to gain another few hours. However, the disadvantage is that these staff and equipment intensive procedures are based on amplification, meaning they can only detect what is coded on the chip.

'That's easier for gram-positive pathogens with their fairly preserved, standard resistance mechanisms, than for gram-negative pathogens, where we basically observe new resistance mechanisms emerge almost every week. In my view it will be hard for PCR procedures to become established in the hospital. There also will be no way around classic microbiology in the future.'

Could the rise in resistances be contained? Welte is optimistic: 'Thankfully there is finally a little more happening with regards to the development of new substances. At the beginning of October a new cephalosporin* was introduced to the German market that's also effective against MRSA. Some other substances are also currently going through the licensing procedures, so we should be able to move on from the very low point – i.e. 10 years without new antibiotics.

'However, the problem remains that the development of resistances occurs much faster than that of the new substances. Too many factors come into play here, including the misuse of antibiotics itself, their widespread use in mass farming and the globalisation of resistances through tourism.

'Ultimately, the much-needed support from politicians is not forthcoming: All (preventative) measures are labour-intensive. In high-risk areas, such as intensive care units, the staff cover in many places is already insufficient.

'If staff numbers keep being reduced further for economic reasons all well-meant infection prevention and control programmes will be of no benefit – and incidentally, neither are standards and guidelines implemented on their own, without repetitive teaching and monitoring!'

* A group of broad-spectrum antibiotics that prevent the rebuilding of the cell walls in bacteria that divide and therefore have a bactericidal effect. Penicillin is part of this large group.

eart rates

if there are multiples, without any additional transducers or cables, allowing clinicians to provide more accurate recognition and intervention.

- Increased mobility and flexibility during labour: By removing cables, Avalon CL is more mobile and flexible, allowing women to find their most comfortable position to best manage contractions during the birth.
- Enhanced monitoring under water: The system can be submerged under water for up to five hours for continuous monitoring, even with twins and triplets.

High risk deliveries

'The system transmits foetal and maternal vital signs information to a monitor via the base station,' the manufacturer explains. 'From there, patient information can be transferred seamlessly to the Philips IntelliSpace Perinatal information management system, which tracks medical information across the obstetrical care continuum – from the first antepartum visit to delivery, postpartum, new-born record, discharge and postpartum follow-up visits.'

Further details:
www.philips.com/avalonsmartpulse
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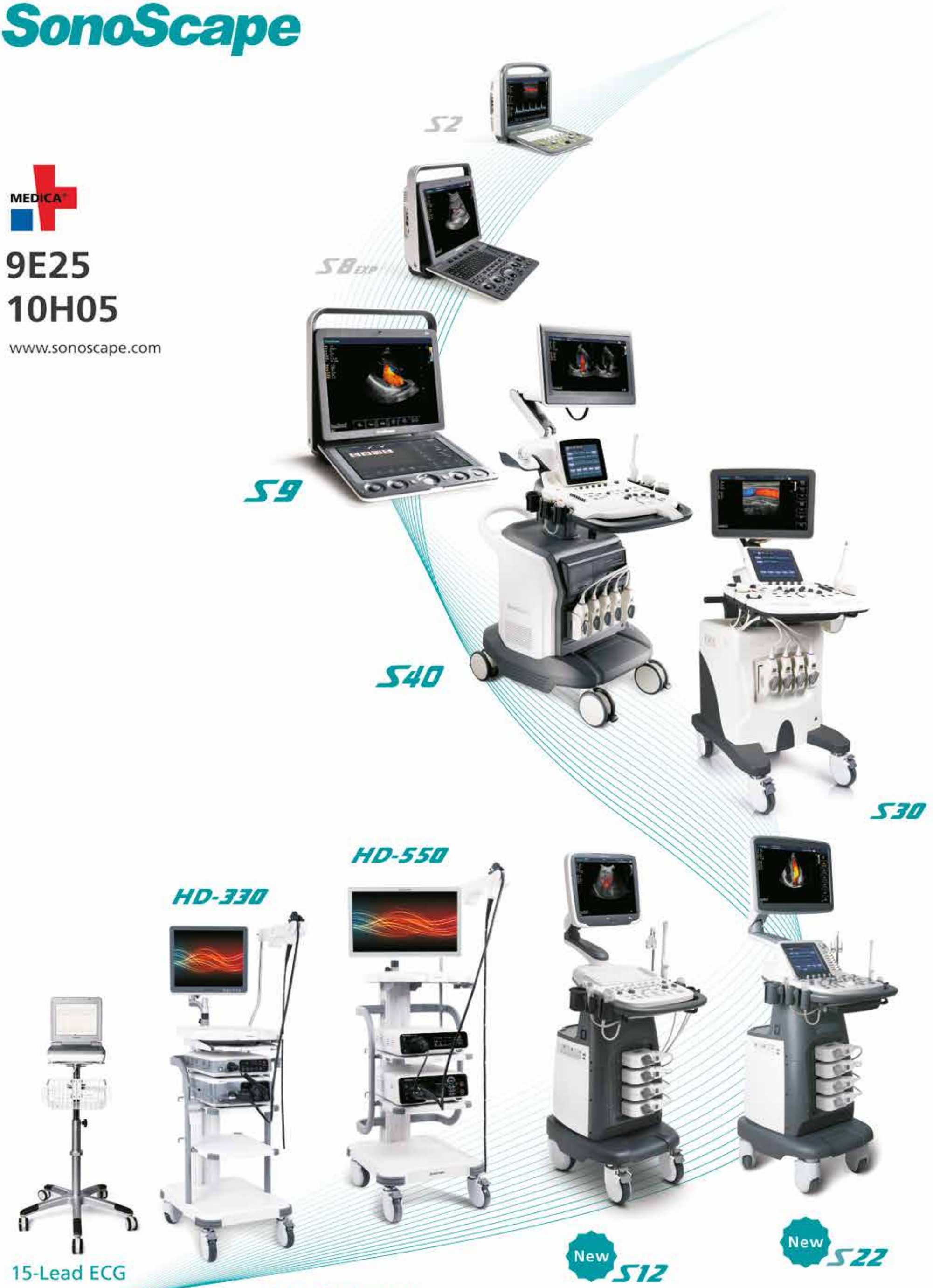

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