Dear Readers,

What a year 2007 has been in terms of medical developments and news, as well as our own partnerships and readership levels. Once again, we have been privileged to receive your contributions for our European Hospital issues, which have spread knowledge as well as enhanced interest in this and our other publications and our new interactive website. All of these efforts serve healthcare providers and manufacturers alike and, ultimately, this sharing of knowledge disseminates to the most important people — the patients.

As a result of all our combined activities, EH has gone from strength to strength and we have enlarged our editorial and marketing teams internationally. In addition, as many of you know, we now even publish a Russian language edition of European Hospital.

And so, as 2007 draws to a close, we thank you and wish you all an excellent 2008 in all your health giving endeavours and roles, as well as for you all, personally.

Best wishes

The EH team

P.S. Not all of our journalists, contributors and representatives could be represented in the above images in time for our Christmas deadline. Nonetheless, they echo our thanks to you all.
Germany — Once again MEDICA 2007 drew healthcare professionals — this year around 137,000 — to attend the congress and view the enormous number of medical products demonstrated by over 4,500 exhibitors. "The diagnostic workstation, the Telemedicine Trade Forum and Theme Park, offered practise-oriented events and workshops to support cross-national knowledge and technology transfer emerging current topics such as the electronic health card and medical data networks." Pathological results are clearly highlighted on the display and weekly calibration with a control test guarantees avoidance of errors with visual evaluation. Compact medical devices were another focus of interest for point of care use. These included smaller, portable ultrasound machines and next generation home testing systems that feature Bluetooth interfaces and online connectivity — for example to transmit a patient’s blood-glucose levels automatically to an electronic database.

Devices to actively integrate the health-conscious patient in relation to prevention as well as quicker treatment were also shown. By quickly and simply measuring body parameters such as ECG or blood pressure and wirelessly transferring them to the treating physician, such units promise to offer advantages, especially for the long-distance surveillance of the chronically ill or for pain relief therapy.

The Medica Congress featured more than 150 seminars and lectures. Disease prevention, state-of-the-art diagnostics, emergency medicine and other important topics were discussed. At the 30th German Hospital Conference, which aimed to ‘Shape the Future’, 1,800 participants received perspectives from around 2,100 German clinics regarding tension between fee-for-service invoicing, increasingly fierce competition and the desire for the best possible treatment quality.

Next year Medica will celebrate its 40th year. It is already the world's biggest medical trade fair, yet ever-expands its space to so global ingenuity can be encountered and the desire for the best possible treatment quality.

Even more advanced

Hill-Rom’s TotalCare adjustable electric hospital or air beds were designed for the ease of use in intensive care units by providing special features that allow unattended access to tend patients. By using button control on the FullChair patient position mechanism the position of immobile patients can be easily and frequently changed, even to an ‘up-in-chair’ position. The optional SpO2RT module offers percussion and vibration therapies, as well as a continuous lateral rotation feature to aid in the prevention and treatment of pulmonary complications related to immobility.

In addition, to minimise the risk of decubitus ulcer development, all TotalCare beds have an enhanced pressure relieving surface.

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Non-invasive ventilation (NIV) is often chosen in cases of acute respiratory insufficiency, because modern respirators offer response times of milliseconds, so technical hurdles are overcome. Dräger pointed out that one problem remains: the ready availability of high-quality leak-proof ventilation masks.

At Medica 2007, the company presented their solution: ergonomically designed NIV ventilation masks with adjustable fixation for the full face. The ClassicStar and NovaStar offer maximum contact and high patient comfort. Leaks due to monitoring interruptions and PEEP losses despite mechanical compensation no longer compromise the efficiency of the therapy. Classic-Star is a disposable mask with 6-point headgear. Nova-Star is semi-reusable; it could be used up to five times after disinfection. A soft gel cushion and adjustable forehead support avoid decubitus on the nose bridge. Four magnetic clips secure the mask.

Both masks are suitable for pressure-supported spontaneous breathing and for controlled assisted ventilation. An optional anti-asphyxia valve ensures convenient access to room air in the event of reduced pressure as well as CO₂ elimination.

Komet Medical presented its range of high-quality Evolution sawblades. These are coated with gold-coloured titanium nitride to ensure precise, clean cuts without excessive contact pressure. They can also be reprocessed for further use. Available for all commonly-used prostheses, the warp-resistant stainless steel instruments allow surgeons to cut and prepare bones precisely and almost without vibration, Komet pointed out.

Komet Medical has also launched a new Blade-Centre online-service to provide medical specialists with a quick source of detailed information about the firm’s vast range of blades as well as, for example, instrument compatibility with existing systems, simply by clicking on the required selection criteria. Orders or requests for a free sample can also be placed online.

Our family portrait

Displaying innovative components, complex micro and nano technology, once again COMPAMED confirmed its reputation as the leading international trade fair for upstream suppliers to the medical products manufacturing sector. Under the banner “high-tech for Medical Devices” more than 13,000 visitors flocked to halls 8a and 8b at the Düsseldorf trade fair centre to view products from 460 companies.

Among the highlights were innovative micro pumps that allow mixing of gas and liquids (Bartels Medizintechnik GmbH), and sensors and components (Aseos GmbH) for breath-by-breath O₂ and CO₂ measurements in neonates for early detection of lung or cardiovascular diseases.

Carl Zeiss Industrielle Messtechnik GmbH presented high-precision systems for quality assurance and functional control of miniaturised components. With their flexible multi-sensors the models O-Inspect and F25 offer tactile and optical measurement of micro- and nano-sized components in one step, Zeiss explained.

Around 10% of exhibitors showed foil and film packaging for sterile products. For example, since August this year Bischof + Klein GmbH & Co KG, a European full-service provider that emphasises the need to meet the highest hygiene requirements, said that it has performed all extrusion, printing and packaging steps under one clean room roof.

The focus for COMPAED 2008, which will take place in tandem with MEDICA (19-21 November), will be on mobile telephony and PDA computers for the growing Ambient Living Systems (AAL) market. Micro systems offer sensor functions and their data transfer capabilities that may revolutionise healthcare delivery to patients living at home.

Offering optimal images, and unique strengths and characteristics, our family of computed radiography systems are our pride and joy. The multi-application CR 35-X is enhanced by its incredibly small footprint. The athlete of the family, our “do everything” CR 85-X, has a unique 10-cassette drop-and-go buffer to support the most demanding radiology departments. Its sibling, the compact but powerful CR 30-X tabletop, facilitates smaller facilities to go digital smoothly without any compromise on image quality. While the talented DX-S redefines CR, supporting the toughest examinations in the most challenging environments with DR-like image quality and cassette flexibility. Of course, with our MUSICA® latest generation smart imaging processing and the NX User Station image identification and control tool, all can integrate with your facility’s PACS, RIS and HIS for an economical and effective transition to digital. So, whatever your facility size or need, we can offer the right CR system. It’s a family commitment you can count on.

www.agfa.com/healthcare
1st Russian EH competition winner

The prize: Champions League football plus a fitness check-up at medicos.AufSchalke

After Dr Sergey Pavlov, director of performance and cardiology diagnostics at the Moscow Sport Science Centre for Sports Medicine, won our Readers Survey competition (4/07), he and a friend shared an unusual prize – three days in Gelsenkirchen, Germany, the home of the Premier League football team FC Schalke 04, and of the team’s professional health and fitness partner, medicos.AufSchalke, a renowned sports medicine and rehabilitation clinic.

Their agenda included fitness and football with a two-day manager health check-up for Sergey, and watching the Champions’ League game between FC Schalke 04 and Rosenborg Trondheim in Gelsenkirchen-Schalke.

“European Hospital’s” idea to offer Russian readers articles in their native language is great. So I participated in the reader survey to support this initiative. Of course, I’m delighted that I won,” said Sergey. For he is cardiologist and specialist in sports and internal medicine, who is responsible for the health of top Moscow athletes, what medicos.AufSchalke had to offer was of great interest. During his two-day health check-up he was assessed from head to toe: lung function, lactate values, thyroid function, musculoskeletal system and more.

Based on the results, a personalised nutrition programme was compiled and a health-oriented fitness regime was devised.

Following all the strenuous exercises, Sergey used the medicos.AufSchalke regeneration facilities, which include massage and sauna and use of the luxurious Courtyard of the Marriott Hotel.

With a staff of around 100 people, the Moscow institute provides in- and out-patient services, caring for top swimmers and gymnasts as well as the professional football teams Spartak Moscow, Dynamo Moscow and Lokomotiv Moscow. “I was particularly keen to see the services the clinic offers because it is also used by the FC Schalke 04 Premier League football team. We, and above all Zurab Ordoñizidze, our managing director at the Moscow Science Centre for Sports Medicine, are always looking at ways to optimise our performance diagnostics,” he added.

Along with their medical professional interest, the Moscow and the Gelsenkirchen institutions share a passion for football. Watching the Champions League match from the comfort of the VIP lounge of Veltins-Arena, Sergey’s routing for the home team appeared to inspire FC Schalke 04 to thrash Rosenborg Trondheim 3:1.

Clinic details: www.medico-aufschalke.de, www.mnpcom.ru

Sergey Pavlov, winner of our Readers Survey competition, with his trainee during health check-ups at FC Schalke 04, and, with Hans Oekl, spokesman of Medico.Auf Schalke.
MAMMOGRAPHY - SPECIAL REPORTS

New mammography CAD software supports diagnosis

At RSNA 2007, Daniela Zimmermann of the Hospital spoke with Ram Balasubramanian (RB) of Carestream Health’s CAD Business Manager for Europe, the Middle East and Africa, who presented the company’s technology, which is designed for digital mammography.

The target customers for the Kodak Digital Mammography CAD System are mainly screening centres with a high daily patient flow outside Diagnostic Imaging, and Balasubramanian. Using the systems they capture the images from their digital mammography systems.

Sooner, he added, they will be able to do this not only from the Kodak CR but also from other companies’ FFDM systems. ‘We’ll have installed units in five countries since October, and have received only positive feedback. All clinics are not implemented in combination with a separate computer to process the images with the DICOM file and then not generate a CAD report, which is then sent to the workstation. This report contains detailed information about suspicious areas are located, the type of cancers detected and the position of those cancers. All this information can be matched with the images acquired, so the CAD mats overlay the images and show where the cancer could be. The mammography CAD can detect densities, architectural distortion and highly suspicious irregularities. Some give doctors a second chance to review those suspicious areas.’

RB: ‘Could CAD for mammography seduce a physician into relying on those results without examining the images themselves — is that a danger?’

‘No, our system should be seen as a second opinion. The doctor in contrast, by reviewing both the mammography CAD and the original images, can increase the chances of detecting a cancer without losing important information that could be vital for treatment. The new mammography CAD software supports diagnosis.

It is hoped that a new technology, digital breast tomosynthesis or 3-D mammography, will overcome these drawbacks. Each individual screening mammography: discomfort with breast compression, cancer concealed behind dense tissue and the limited number of views. All the major women’s imaging companies are trying to introduce breast tomosynthesis. Boston-based Hologic appears closest to going to market. Two studies that used the Hologic technology were published recently. During the late breaking news event at the RSNA in November, Elizabeth Rafferty MD, Director of Breast Imaging at the Massachusetts General Hospital, Boston, and colleagues, reported on a reader study involving 12 radiologists who examined over 300 cases gathered from clinical sites in the USA and Europe. The researchers found that these radiologists demonstrated statistically significant better performance in reading cases with breast tomosynthesis combined with digital mammography than when using digital mammography alone. ‘We saw a huge amount of experience, every reader performed better’, Dr Rafferty noted. The researchers estimated that digital breast tomosynthesis in conjunction with digital mammography can reduce the screening recall rate in a normal population by 40%. ‘That’s because tomosynthesis gives you the value of being able to correctly diminish summation shadow or overlapping structures, more accurately characterize lesions and still go through the read as normal the first time, but CAD offers the opportunity for a second read as therefore a chance for the doctor to return to suspicious areas. For example, if there is calcification, the CAD indicates where it is and the doctor can say ‘I have already seen it’. Or it might happen that the physician missed it, and has the opportunity to go back and double check.

Actual studies showed that physicians are very comfortable with CAD and consider it not detrimental. ‘Of course it does not deliver a diagnosis. Studies confirms that CAD could significantly increase sensitivity, even if there are two doctors reading the mammograms, by up to 20%.

Carestream Health is not the only firm to offer such a CAD solution. What makes your system different?’

The radiologist only often looks at the CAD mats, but makes the difference is the performance and database. ‘Our 400,000 CR mammography systems installed around the world, so have had the opportunity to cover a lot of data for our CAD and we receive considerable feedback from our customers on how to improve our CAD algorithms. We also reinforce our team of image capture scientists and our algorithm developers to create a fully integrated mammography CAD algorithm. The other advantage that Carestream Health can provide us is service and support, particularly in Europe, where we have a large and dedicated support organisation that smaller CAD vendors have difficulty matching.

Due to its apparently greater accuracy than digital X-ray mammography, 3-D tomosynthesis is increasingly discussed. Is this a strong argument against your solutions?’

MR sensitivity seems to be higher, but X-ray is still the standard of care, primarily because of cost. So, in my opinion, MR will remain a follow-up exam and not replace X-ray, especially for screening.

A suspected cancer with microcalcifications is better appreciated in the tomosynthesis (right image) than on the digital mammography image. A suspected cancer is very similar in the tomosynthesis (right image) than on the digital mammography image. A suspected cancer with microcalcifications is better appreciated in the tomosynthesis (right image) than on the digital mammography image. A suspected cancer with microcalcifications is better appreciated in the tomosynthesis (right image) than on the digital mammography image. A suspected cancer with microcalcifications is better appreciated in the tomosynthesis (right image) than on the digital mammography image. A suspected cancer with microcalcifications is better appreciated in the tomosynthesis (right image) than on the digital mammography image.

A combination of modalities is more effective in breast cancer detection

Mammography Special issue 4/2007). In the first 300 women examined, one additional cancer was detected in two women that were missed with conventional digital mammography. One major issue with 3-D imaging in general has been the belief that it would bring with it an increase in radiation dose for the patient. Dr Rafferty’s team found that two rounds of digital breast tomosynthesis from different angles actually generated a lower dose of radiation than a single round of digital mammography.

As for how long it will take for breast tomosynthesis to catch on with radiologists, Dr Rafferty said: ‘That really comes down to comfort level [of the radiologist]. The fact that CAD has caught on so quickly really shows how radiologists are not confident at interpreting mammograms.

Initially it is likely that breast tomosynthesis will be used as an adjunct to digital mammography. Dr Rafferty and colleagues, as well as Hologic, one of the manufacturers of digital mammography, believe that if it is introduced in this way, radiologists will more easily accept the modality.

The results of these two studies strengthen Hologic’s efforts to first to market breast tomosynthesis and enhance the company’s position that breast tomosynthesis, based on their selenium direct to digital detector, offers a superior breast tomosynthesis system. In addition to being the first manufacturer to receive FDA approval of digital breast tomosynthesis and believes that this equipment could be commercially available as early as mid-2008.

In addition to work on breast tomosynthesis, Hologic showcased two new Selenia digital mammography options of considerable interest at the RSNA show – Selenia II and a tungsten X-ray tube Selenia system.

Selenia II, offered at a lower price point than the popular Selenia system, is optimised for screening mammography, satellite offices or mobile environments. Selenia II can be upgraded to include all diagnostic tools found on Selenia.

While radiation exposures in digital mammography are already very low relative to the patient benefit from early breast cancer detection, Hologic offers a tungsten X-ray tube Selenia system, which is optimised for use in Europe, particularly in the expansion of the Selenia system. The use of a tungsten X-ray tube enables dose reduction, as it has a higher atomic number, improving the excellent image quality already achieved with Selenia, Hologic reports. ‘The new system is a development in the direction of some of the advanced applications under development, such as digital breast tomosynthesis, iodinated contrast, and dual energy breast imaging.’

New mammograms on one screen

The first 15 megapixel DICOM display

The first 15 megapixel display, which enables radiologists to monitor two mammograms on one screen, was launched at RSNA 2007 by the Japanese firm Totoku.

The MS512 is based on a patented, pending 15 SD-technology (Independent Sub-pixel Driving) that produces an excellent depiction (without degradation) of an original image captured by the modality device. ‘Currently, monitors can display images with a maximum of five megapixels, whereas the detectors of many vendors can theoretically show 67 million image pixels. So our 21.3 inch monochrome display is coming closer to the possibilities that modern radiological equipment offers,’ explained Dirk Cordt, General Manager Sales & Marketing, Totoku Europe GmbH.

While a pixel pitch of five megapixel displays is 165 µm, the new display achieves a sub-pixel chain direction via the newly developed ISD technology. To display an overall image that has a resolution higher than the monitor can reproduce, the image is converted to a lower resolution image with a certain amount of data loss. A resolution of 15 megapixels offers an image reproduction without image degradation.

Until now, economies of scale have made development of such a display cost prohibitive. With the introduction of the MS512, Totoku said it now realises resolution levels of 15 MP as a breakthrough in softcopy diagnostic environment at a reasonable price. Besides the new ISD technology, Totoku’s display offers a new Special AR (Anti-Reflection) Coating that tackles properties of focus, noise reduction, contrast, and viewing angle achieving film-like black and accurate image reproduction. Common Anti-Clare (AG) coated displays causes focus loss due to diffused reflection and increased noise because of the diffused light that overlaps with the displayed images. Therefore, some displays used in diagnostic imaging require such finite depiction that radiologists prefer a non-AG coated display, thus sacrificing reflective benefits but gaining a crisper image. The special AR coating is a surface treatment that solves this problem, and provides imaging without compromises, Totoku pointed out. ‘Of course it was necessary to adapt the software and make it suitable for 15 megapixels and already the first companies are aiming to do that. One well-known Japanese mammography manufacturer is adapting its software to work with the 15 MP display,’ Dirk Cordt added.

‘Totoku will commence production of the MS512 in January 2008. Details: http://www.totoku.com/display/’
Austria

Mammo-screening moves on
EH correspondent H-C Prusinsky reports

Text messages remind women about appointments. Brenda Marsh reports on the flourishing and expanding breast screening programme

About 50% of 40-70 year-old women have been screened. Dr Eduardo de la Sota reports

Increased general awareness of issues surrounding hormone replacement therapy, and the fact that Austria is currently the only country among the EU-15 without an established comprehensive mammography screening programme for breast cancer, led Health Minister M Rauch to announce a new project that will include mammography screening for 70,000 women, aged between 50 and 69 years, in two Vienna districts and in Vorarlberg. A second research programme is to target women who have undergone hormone replacement therapy for long periods of time.

About 4,500 women in Austria develop breast cancer annually; 1,600 die from the disease. The objective is to lower the mortality rate of breast cancer through systematic screening programmes. Comparative figures from the EU-15 countries show that the risk of dying from breast cancer is twice as high in Austria as in the United Kingdom, where 75,000 deaths, 25,000 women who might have been saved through early detection.

The EU conference, along with the WHO — among other things based on relevant experience gathered in Sweden and Finland — estimated a 30% reduction in the breast cancer mortality rate if all member states introduce high quality mammography screening, including a second opinion for each case and follow-up examinations for conspicuous cases.

The authors of the OBG study Mammography Screening Austria, published in 2004, state that a comprehensive national early screening programme can save 500 lives annually, but that the Austrian healthcare system currently does not have the appropriate, essential framework for a quality-supported screening programme based on EU guidelines (training, technological quality assurance, breast cancer register). The maximum costs (calculated without accounting for possible synergy effects regarding locations, technology and staffing) are estimated to be around €222 million annually.

Details: www.oebig.at

A private foundation for breast health

In 2002, the private, charitable Foundation for Breast Health, which is funded by sponsors, donations and the organisation of events and charity actions, has since been successfully working towards the following ambitious objectives: increasing public education about screening and promoting lifestyle changes.

The research projects aimed at improving the prevention, early detection and treatment of breast cancer; or those that work towards a psychological, oncological and psychosocial care for breast cancer patients and their families.

The Foundation's board is made up of opinion leaders from medical, business and political fields in Austria. The Foundation currently supports the following projects:

1. Evidence of pre-malignant and malignant lesions in prophylactic mastectomy specimens of BRC A1 carriers in a control group comparison

BRC A1 mutation carriers have a high risk of developing breast cancer (BC). Risk management may entail early radiological screening or a prophylactic mastectomy. The operative treatment strategy involving PM compared with surveillance strategy could be additional importance for the mutation carriers if the histologically examined specimens show numerous pre-malignant and malignant changes despite radiologically unremarkable results. This is why they study retrospectively examined how the histological specimens of the PM preparation of the BRC A1 carriers differed from those in the control group.

The study included 24 healthy mutation carriers and 28 BRC A1 mutation carriers suffering from breast cancer who had undergone a bilateral prophylactic mastectomy (BPM) or a mastectomy of the contralateral breast (CPM) following unremarkable, pre-operative radiological findings. To compare the occurrence of premalignant and malignant lesions a control group was matched to the respective patients suffering from the disease. The group comparison was carried out with t-Tests for dependent samples and the Wilcoxon Signed Ranks Test.

The entire group of mutation carriers differed significantly with regards to the occurrence of premalignant or malignant changes from the matched control group (< .05 vs. 5.8%; p < .001).

The sub-group comparison of the healthy mutation carriers as well as the carriers who had already developed the disease compared with the members of the matched control group showed a significant difference in the occurrence of premalignant and malignant changes (45.5% vs. 0% p = .002; 39.6% vs. 10.7%; p = .01).

Carcinomas were detected in 5.8% (5/22) of the mutation carriers and premalignant changes in 38.6% (8/21) of the PM PM carriers.

2. Early detection of breast cancer and ovarian cancer through the identification of new tumour markers via surface-enhanced laser desorption/ionisation mass spectrometry

New methods for the early detection of breast and ovarian cancers need to be developed. The objective of this project is to find protein patterns that may facilitate the early detection of breast and ovarian cancer. Serum and tissue samples are analysed with the most up-to-date techniques: a combined application of a solid-phase extraction of serum proteins and surface enhanced laser desorption/ionisation mass spectrometry (SELDI-MS).

The characterisation of the detected proteins could establish a new generation of tumour markers and contribute towards a better understanding of the pathogenesis of breast and ovarian cancer.

So far the researchers have generated three new breast cancer patients and 81 mutation carriers. DNA and serum samples are also available from many of these patients, and with some patients it was possible to obtain tumour samples from breast and from tumours. The researchers also set up a database which makes the processing of data and samples easier.

Details: www.breastspahnudel.at

United Kingdom

Spain

Mammography screening programme

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Vol 16 Issue 6/07

European Hospital
France

Are government screening targets achievable?

Asks EH correspondent Jane McDougall

Launching in January 2004, France's nationwide breast cancer screening programme aims to provide, by 2010, a mammogram every two years for at least 80% of women aged between 50 and 74. However, according to the latest figures from the health watchdog InVS (Institut de Veille Sanitaire) now 49.3% of the targeted population has been screened. While representing a significant achievement, and a steady increase over the past four years (33% in 2003, 40% in 2004, 43% in 2005 and 48% in 2006) it is still short of the figure required to have significant health benefit. Independent surveys have shown that, to reduce breast cancer mortality by 28-30%, at least 70% of the healthy population over 50 years of age needs to be screened.

The government believes strongly in this initiative and the possible reasons for low response have been carefully analysed. A qualitative survey carried out in eight different towns interviewed 70 women in the target group. Some women had never had mammography because they were scared; their attitude is fatalistic; it is better not to know because nothing can be done. This comes from their misconceptions of breast cancer and its treatment. A second group considered that state-organised screening is for ‘other people’, the masses, and of lesser quality because it’s free. This latter attitude explains why nearly 70% of women questioned say they have had a mammogram in the past year but the national screening programme averages less than 50%.

Marked differences are seen between regions. Each local authority is responsible for the implementation of the screening programme in their department. Brittany, a generally rural region, has over 60% uptake compared with Paris, which has the lowest at 26.8%. We made some enquiries in the Parisian area. In a handful of women (aged 65-70) we discovered an unawareness of the national screening programme and no information provided by GPs. Even if they had asked for a preventative mammogram this was given privately.

Doctor Michèle Vincenti, a regional director of the programme in Seine-Saint-Denis (NE Paris), explained that one problem in France is in the culture of the medical profession, which is reluctant to suggest organised screening as they feel, unwarrantedly, that they lose control of the patient’s care. In this department, which has been involved in pilot programmes since 1989, there is a highly structured campaign of communication with nearly 90% of registered radiologists involved in the programme. They are concentrating communication via women’s associations and health groups rather than the medical profession.

A cross-sectional questionnaire-based study carried out in seven departments in 2005 appears to add weight to Dr Vincenti’s claim. Of the women who underwent a private mammogram, 57% suggested that this alternative to the national screening programme was advised by their doctors. In 2006 the National Cancer Institute (INCa) launched a nationwide, televised campaign emphasising the benefits of the screening programme, especially the high standards demanded by EU guidelines and the important double-reading of all mammograms. The Health Authority (CPAM) backed this up with a newsletter to all general practitioners (GPs) reminding them of the key role they play in influencing their patients’ choice. A spokesperson from the InVS said ‘uptake rates improved between 2005 and 2006 as more departments entered the national screening programme and we expect to see this trend continuing in the figures for 2007, but it is still too early to say when we will obtain the target.

Programme is nationally coordinated. It sets national standards that are monitored through a national quality assurance network. England has a national co-ordination office in Sheffield and an advisory committee that oversees the programme and reports to government ministers.

The service provides free breast screening every three years for all women aged 50 and over. Today around one-and-a-half million women are screened in this country annually. Women aged 50-70 years are now routinely invited. As this is a rotating service between GP practices, not all women are invited as soon as they become 50-year-olds. However, the first invitation is received before aged 53. (Women under 50 are not usually invited for routine screening, because mammograms are not as effective in pre-menopausal women, due to breast density. However, those at risk, or those concerned about a specific breast problem can request NHS screening.)

Today, the UK has about 80 breast screening units, each inviting a defined population of eligible women (aged 50 to 78) through their GP practices. Women are invited to a specialised screening unit, which can be hospital based, in a mobile unit, or permanently based in another convenient location, e.g. a shopping centre.

Two views of the breast are obtained - craniocaudal (from top) and mediolateral (into the armpit diagonally across the breast). According to research, this increases small cancer detection rates by up to 43%.

In England, the budget for the breast screening programme is now estimated to be £7.50 million — about £7.50 per woman invited, or £45.50 per woman screened.

Once the word is out, there is no turning back. Your patients will never accept any other kind of breast screening. Photon counting lies at the heart of microdose mammography. As the name implies, the radiation dose is far lower than any other mammography system. And with a resolution of 24.96 megapixels, image quality leaves our competitors blurred.

How is this possible? Our patented detector counts X-rays one by one (believe us, it’s a very fast detector). That means no electronic noise in the image and no information lost in conversion. Because the image is acquired by multi-slit scanning, scattered radiation is eliminated. The result? Dependable images without ‘dead’ pixels that might obscure micro-calcifications.

Sectra’s mammography solution includes not only the stand itself, but also breast imaging PACS, screening RIS and full support. Together these systems form a complete digital workflow solution that takes better care of both you and your patients.

For a significantly bigger information dose, go to www.sectra.com/medical.
Stereoscopic digital mammography, a new diagnostic technique capable of producing three-dimensional (3-D) in-depth views of breast tissue, could significantly reduce the number of women who are recalled for additional tests following routine screening mammography.

Results of a clinical trial being conducted at Emory University Breast Clinic, in Atlanta, were presented at the annual meeting of the Radiological Society of North America (RSNA).

‘Standard mammography is one of the most difficult radiographic exams to interpret,’ said David J Getty PhD, division scientist at BBN Technologies of Cambridge, Mass. ‘In a two-dimensional image of the breast, subtle lesions may be masked by underlying or overlying normal tissue and thus be missed, and normal tissue scattered at different depths can align to mimic a lesion, leading to false-positive detections.’

Stereoscopic digital mammography consists of two digital X-ray images of the breast acquired from two different points of view separated by about eight degrees. When the images are viewed on a stereo display workstation, the radiologist can see the internal structure of the breast in 3-D. In the ongoing clinical trial, researchers use a full-field digital mammography unit modified to take stereo pairs of images. The workstation enables the mammographer to fuse the stereo image pair and to view the breast in depth. ‘Stereo viewing is the only way to see the structure within the breast volume in true depth,’ said Dr Getty, who has worked on the development of this technology for the last 12 years.

As of July 2007, 1,093 patients at elevated risk for developing breast cancer were enrolled in the trial. Each patient received a full-field, standard digital mammography screening examination and a full-field, stereoscopic digital exam, which were then read independently by different radiologists.

A total of 259 suspicious findings were detected by the combined mammography procedures and referred for additional diagnostic testing, including biopsy when indicated. Of those, 109 were determined to be true lesions. Standard mammography missed 40 of the 109 lesions while the stereoscopic exam failed to detect 24.

‘Our early results suggest that stereo digital mammography could contribute to the earlier detection of cancer,’ Dr Getty pointed out. ‘A small percentage of the additional lesions missed by standard mammography but detected by stereoscopic mammography will turn out to be cancerous.’

Of the 259 findings, 150 were false positives, meaning further testing revealed that no abnormality was present. Standard mammography yielded 103 false positives; stereo mammography yielded 53.

In our study, stereo digital mammography reduced false positives by 49 percent,’ said Dr Getty. ‘This could have a significant impact by halving the number of women who are needlessly recalled for additional diagnostic work-ups, resulting in a large savings in cost and patient anxiety.’

By the end of the clinical trial this December, 1,500 women at elevated risk of developing breast cancer will have received both the stereo and standard digital mammography screening examinations.

Offering wide-scale stereoscopic digital mammography would entail minor changes to digital mammography equipment and software, Dr Getty added.

Source: RSNA

www.seca-online.com

seca GmbH has launched its newly designed website. Customers can now select a country to gain information in their own language (wherever possible), and then view three product categories – medical, specialist and private, each containing information already available in seca’s printed catalogue. Downloadable user manuals and product specifications are also available.

Also, along with clear photographs that show major features of the products, about 10 are shown in use in short videos.

The website includes a search tool and, under Technical Support, local telephone numbers are listed for immediate assistance, and there are e-mail forms for contact with local sales and customer support services.

The password-protected pages for seca’s partners and dealers are to provide standard information as well as technical and marketing materials necessary to implement seca’s sales in their areas.
USA - MRI is playing an increasingly important role in breast cancer screening in the US, especially in the screening of high risk patients. It has proven to be more sensitive than mammography examinations, but is less accurate in the differentiation between benign and malignant lesions. Doctors still recommend breast biopsy procedures of suspicious MRI findings. As a recent study from scientists at the Memorial Sloan-Kettering Cancer Centre, New York, USA, shows, MR spectroscopy is a safe and efficient method for the identification of breast neoplasms, that has potential to significantly reduce the need of MRI guided breast biopsies in the future.

With MRI we scan a part of the body and generate an image that can be used for the diagnosis of malignant lesions. MR spectroscopy scans a part of the body as well, but it generates a graph that gives information about the biochemical composition of the area we are examining,’ explained Lia Bartella MD, director of breast imaging at Eastside Diagnostic Imaging in New York City. Dr Bartella and colleagues most recently examined 32 cases of non-mass enhancing breast lesions in women aged 20-63, using proton magnetic resonance spectroscopy (Radiology 10/2007).

‘Proton magnetic resonance spectroscopy (H MRS) can be performed on a clinical MRT with at least 1.5T. It adds only 10 minutes to a standard MR examination and spectroscopy sequences, for scanning, are commercially available as is the software for off-line data processing. In the study we used a breast coil and noninvasively measured the levels of choline compounds. Tumours showing elevated choline levels are likely to be malignant,’ Dr Bartella added.

The team found positive choline findings in 15 of 32 lesions, of which 12 lesions finally were proven to be malignant. H MRS had a high specificity of 85% and a sensitivity of 100%, which means a reasonable number of breast-biopsies could become unnecesary.

‘MRI guided needle biopsy is a pretty safe procedure as, unlike with other tumours, there is no spread of tumour possible. But 80% of all breast lesions biopsied are found to be benign. During our research we found that MR spectroscopy in our group of patients (Radiology 06/2006) could have spared 57% of these biopsies, while missing none of the cancers.’

Although MR spectroscopy is already in clinical use to diagnose brain and prostate tumours, it is not used clinically for examining the breast at the moment. Dr Bartella hopes, that in the future, this examination may be able to eliminate many expensive biopsies for indeterminate lesions found during a breast MRI examination.

‘MR spectroscopy of the breast is still a research tool, but it may become part of the standard breast MRI examination. It may also be used to monitor and predict the response to neo-adjuvant chemotherapy in the future. But to achieve this, the MR spectroscopy needs to be advanced technically,’ Dr Bartella concluded.

Sweden – Sectra, which develops IT systems and products for radiology, mammography and orthopaedic surgery, has announced an agreement with Swedish research firm Synthetic MR AB, developer of analysis and imaging methods for synthetic magnetic resonance, for its new software-based technology to be offered as a clinical application in Sectra’s PACS for radiology.

‘We are highly impressed by the efficiency enhancement in magnetic resonance examinations that may potentially be achieved with Synthetic MR’s software,’ said Torbjörn Kronander, President of Sectra Imtec AB. ‘It provides time-savings for patients, hospital personnel and technicians as well as facilitating and improving the analysis of MR images.’
The ‘buzz’ about breast-MR

fessor of breast imaging at the University of California – Los Angeles’ School of Medicine, discussed the challenges breast imaging has faced over the past 40 years, as well as advances and utilisation trends of the technologies of breast ultrasound, digital mammography, breast MR and interventional procedures that have made this a big growth area.

Basset noted that almost half of all age appropriate women in the USA receive mammography each year, and referenced a survey that claimed 75% of consumers and medical press, leading to greater awareness to patients and their doctors. The publicity increased demand for digital mammography in the USA, whether patients are better served by it or not.

At RSNA 2007, breast imaging was the topic of the prestigious Annual Oration in Diagnostic Imaging. Dr Lawrence W Basset, distinguished professor of Radiology, Dr Christiane Kuhl, and colleagues, received an excellence award for this clinical study at the American Society of Clinical Oncology’s conference. According to Debbie Thomas, a vice president of Aurora Systems, a Massachusetts-based manufacturer of a fully integrated, dedicated breast MRI imaging and biopsy system: ‘2007 has been a breakthrough year for breast MRI.’ She reports that Aurora’s sales soared in the past 12 months, with its systems now installed in over 30 locations throughout the US, Europe, and Asia. In 2007, Aurora opened offices in Taiwan to facilitate sales demand in Asia.

In August 2007, Paramed Medical Systems, headquartered in Genoa, started a multi-centre clinical study at the American Society of Clinical Oncology’s conference. According to Wayne Wager, the firm’s president and CEO, its software application specific computer-assisted detection (CAD) software for MRI, has a 2007 major year for breast imaging. The European Hospital, spoke with Guido Stomp, Philips’ Business Line Director of MR, about the company’s new dedicated solution for breast imaging – the MammoTrak – which he describes as a dedicated breast imaging trolley.

At RSNA 2007, European Hospital visited Philips Medical Systems which presented their latest equipment for magnetic resonance mammography. Daniela Zimmermann, of European Hospital, spoke with Guido Stomp, Philips’ Business Line Director of MR, about the company’s new dedicated solution for breast imaging – the MammoTrak – which he describes as a dedicated breast imaging trolley.
The industry focus: MR-Mammography

MR mammography appears to have been proven as more accurate in terms of sensitivity, specificity, and negative predictive value in high-risk patients, and so the number of examinations increases continuously — particularly in the USA. Thus the demand for specific equipment & technologies, e.g. MR tables for mammography also continues. At RSNA 2007 several companies displayed such products. Aurora Imaging Technology Inc. presented its Aurora 1.5T dedicated Breast MRI System, a fully-integrated MRI system designed specifically for breast imaging and intervention. The firm reports that it fully covers the breasts, chest wall and axilla in a single scan without any loss in image contrast or resolution. The magnet optimises breast imaging and a proprietary shim produces large, homogeneous elliptical field of view, Aurora adds. In addition, it has introduced a new fully MRI-guided interventional system with specially designed needle guidance that can accommodate most core biopsies or vacuum-channel coil array enables individual positioning of the coil for each patient; they can be moved medially and laterally, or vice versa towards the axilla and chest wall, which leads to an increased image quality compared with traditional tabletop coils.

Due to an improved overall signal to noise ratio, image quality is reported to be clearer. In addition, a complete, open medial and lateral access to the breast allows interventional to all breast areas. Thanks to interventional grids that can be moved towards the axilla and chest wall, access to lesions in the inner upper and outer upper breast quadrants. For patient comfort and to ease pressure points (e.g. diaphragm and sternum) Sentinelle has added adjustable padding made of visco-elastic foam.

Philips Medical Systems also displayed its latest developments for MR-mammography (see MRI interview with Guido Stomp in this issue). Furthermore the company recently published an abstract that confirmed MRI as a promising modality for future breast cancer diagnosis. ‘MR Mammography has evolved as a diagnostic adjunct for many aspects of breast imaging, but the area where it shows the most benefit is in high-risk patients. MR Mammography can be beneficial in terms of patient management and cost reduction for care, as it impacts treatment in nearly 50% of cases. While the benefits of MR mammography are clearly understood in terms of sensitivity, specificity, positive predictive value and negative predictive value, exactly how these figures are affected by various combinations of risk factors as yet to be understood as is the impact of early diagnosis on morbidity and mortality.’ (Magnetic Resonance Mammography in High-risk Patients - Bernadette M. Kaufman – 1 October 2007)

Top: Evaluation of patient with known invasive ductal carcinoma in the right breast. Aurora 1.5T Dedicated Breast MRI System reveals an additional occult cancer in the left breast Below: Known Paget’s disease of the left breast in right area. No mammographic abnormality identified. The Aurora 1.5T Dedicated Breast MRI showed ductal enhancement in upper medial left breast, revealing DCIS in both sites.

Ultrasound technology may reduce breast biopsies

eSie Touch Elasticity Imaging, a new method in ultrasound, demonstrated by Siemens Medical Solutions in March at the European Congress of Radiology, is an adjunct to regular breast ultrasound examinations, and may provide a clinically relevant differentiation of benign and malignant tissue. Several studies have shown promising results, and suggest the method could reduce the number of unnecessary breast biopsies. The software for this diagnostic advance is offered with the 5.0 release of the Accuson Antares ultrasound system, premium edition.

Clinicians use the application to generate an elastogram, which provides additional information about mechanical properties, e.g. the stiffness of breast lesions. Siemens reports that the method offers a significant improvement in the acquisition of the data — in most cases, the heart beat and the breathing of the patient will provide a sufficient movement to generate the elastogram.

In one published study, 40 patients with a total of 123 suspicious lesions were examined. Using elasticity measurements from the eSie Touch Elasticity Imaging application, 18 lesions were classified as malignant, which was confirmed in 17 cases by a needle-guided biopsy. Of the 105 lesions predicted as benign, all were biopsy-proven benign. ‘Elasticity imaging has a high specificity,’ said the head of this study, Richard G. Barr, professor for radiology at the North-eastern Ohio University College of Medicine and Radiology at the Southwoods X-Ray and MRI, Ohio, USA. Prof. Barr hopes that the use of elasticity imaging will help to reduce the number of breast biopsies for many patients. The results of the Barr study are presently being validated in comprehensive studies in Europe and elsewhere in the United States.

Elasticity imaging illustrates the relative stiffness of tissue compared to its surrounding. As tissue undergoes pathologic changes, its relative stiffness will change. The stiffness of the tissue as well as its size compared to the B-mode image provides further insight into potential pathology.

eSie Touch Elasticity Imaging has been available on the Accuson Antares 5.0 ultrasound system premium edition since March this year.

MicroDose enters Belgium

The 310-bed St Trudo hospital, which serves the Zuidwest Limburg and south Vlaams-Brabant regions, has become the first in the country to order a Sectra MicroDose Mammography digital system from the IT and medical-technology firm Sectra.

About two million Belgian women undergo breast scans (both diagnostic and screening procedures) annually. With this order, the hospital will provide mammography examinations with the lowest radiation dose on the market, the company reports. ‘The Belgian market for digital mammography is taking off and most hospitals are now digitising their mammography operations,’ says Wim Schuer, Vice President Sales and Marketing of Sectra’s medical operations in the Benelux region. ‘At the same time, care quality awareness is increasing. We provide customers with systems that promote the development of safe digital mammography screening for women. Accordingly, we are well positioned to take advantage of this growing market.’

The order also includes the firm’s breast imaging PACS to process and archive patient data and images. This system will be integrated with the existing hospital image management system and, combined with the mammography system, form a complete digital solution.

‘We chose Sectra MicroDose Mammography because we foresee throughput and economic advantages but, most importantly, we will avoid exposing women to higher radiation levels than necessary. This will be of great benefit to women as well as our prac- tice,’ explained Dr. S Verhamme, head of the hospital’s radiology department, and breast radiologist Dr. G Vandenbosc. Sectra MicroDose Mammography is based on unique detector technology that counts every X-ray photon — con- sidered by many to be the X-ray tech- nology of the future.
Like magicians, manufacturers vie to pull ever more surprising items out of the technology hat. Guido Gebhardt reports on the world’s biggest gathering of radiologists and showcase for related equipment

USA - At the 50th Congress of the North American radiologists (RSNA – Radiological Society of North America) in Chicago this November, it was even clearer that new technologies are driving imaging to unseen levels, which in turn has led to significant scientific discoveries in diagnostics and intervention. This year’s spotlight focused sharply on computed tomography.

The madcap slice race

In the early 1990s computed tomography (CT) was on the brink of collapse. It was not until Will Kalender’s development of multislice-serial CT that this technology was revived and the four big manufacturers began a ‘slice-race’. The number of detector rows increased annually. The current benchmark is 128 slices, but as talks with numerous radiologists show, even they will soon be overtaken by new, more compact tube and detector technologies, rotation times and generator outputs.

Dear manufacturers stop this silly race and agree on the dose for a standardised examination with preset resolution. For example, tell radiologists how long a cardiac examination with an isotropic spatial resolution of 400 µm takes and which dose is applied. The best system is the system with the largest diagnostic benefit and the most minimal patient dose. A similar development to that of the slice-race is happening in display systems. Here the manufacturers are presenting monitors with resolutions of up to 16 megapixels. However, a resolution of five megapixels is more than adequate for mammography. A 30 inch 16 megapixel display therefore allows simultaneous visualisation of two mammograms in full on the same screen. The annoying border between the images disappears. Some radiologists would prefer to position two monitors at a slightly blunt angle to one another to avoid reflections. Current display technology is more than sufficient for diagnostic requirements. What X-ray imaging could display has been more than outperformed by digital imaging.

Like magicians, manufacturers vie to pull ever more surprising items out of the technology hat. Guido Gebhardt reports on the world’s biggest gathering of radiologists and showcase for related equipment

CT at RSNA

The Aquilon One 320-slice CT

As expected, Toshiba unveiled its new CT-scanner. However, instead of the long awaited 256-slice technology, the company threw down the gauntlet to its competitors by introducing the Aquilion One 320-slice CT.

Toshiba describes this system as a dynamic volume CT scanner that can capture a large volume of data, 16 cm, per gantry rotation, which allows it to visualise the entire brain or heart in just one rotation, obviating the need to acquire slice images from multiple passes. The fast rotation speed, 0.35s, means a significant reduction in motion artefacts, a problem in certain patient groups e.g. paediatrics. These improvements contribute to greater patient safety, the shortened scanning time reduces the amount of contrast medium used and exposure to radiation is lower, Toshiba pointed out.

The volume data acquired for the heart in one rotation does not require helical scanning; this means the exposure is reduced by three-quarters compared with a conventional CT-scanner. Low exposure doses make repeated scanning of the same region possible, leading to dynamic volume imaging. These dynamic images are quite unique, 3-D images of joint movement, normal respiration and contrast medium flow to vital organs are now easily acquired and can be analysed in real time. This modality promises to lead to new and exciting diagnostic imaging techniques. The Aquilon One, which secured its 510(k) clearance in October has already been installed in five facilities worldwide.

At Toshiba seminars, The Realities of 256 CT, leading international experts spoke of their experiences with this new technology. Focusing on dynamic volume imaging, Dr Patrik Rogalla of Humboldt University (Berlin, Germany) described how pathological changes in the pancreas, which are in complete agreement with post-operative pathological, can now be clearly visualised through the Aquilion One. With conventional CT-scans, this had been impossible. Dr Kieran J Murphy of Johns Hopkins Hospital (Baltimore, USA) explained how the introduction of the Aquilon One will lead to significant changes in the flow of diagnosis in CT examinations.

Philips’ ICT

The 256-slice Brilliance ICT scanner, the Philips flagship product, was also on show at the RSNA, where the company spoke of its ability to produce high-quality images with exceptional acquisition speed, including complete coverage of the heart and brain. This system is so powerful that it can capture an image of the entire heart in just two beats, while the enhanced visualisations will be valuable for doctors diagnosing and treating problems within the heart, Philips points out. The ‘Brilliance ICT scanner is also designed to reduce patients’ exposure to X-rays. The scan is much quicker, as the machine’s X-ray emitting gantry – the giant ring-shaped part that surrounds the patient – can rotate four times in a single second, which is 22% faster than current systems.

In addition, five research projects highlighted by the company, one of which is a Central CT imaging – aims to quantify the amount of calcium in tissues, such as calcified plaques and the ability to differentiate multiple morphological structures in one-pass CT scans.

The company reports that, up to now, more than 30 CT systems with essence technology have been shipped.

Adaptability: The one for all

With the new Somatom Definition AS (Adaptive Scanner), Siemens has developed a scanner that for the first time adapts to virtually any patient and clinical need, the firm reports.

The Somatom Definition AS is the first scanner to combine such dynamic components as the Adaptive Dose Shield with a scan field of up to 200 cm and the 78-cm gantry opening. This allows fast and problem-free head-to-foot scanning, even for poly-trauma patients. The ‘unequaled high temporal resolution of up to 150 ms – combined with extremely fast coverage with up to 128 slices per rotation – makes crystal-clear images possible, free of movement artefacts, of even the finest anatomical details. This permits, for example, highly accurate measurement of stenosis and/or precise planning for stent implantation’, Siemens pointed out.

Another feature is the new Adaptive 4D-Spiral. The continuous movement of the patient table permits a larger area to be imaged, so that entire organs and their functions can be examined with a single scan. In a stroke situation, for example, the entire brain perfusion can be displayed. ‘We hope we can diagnose stroke earlier than before,’ said Werner Baust MD, Director of the Institute of Radiology and Medical Director at the University Hospital Erlangen.

Minimally invasive procedures will also become easier and more certain. Biopsies of suspicious tumour tissues can, for the first time, be performed with the help of 3-D image guidance.

GE Healthcare’s Gemstone

Under the banner HDCT technologies, GE Healthcare showcased recent technical and clinical advances from a portfolio of CT and Mammography systems that the company intends to incorporate into its next generation CT scanners. ‘HDCT technologies represent a dramatic departure from recent CT industry trends, but one that – at its core – is aligned with the real diagnostic goals that clinicians are demanding for their patients,’ said Gene Saragusa, vice president of GE’s CT business. ‘We believe HDCT technologies are transformational and we’re excited about the clinical possibilities that they may enable.’

Trying to solve the paradox of a step-function improvement in image clarity, while simultaneously reducing patient dose, require returning to the fundamen- tals behind spatial resolution, low contrast discrimination and dose efficiency. GE engineers and scientists are working on completely reinvigorating the entire CT imaging chain – from the X-ray tube through the detector and data acquisition system – even rewriting the way images are reconstructed for the first time since CT was invented.

Additionally, materials scientists are reformulating new CT detector material. This new scintillator material is, literally, a gem. Because of its unique optical properties, it is hoped that the Gemstone (also, incidentally, once believe to have healing properties). When modified to enhance its X-ray-sensing behaviour, the Gemstone CT detector is being designed to provide significant improve-
Whether this scenario allows better sleep for radiologists remains to be seen. Many other valuable RSNA highlights were less obvious than some of the already mentioned, intriguing presentations.

Lifelong learning
The four-day BOOST programme (Bolstering Oncoradiologic and Oncoradiotherapeutic Skills for Tomorrow) was among the new courses. There was also a comprehensive seminar on interventional oncology that ran through five afternoons, along with a concomitant Cardiac CT case study and one-day symposium on quality improvements in molecular imaging.

As every year, the Lakeside Centre showcased a range of courses and seminars on clinical PET and PETA/CT imaging in oncology, as well as sessions on the gastro-intestinal tract, musculoskeletal diagnostics, paediatric and neuroradiology. At two seminars on financing participants learned how to develop successful strategies for property investments or the running of pension programmes.

One of the markers of the annual RSNA’s success is the comprehensive choice of 1,765 scientific papers, 604 posters and 1,418 presentations on 16 radiological sub-topics. The entire palette offers a unique opportunity for lifelong learning, as well as making contacts with fellow professionals.

With a stronger than ever presence, the IHE initiative (Integrating the Healthcare Enterprise) held numerous demonstrations, courses and exhibitions on the integration of IT systems such as KIS, RIS and PACS. These have achieved a high degree of technological maturity, with advantages from integration and communication capacities.

After many years of a bias towards IT the ratio between modalities and software appears to be more like 1:1 now, although it is becoming difficult to ascertain where the PACS starts and the equipment stops.

Inevitably, this inspiring range of presentations and new products will continue at the European Congress of Radiologists (ECR) in March 2008.

And, next November, the 94th ISBN will open its doors to reveal more radiological marvels.

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Answers for life.
Hand-held Dopplers for venous assessment

Screening in primary care to detect and prevent potential vascular disease is becoming increasingly important, due to ageing populations — many with cardiovascular risk factors such as obesity and diabetes. For arterial and venous conditions alike, the handheld ultrasonic Doppler produces hand-held ultrasonic Dopplers, the Doppler range.

Huntleigh has heeded the needs of healthcare workers, spending time to educate primary care practitioners about the particularities of their work and support them in their roles. New applications for traditional Dopplers have been identified, including the revolutionary Proxim range from Medisca, which includes the Proxim 354D, a portable digital imaging solution for X-ray examinations.

The first portable digital imaging solution

The first portable digital imaging solution is the PiXium Portable, which features a user-friendly, intuitive interface and can be used as a stand-alone device or as part of an integrated system. The device has been designed to be compact and lightweight, making it ideal for use in a variety of settings, including emergency departments, operating rooms, and outpatient clinics.

The PiXium Portable features a high-resolution, color touchscreen display, allowing for easy viewing and interpretation of images. It also includes a built-in X-ray generator, which enables the device to produce high-quality images without the need for additional equipment.

The PiXium Portable is designed to be easy to use, even for non-experts. It includes a simple-to-use control panel, and its intuitive interface makes it simple to access and navigate the device. The device also includes a range of advanced features, including image processing and enhancement, which can help improve image quality and make it easier to diagnose and treat patients.

In addition to its portability and ease of use, the PiXium Portable is also highly accurate and reliable. Test results have shown that the device is able to produce high-quality images with a high degree of accuracy, making it an ideal choice for use in a variety of settings.

Overall, the PiXium Portable is a highly innovative and user-friendly solution to the problem of providing high-quality X-ray images in a portable, lightweight device. Its ease of use, accuracy, and reliability make it an excellent choice for use in a variety of settings, from emergency departments to outpatient clinics.

Hand-held Dopplers for venous assessment

Background

Hand-held Dopplers are commonly used in primary care settings to assess peripheral arterial disease (PAD) and venous disease. These devices use ultrasound technology to measure blood flow and provide information about the health of blood vessels.

Methods

The study was conducted at a primary care clinic in a suburban area of a major city. Participants were selected based on their eligibility criteria for PAD screening, which included being over the age of 40 years, having a history of smoking, and being at high risk for cardiovascular disease.

Results

The study found that hand-held Dopplers were effective in identifying PAD in the majority of participants. The sensitivity and specificity of the devices were high, with a positive predictive value of 92% and a negative predictive value of 85%.

Conclusion

Hand-held Dopplers are a valuable tool for the early detection of PAD in primary care settings. These devices are easy to use, accurate, and can be integrated into routine care to improve patient outcomes.

Further research is needed to evaluate the long-term effectiveness of screening with hand-held Dopplers and to explore their role in the management of PAD.

References


Sweden - Enormous medical and clinical issues are caused by general lack of awareness about obstructive sleep apnoea (OSA) and the possible connection with cardiovascular diseases, according to experts at a round-table discussion on Syndrome Z and OSA.

'Several studies point to the correlation between OSA and metabolic diseases,' said Professor Patrick Levy, Director of the University Sleep and Respiratory Research Team, Inserm ER17, University J Fourier Grenoble, France. 'For instance, regarding hypertension, a component of the metabolic syndrome, a recent study from our research group shows that as many as 67% of patients suffering from OSA are suffering from hypertension. We need to re-evaluate the metabolic syndrome to include OSA, a combination called Syndrome Z.'

Lack of knowledge causes casualties and cardiovascular problems

Syndrome Z is the term used to explain the connection between OSA and conditions that together form the metabolic syndrome. The metabolic syndrome, which affects about 25% of the world's population today, includes cardiovascular risk factors such as diabetes, abdominal obesity, high cholesterol and high blood pressure. OSA occurs when breathing stops during sleep, often combined with heavy snoring. Common symptoms during the day are sleepiness, tiredness, headaches, concentration difficulties and a depressive tendency. Estimates are that 4% of all men between 30 and 79 years of age and 2% of all women suffer from OSA. Metabolic syndrome and OSA together may form a deadly combination due to cardiovascular complications.

Despite the availability of effective treatment, OSA remains an under-diagnosed and under-treated condition, largely due to a lack of awareness among physicians and the public.

Numerous studies have proven the link between OSA and metabolic diseases but the roundtable participants agreed that more research is important to further demonstrate the exact relationship between the different conditions.

For clinical purposes, it is very important to point out the co-existence of OSA and other metabolic conditions such as diabetes,' added Professor Igor Harsch, Head of the Department of Endocrinology and Metabolism, University of Erlangen, Erlangen, Germany.

It is a healthcare management issue, said Professor Helmut Teschler, Head of the Department of Pneumonology and Sleep Medicine, Ruhrlandklinik, Essen, Germany, who provoked agreement when he added: 'We must convince the authorities that it is worth screening patients suffering from metabolic diseases for OSA. Patients that have symptoms for OSA should always be treated with CPAP (continuous positive airway pressure) before obesity surgery is considered.'

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The panel established four other necessary future activities to tackle the problem:

- Increase awareness of OSA within the medical community and the general population.
- Seek the European Respiratory Society's assistance with increasing awareness.
- Increase education relating to sleep disorders during medical studies/training.
- More research on OSA, the metabolic syndrome and Syndrome Z is needed.

The meeting, initiated by the manufacturer ResMed, which specialises in sleep and respiratory medical equipment, was held in conjunction with the European Respiratory Society's annual congress in Stockholm.

The latest generation of the Olympus endoscope cleaning machine ET-321 has been launched in Germany. The new machine structure makes use of an advanced magnetic-inductive principle (MID), which can measure flows less than 45mm and 540mm wavelength, working on the absorption bands of a particular substance. This enables the use of a smaller number of patients.

In contrast, the Olympus endoscope cleaning system was composed of a narrow-band illumination device and a video processor (CF-X2, Olympus, Tokyo). The illumination consists of 45nm and 540nm wavelength, which conform to the absorption wavelength of haemoglobin. The special flow control system guarantees a constant flow of the disinfection liquid through the endoscope tube. A miniaturised three rate sensor, working on the magnetic-inductive principle (MID), can measure flows less than 50 ml per minute with high precision, m.u.t. reports, adding that all units are connected to a local bus system, which is also accessible via networks such as the internet or a telephone line for the remote management of the machines.

The important task of leakage testing - to assure full functionality - is accomplished by a method based on pressure measurement. This technique counts the pressure drop over a short period of time by using values down to five mbar. The special flow control system guarantees that the disinfection liquid is transported uniformly through the endoscope tube. A miniaturised three rate sensor, working on the magnetic-inductive principle (MID), can measure flows less than 50 ml per minute with high precision, m.u.t. reports, adding that all units are connected to a local bus system, which is also accessible via networks such as the internet or a telephone line for the remote management of the machines.

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Scrutinising remote surgical progress via a PC

The digital transmission and display of surgical images on operating theatre monitors can not only support rapid co-ordination of the theatre team, but also complex patient information can be completed with additionally integrated images and information obtained from diagnostic equipment and relayed to external experts who may simply be using their PCs.

Professor Gernot Dunker MA MD at the Martin-Luther University in Halle, Wittenberg, in Germany, simply calls up the latest images and diagnostic relevant results in the form of a paper printout or similar.

However, combining such extensive patient data from preliminary examination, diagnosis and surgical intervention, as well as ensuring high technical and manufacturer-independent peripheral compatibility, represents a big challenge in telemedicine.

Maquet - one of the few providers of telemedicine systems - reports that it has ‘developed the first comprehensive telemedicine system’ to smoothly integrate source of medical images and data, storage and archiving according to international standards, and allow digital transmission to a PC. Information from the imaging equipment connected for a particular operation is united by the system: ‘Patient data or imaging results in as little as 10 minutes. With in-built procedural control and the availability of separate positive and negative controls health professionals can have added confidence in reading the visual result with minimal training required.

Felip Garcia, European product manager at Sony Europe, added: ‘Not only does it require fewer discs to record and store more superior handling, as well as the detailed reporting and even without a PC, these can be displayed on the unit’s 16:9 LCD colour screen, accessed instantly through thumbnail indexes meaning valuable time saved from fast forwarding and rewinding content.’

The PDW-75MD accepts 33.3GB single layer discs as well as 50GB dual layer discs to enable more than double the recording time from a single layer disc. In addition, the new Clip continuous REC function accelerates the process of accessing information by empowering users to continue with ‘essence markers’ throughout a larger single recording and even without a PC, these can be reviewed and edited on the unit. Any recording on the PDW-75MD Professional Disc can be accessed instantly through thumbnail indexes displayed on the unit’s 16:9 LCD colour screen, meaning valuable time saved from fast forwarding and rewinding content.’

An external performance evaluation has confirmed that the new Olympus AU-Connector has excellent operational capabilities, the company reports, adding: ‘This compact, consolidated system, which combines high workload Olympus analysers with Intelligent Sample Management, was put to the test by scientists at a busy private laboratory in Munich, Germany.’

‘The AU-Connector was evaluated with differing combinations of Olympus analysers. These included two AU2700 clinical chemistry systems together and the combination of an AU3000i immunocassette analyser with an AU700. In particular, the external scientists noted that both AU-Connector hardware and software were extremely easy to operate, and that start up and shutdown times were superior to any other system to date. Furthermore, they were particularly impressed by the prioritised STAT sample handling, as well as the detailed results and sample information delivered by the software.’

The evaluation also demonstrated that the impressive throughput target of over 600 tubes per hour can easily be met by the AU-Connector, and the analytical performance of connected analysers was completely unaffected. Intelligent Sample Management also ensured that both analysers were always running at the highest capacity ensuring the lowest possible turn-around times. For example, when one AU2700 had its reagents repleted, the system simply routed all the samples to the other instrument thus ensuring continuous operation and maximal processing capacity.

Intelligent Sample Management was also found to ensure 100% protection of sample integrity, by always sending tests that may be contamination sensitive to the AU3000i first, as this employs disposable tips, Olympus points out.

The ability to archive or sort samples into third party analyser racks after analysis is an additional feature allowing simple management of samples requiring testing elsewhere. Fully automated validation, including re-run and reflex testing without disrupting routine work was also possible due to Olympus data/it system. Operator specific rules could also be executed through this advanced data management system and validation of all results of a sample was performed.

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**NEW**

Professional Disc technology doubles capacity of HD medical recorder

Sony revealed its latest full 1440 x 1080 HD video recorder for medical professionals at the Medical trade fair in November, explaining: ‘Fully compliant with medical safety standards, the PDW-75MD features a number of new functions that enhance HD workflow, including dual layer professional disc and a Clip continuous REC function.’

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Top hygiene management in the sluice room

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 Presently, to meet their needs and those of healthcare-associated infections (HAI), many countries apply a standard of one infection control practitioners (ICPs) per 250 hospital beds and one infection control nurse per 1,000 hospital beds in order to reduce the spread of infections in hospitals. Thus, the methodology was tested in the USA (1975; 1976) and Germany (1979). In order to identify infection control programmes in hospitals, surveillance of hospitals carried out in 1995 of the SENIC investigators were able to show which elements were essential for an effective infection control programme. Hospitals that performed surveillance, implemented adequate precautions such as surveillance of wound infection rates to the surgeons, and diagnosed a hospital epidemiologist at least one ICP per 250 hospital beds, achieved a 32% reduction of HAI compared with hospitals that did not fulfill these criteria (R W Haley et al). In 1976 the mean number of ICP in US hospitals was 0.52 full-time equivalent (fte) per 250 beds and this figure was used in the statistical analysis. The number of infection control specialists up to nowadays fundamental changes in healthcare. Duration of hospital stays has become shorter, and many patients are treated in day- nurseries as outpatients. Solid organ and bone transplantation and intensive chemotherapy have been introduced. New technologies enable complicated and risky operations often old and seriously ill patients. The consequence of all these changes in that hospital in-patients are generally reduced from 40 to 36 hours per week. Such big changes the suitability of the standard for infection control staff for the present time is questionable. In 2002, the European Union concluded that one ICP per 100 hospital beds is needed to meet the minimum requirements of healthcare-associated infections (HAI), many countries apply a standard of one infection control practitioners (ICPs) per 250 hospital beds and one infection control nurse per 1,000 hospital beds in order to reduce the spread of infections in hospitals. Thus, the methodology was tested in the USA (1975; 1976) and Germany (1979). In order to identify infection control programmes in hospitals, surveillance of hospitals carried out in 1995 of the SENIC investigators were able to show which elements were essential for an effective infection control programme. 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Bayer Healthcare manufactures a range of innovative products for the care of diabetics and also sponsors meetings and training sessions for nurses — particularly specialist diabetes nurses. This November, Bayer hosted the 4th European Nurses Symposium in Leverkusen, Germany. 260 specialist diabetes nurses attended to hear talks by international diabetes experts and to share individual experiences in the support, education and daily care of newly diagnosed and longstanding diabetics.

Anne Marie Felton, president of the Federation of European Nurses in Diabetes (FEND), presented the Unite for Diabetes campaign, partnered by Bayer Healthcare and supported by the UN Resolution on diabetes. She announced that the decision to celebrate the 14th November, World Diabetes Day as a United Nations day, from 2007, will help raise awareness for the current goals to combat this illness — goals that include the implementation of cost-effective therapeutic strategies and the development of preventive measures.

Professor Oliver Schnell from the Diabetes Research Institute, Munich stressed the strong medical evidence supporting self-monitoring of blood glucose (SMBG) as a pillar of diabetes management. Good glycaemic control is constantly associated with better outcomes in both type 1 and type 2 diabetics and is only successfully achieved with SMBG. The recent International Diabetes Federation (Global Guidelines for Type 2 Diabetes (2005). www.idf.org) recommend SMBG as the ‘minimal, standard and comprehensive care of all people with diabetes’. However, it would appear that simply monitoring blood glucose is not enough, results have to be transformed into action. Even if the patient is not going to use self-monitoring to make therapeutic changes themselves, recording their blood glucose levels allows them to follow the influences of diet and other factors on their blood glucose levels. Post-prandial blood glucose and glycaemic variations have been found to be particularly important to correct treatment modifications (IDF - Guideline for Management of Post-meal Glucose-Information Booklet 2007. www.idf.org).

Importantly, this information gives healthcare providers an accurate overview of a patient’s control and adjustments in medication can be made on a case-by-case basis.

‘More than 240 million people worldwide currently suffer from type 2 diabetes,’ said Dr Xavier Cos from the Catalonian Health Institute in Barcelona, adding: ‘By 2025 this number will be in excess of 300 million.’ He stressed the importance of therapeutic management programmes being tailored to an individual’s needs, that insulin therapy is not delayed and that patients undergo thorough training so that they are empowered to control their own disease.

The role of the diabetic nurse in the prevention of type 2 diabetes was described by Sari Harma Rodrigues, from Finland, who explained that diabetes prevention is a multidisciplinary team effort in which the nurse has a pivotal role in designing and planning patient education. She outlined three general approaches to the prevention of type 2 diabetes; the general population, detection and screening of high-risk individuals and early detection of people with undiagnosed diabetes.

Dr Roberto Parotelli, Head of Region Europe at Bayer Healthcare Diabetes Care, firmly believes that industry has a role to support all these projects, and underlined his company’s aim to provide innovative products and services to help empower the individual. Along with partnering the Unite for Diabetes initiative, he outlined of projects in which Bayer is a partner, including the Diabetes Dream Fund, the EU-funded project IMAGE, and HOPE, an Indian diabetes educational project.