Acute hospital care in England could be on the verge of collapse

Around 65% of in-patients are over 65 years old

It is not uncommon for patients, particularly older patients, to be moved four or five times during a hospital stay because of a shortage of beds and often with incomplete notes and no formal handover.

As a medical profession we have to look at how we are handling acute patients in the hospital - the fact so many are moved beds at night or having blood tests at night is appalling and that is the sort of thing we are going to have to resolve, he added.

Additionally, the RCP report said that hospital staff often see the elderly as ‘unwelcome’ and think they ‘shouldn’t be there’, even though they make up two thirds of patients.

‘One doctor told me that his Trust does not function well at night or at the weekend and he is relieved that nothing catastrophic has happened when he arrives at work on Monday morning,’ Sir Richard said. ‘This is no way to run a health service. Excellent care must be available to patients at all times of the day and night. We call on government, the medical profession and the wider NHS to work together to address these problems.’

To help tackle the looming crisis, the RCP is calling for: all health professionals to promote patient-centred care and to treat all patients with dignity at all times; the redesign of services to better meet patients’ needs rather than medical reasons; and the redesign of services to better meet patients’ needs rather than medical reasons.

Does Germany top Europe in unnecessary diagnostics?

Statistics show significant increase in scans and left heart catheterisations

Report: Susanne Werner

When it comes to the number of individual medical examinations, Germany among Europe’s front runners, according to statistics from the scientific institute of the AOK (WIdO). Heart catheterisations are carried out far more frequently there than in Austria or Switzerland. The number of left heart catheterisations in Germany more than tripled. In 2010 it was around 70% higher in this country than in Austria, and 98% higher than in Switzerland. The QSR procedure is recognised across Europe, explained Christian Günster, WHO Head of Research. Its particular feature is the assessment of...
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- No

Signature

Date

READER NUMBER

Address

Town/City

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E-mail address

1. SPECIFY THE TYPE OF INSTITUTION IN WHICH YOU WORK
- General hospital
- Outpatient clinic
- University hospital
- Other institution (e.g. medical school)

2. YOUR JOB
- Chairman of administration
- Chief medical director
- Technical director
- Chief of medical department
- Other professional

3. HOW MANY BEDS DOES YOUR HOSPITAL PROVIDE
- Up to 150
- 151-500
- 501-1000
- More than 1000
- None, (not a hospital/clinic)

4. WHAT SUBJECTS INTEREST YOU IN YOUR WORK?
- Surgical innovations/surgical equipment
- Cardiology, imaging/heart-attack technology
- Radiology, interventional-angiography equipment
- Critical care units/management equipment
- Ambulance and rescue equipment
- Pharmacy
- Neurology
- Neonatology
- Laboratory, medical staff, equipment
- Pharmacy
- Nurses and medications
- Hospital administration.personal hygiene and nutrition
- Hospital management, personnel
- Hospital information technology and telemedicine
- Personalized healthcare and management
- Hospital Purchasing
- Material Management
- Public Relations

ESPECIALLY FOR DOCTORS:
Please complete the above questions and we would like you to answer the following additional questions in the relevant boxes.

- Yes
- No

1. In which department do you work?
- In which department do you work?
- Yes
- No

2. Are you in charge of your department's budget?
- Yes
- No

3. How much influence do you have on purchasing decisions?
- I can only present an opinion
- I can present without authority
- I have no influence

4. Do you consider that your equipment is outdated?
- Yes
- No

5. Does your hospital have a telemedicine service?
- Yes
- No

6. Do you use second-hand equipment?
- Yes
- No

Do you wish to participate in a survey on patient care in Germany?

- Yes
- No

Signature

Date

Many German hospitals, he concludes, can no longer guarantee patient care in Germany Manhattan’s top when it comes to mortality rates from heart attacks, he adds.

Modern treatments require more imaging
Physicians do not accept these accusations. He is convinced that the cause of the increase is modern treatment concepts. Cancer patients are treated in a much more individualised way than 10 or 20 years ago. Doctors need to carry out CT scans after only a few weeks to observe vascular growth, he explains. Moreover, imaging procedures now deliver good and meaningful images, which no doctor can do without. The DBR President adds that MRI delivers particularly good images of joints. Whilst arthroscopes used to be the standard treatment MRI is now the procedure of choice. This saves patients invasive examinations.

Professor Eckhart Heck, Director of the Clinic for Internal Medicine at the German Heart Centre Berlin, and Professor of the German Society (DGK), agrees. There are plausible reasons for the growth and these are founded in medical treatment, and he points to the guideline-based emergency treatment which is necessary to treat patients comprehensively, and quickly. ‘The patient should be in a location where they can be treated no later than one hour after the first symptoms.’

PARIS - 6-7 DECEMBER 2012

The 13th University Hospital Centres Conference

CHUs must become new with the ‘new’ patient

Report: Ankick Chappy

Since University Hospitals in France were created in 1958, their three-fold focus has been on services for health, education and biomedical research and their effect has been to create such a fine medical service that its high quality is respected worldwide. December’s 13th national University Hospital Centres (CHUs) Conference will draw their CEOs and Deans to Bordeaux to discuss ‘new’ patient care.

Many German hospitals, he concludes, can no longer guarantee patient care in Germany Manhattan’s top when it comes to mortality rates from heart attacks, he adds.

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Acute hospital care in England continued from page 1

Having served as treasurer of the Royal College of Physicians (RCP) from 2003, Sir Richard Thompson became its President in 2010, a role in which he leads the organisation on behalf of its fellows and members.

Following his training in natural sciences and medicine at Oxford and St Thomas’ Hospital Medical School, and junior posts in London, he joined Dr Roger Williams in the early days of the liver unit at King’s College Hospital, and spent 18 months with Professor Alan Hofmann at the Mayo Clinic. He became a physician and gastroenterologist at St Thomas’ Hospital in 1972, serving until his retirement in 2005.

For over 30 years he also led a clinical research laboratory, chiefly studying aspects of nutritional gastroenterology, and had also supervised 30 MD and PhD theses as well as publishing over 200 papers and, during 21 years of his career, Sir Richard also served as physician to Her Majesty Queen Elizabeth II.

He is convinced that healthcare excellence comes from the search for new materials, molecules and approaches to both patient and disease.

André Hériaud believes that the pressure from growing consumerism, economic restraints and private clinic competition acts ‘like an incentive that pushes us to improve’. He is well aware that we live within real life, facing a changing society, increasing precariousness, the arrival of marginal populations, often illegally, and the strain of the current economic crisis on patients and their families. The rise of consumerism can’t be helped. The sick person is also a client in the noble sense of the term, someone who has rights and duties, someone who makes choices, someone who is entitled to proper information. The word hospital linked to enterprise does not shock him, when it refers to undertaking something to improve energy, efficiency, transparency and better communication.

He sees the image of the CHU as a paradox for economic decision-makers: the ones never needing a public hospital believe they are a monstrous waste of public money; the others, who use CHUs for self or family, particularly to tend severe pathologies, without exception recognize their high standards – in competence, technology and staff attention to the patient. In case of doubt about the relevancy of a medical procedure, he knows he is faced with a medical team of integrity, because no financial consideration governs medical decisions. If the doctor recommends surgery, he can do it without reflection.

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The CHU model is admired beyond France: their sheer size is considered impressive. In Paris, the AP-HP is the biggest hospital in Europe, and the Hospices Civils de Lyon is second in Europe.

The report said there should be a concentration of hospital services in fewer, larger sites that are able to provide excellent care round-the-clock and improvements in community services to avoid many patients ending up in hospital because of a lack of help close to home.

To examine better processes and standards for treating medical patients, the RCP has established the Future Hospital Commission (FHC), which will report in a few months’ time. The RCP report, which plays a leading role in the delivery of high quality patient care by setting standards of medical practice and promoting clinical excellence and represents over 27,500 fellows and members worldwide, coincides with a period that the NHS is under severe pressure to make financial savings amounting to billions of euros. However, Sir Richard said making more money available was not the only answer and he believes that junior hospital doctors’ hours should be relaxed to help with more flexibility within rota and with continuity of care, which is currently ‘very poor’. He also wants to see a new cadre of generalists appointed in hospitals to provide the continuity of care, as well as more physician assistants.

Struggling with age and complexity

If action is not taken soon, he said, ‘I think there will be a continued flight of doctors from this area of medicine because they are finding the strain very high and some are disillusioned. In addition, hospitals will be closing to acute admissions at times because they will not be able to cope. It is very serious.’

Professor Tim Evans, one of the report’s authors and also an intensive care consultant at the Royal Brompton Hospital in London, added: ‘It’s increasingly clear that our hospitals are struggling to cope with the challenge of an ageing population with multiple, complex diseases, and he warned that if steps were not taken to improve hospitals, there may be other scandals, such as that which occurred at Mid Staffordshire NHS trust, where hundreds of patients died due to poor care between 2005 and 2009.

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The needs of European hospitals are similar

Not only can advanced technologies significantly affect the health and well being of patients, but they can also improve patient safety, efficiency and the quality of care. How are these technologies used in our varied European hospitals? In the absence of comparative studies, our correspondents sought answers from leaders in the front line of health politics and procurement for hospitals.

Report: Michael Reiter, Mark Nicholls, Eduardo de la Sota, Jane MacDougall

Finding a common denominator for innovation strategies across European hospitals is difficult, said Pascal Garel, CEO of HOPE Healthcare systems. Systems are deeply rooted in national and even regional culture - also reflected in the diverse ways that hospitals identify their needs for new technologies. However, there are joint EU activities regarding health technology assessments (HTA), which HOPE supports and follows closely, and the organisation is keen to develop mini-HTAs at local and hospital level. In this special section, we present additional value provided by new equipment regarding improved diagnosis, therapy and workflow.

Mercedes Mengibar, administrative council member and Managing Director of Xanit Hospital International, a private care provider at the Costa del Sol, 'The new diagnostic, therapeutic and implant technologies (ICT) installed at hospitals in recent years help us to bring efficiency to processes that support care and the organisation. They require fewer human, financial, and infrastructural resources, and allow us to avoid duplication and unnecessary administrative tasks; they also facilitate collaboration, training and cross-sector delivery of care.' Xanit’s Xanit’s acquisitions include high-field MRI, multi-detector computed tomography (MDCT) with 64 detectors, a gamma camera for SPECT/CT, CT, diagnostics for genetic counselling, a Linac, chemotherapies, haemodynamics and vascular radiology, laparoscopic surgery, immunofluorescence, Co-Direction for the coordinating centres, and equipment comes from the end user, medical doctor, team etc. involved in its use. This requires a written request to the purchasing department outlining the reasons why the equipment is needed, the approval of the hospital director, the advantages that may arise, and so on. Elisabeth Aoun explained. 'If that equipment is for a specific purpose and reasonable, the end-user then explains the need orally to the purchasing commissioner. If the equipment is for the general needs of the hospital, the end-user needs to explain the need in a more formal way; this is done in writing. 'We need to think about more innovative financing options for some of the larger enabling technologies. Some forward thinking medical device suppliers are talking about providing managed services that include not only the implant or piece of kit, but the hardware that goes with it.'

UK procurement strategies

Chris Slater, Head of Supplies and Procurement for Leeds Teaching Hospitals NHS Trust, said that ‘some resistance by suppliers, but the Department of Health is now pushing suppliers to code products with GSE barcode identifiers for tracking purposes.’

Pascal Garel - Educated in political science and European law, he has been in charge of medicines management, with decade spent in teaching hospital centres in Nantes and Rouen, his other professional goals include Becoming Director of the European and international Teaching hospital centres in Nantes and Euromed. 'The new diagnostic, therapeutic and implant technologies (ICT) installed at hospitals in recent years help us to bring efficiency to processes that support care and the organisation. They require fewer human, financial, and infrastructural resources, and allow us to avoid duplication and unnecessary administrative tasks; they also facilitate collaboration, training and cross-sector delivery of care.' "Xanit’s acquisitions include high-field MRI, multi-detector computed tomography (MDCT) with 64 detectors, a gamma camera for SPECT/CT, CT, diagnostics for genetic counselling, a Linac, chemotherapies, haemodynamics and vascular radiology, laparoscopic surgery, immunofluorescence, Co-Direction for the coordinating centres, and equipment comes from the end user, medical doctor, team etc. involved in its use. This requires a written request to the purchasing department outlining the reasons why the equipment is needed, the approval of the hospital director, the advantages that may arise, and so on. Elisabeth Aoun explained. 'If that equipment is for a specific purpose and reasonable, the end-user then explains the need orally to the purchasing commissioner. If the equipment is for the general needs of the hospital, the end-user needs to explain the need in a more formal way; this is done in writing. 'We need to think about more innovative financing options for some of the larger enabling technologies. Some forward thinking medical device suppliers are talking about providing managed services that include not only the implant or piece of kit, but the hardware that goes with it.'

Leeds Teaching Hospitals NHS Trust, explained that they provide a central function and procurement for all of the hospitals, Chris Slater’s team, working in three distinct areas - purchasing and contracting, materials management service, and data management service. Some years ago procurement for Leeds was centralised into one unit rather than a division, or departments doing their own procurement. This is now common within most health Trusts.

Leeds Teaching Hospitals NHS Trust has five main hospitals: St James’s University Hospital (Leeds, England’s largest teaching hospital), Leeds General Infirmary (a major city centre hospital), Queen Elizabeth Hospital, Chapel Allerton Hospital (predominantly orthopaedics), Seacroft (renal dialysis, reproducive medicine, dermatology and prosthetics), and Wharfedale Hospital at Otley (lymphoedema, out-patients, etc. through minimising invasive procedures, and enabling purchasing monitoring at home).

In selecting equipment, the Trusts work closely with clinicians. It’s not about cutting costs. It’s about getting the most appropriate product to provide the best treatment. It’s about getting the operation. It’s about getting the technology. It’s about getting the patient. It’s about getting the outcomes to the patient."

At Xanit, the Directorate of the Procurement Commission oversees investments in clinical, financial, nursing activities and operations. Requirements considered are scientific innovations, the need for additional or specifically trained staff, cost of consumables, implementation and maintenance, and financial analysis. Mercedes Mengibar said.

Agips covers a network of public health hospitals in the Paris/France region. According to Elisabeth Aoun, Director of Purchasing for Health Products and Equipment for the Public Hospitals of Paris, and Agips Co-Director, the equipment is similar throughout the country because whether public or private hospitals must provide everything that’s required to the ‘Appels des offres’ opened tenders with which all French hospitals must work. ‘The procedure for purchasing equipment from the end user, medical doctor, team etc. involved in its use. This requires a written request to the purchasing department outlining the reasons why the equipment is needed, the approval of the hospital director, the advantages that may arise, and so on. Elisabeth Aoun explained. ‘If that equipment is for a specific purpose and reasonable, the end-user then explains the need orally to the purchasing commissioner. If the equipment is for the general needs of the hospital, the end-user needs to explain the need in a more formal way; this is done in writing. ‘We need to think about more innovative financing options for some of the larger enabling technologies. Some forward thinking medical device suppliers are talking about providing managed services that include not only the implant or piece of kit, but the hardware that goes with it.’

The team tried to recreate the way that we execute. For example, we’ve got a device which brings greater compliance. We’ve got a device which enables us to avoid moving patient data, images, etc. which fully integrates clinical information such as patient data, images, etc. plus business and logistics data, costs and financial information to enable efficient management of financial resources, and allow us to avoid duplication and unnecessary administrative tasks; they also facilitate collaboration, training and cross-sector delivery of care. ‘Xanit’s acquisitions include high-field MRI, multi-detector computed tomography (MDCT) with 64 detectors, a gamma camera for SPECT/CT, CT, diagnostics for genetic counselling, a Linac, chemotherapies, haemodynamics and vascular radiology, laparoscopic surgery, immunofluorescence, Co-Direction for the coordinating centres, and equipment comes from the end user, medical doctor, team etc. involved in its use. This requires a written request to the purchasing department outlining the reasons why the equipment is needed, the approval of the hospital director, the advantages that may arise, and so on. Elisabeth Aoun explained. ‘If that equipment is for a specific purpose and reasonable, the end-user then explains the need orally to the purchasing commissioner. If the equipment is for the general needs of the hospital, the end-user needs to explain the need in a more formal way; this is done in writing. ‘We need to think about more innovative financing options for some of the larger enabling technologies. Some forward thinking medical device suppliers are talking about providing managed services that include not only the implant or piece of kit, but the hardware that goes with it.’

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Funding: A key challenge

At Xanit, for each upcoming year and every department, the hospital management co-ordinates with the department manager to analyse investment needs. Once investments and annual budgets are approved, best-avowed services for financing are identified - including equipment leasing contracts and long-term loans for construction.

UK hospitals can finance new technologies by ensuring they are remunerated at the right level by commissioning agencies, as well as by negotiating with suppliers to adopt that technology once the longer term, thus perhaps not a price reduction for the decision, but enabling equipment use via a long-term loan - free of charge or at a much-reduced price. Chris Slater: ‘It’s about trying to put enablers in place, as much as possible, to allow us to use the technology and we work with suppliers wherever possible to do that. We need to think about more innovative financing options for some of the larger enabling technologies. Some forward thinking medical device suppliers are talking about providing managed services that include not only the implant or piece of kit, but the hardware that goes with it.’

Equipment evaluation

New equipment should improve efficiency and quality or reduce cost, but investments are also legitimate where ‘non-innovation would leave our hospital behind regarding clinical competence,’ explained Mercedes Mengibar. ‘The problem is that innovations are introduced long before any thorough examination of their clinical impact, ethical consequences, or economic and social effects can be carried out.’

Finance

Procurement - Procedures, financing and cultural philosophies can shape the difference

Procurement – Procedures, financing and cultural philosophies can shape the difference.
Manufacturers could deliver more innovation

How? By better understanding of different hospital cultures, better understanding trends in healthcare needs and demand. Pascal Garde suggested.

Cost of care matters everywhere, new technology pricing is a key aspect. Mercedes Mengíbar emphasised: ‘Manufacturers should keep costs in mind – regarding device design, consumables, and maintenance. The fundamental orientation of new products has to be towards facilitating processes enabling new services, and cutting cost of care’. Shared responsibility is her key word regarding future interaction between manufacturers and hospitals. ‘The relationship has to evolve into a win-win partnership in which both parties contribute their expertise to products, for suitable use of technologies in proportion’.

For Elisabeth Aoun, equipment manufacturers should ‘make themselves known to the purchasing departments via marketing materials, sales representatives, adverts, reputation etc., to follow specifications and requirements described in the tender to the letter, not to try and sell their equipment where it really does not fit’. Tender documents are carefully planned and those are the hospital’s requirements, nothing else. The ratio of quality to price is always a deciding factor. She added, but quality covers more than results the machine can give. After-sales service, training, technical support are all very important.

Jean-Eric Lefèvre stressed the importance of services being in French and preferably France-based. Manufacturers should also try and understand the healthcare system of the country, however remarkable the machine – if the exams it enables are not covered by reimbursement schemes, it can’t be purchased because it won’t be used’. In France, there is no customer loyalty in healthcare, he said. ‘Every public tender is an open competition so, having bought from a company one year is no guarantee for the next, unless of course their offer is the best’.

Chris Slater pointed out that the UK’s NHS is becoming more business-like, so whilst suppliers need to involve clinicians, they must also involve the procurement and finance elements.

We have examples where new technology and force it on clinicians, and clinicians can never take a new technology and force it on the business, he stressed. ‘Suppliers sometimes see clinicians as the key decision-makers, but actually it’s a collaborative approach, and they need to understand who is in that collaborative and get the right people around the table if they want to get that product into the organisation.’

To assess their value, a body of clinical evidence is often required and, with new technology, can become difficult to obtain. ‘Because we have a finite budget, the cost is often not delivered at the point it is used’, said George Anderson: ‘A good example is laparoscopic surgery, which may reduce the bed stay by 2-3 days, but the equipment needed is significantly more expensive. The organisation gains at the top level, but theatres are hit because the cost of the procedure has doubled or trebled; however, the patient has a far better outcome, experiences far less pain and goes home quicker’. The organisation as a whole will ultimately benefit, but it’s just about where the budget sits – that’s the difficulty’. In recent years the NHS has pushed to devolve budgets.

‘While I see the logic,’ said Chris Slater. ‘What that has failed to address is the patient pathway issue. That pathway will probably pass through 15-20 budgets, and getting everybody aligned is actually hindering the deployment and effectively our ability to procure new technology. We are now having sensible conversations about re-centralising certain budgets – but that is only in its infancy’.

Investment budgets

At Xanit, 2.4% of the revenue budget is allocated to new fixed assets, there are currently no subsidies for fixed assets. In the UK, Chris Slater said: ‘As a provider, we have capital budgets, given to buy new equipment, and we try to use that capital to buy the latest innovations. We don’t have funds directly held for the development of new technology at the hospital. However, added George Anderson: ‘We do have the resource of our clinicians to help with the development of new technology, so while we perhaps don’t provide funding, we’ve a full range of very senior clinicians who are world leaders in their areas and much sought after by the manufacturers’.

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Navigating through EU funding jungle

National interests hamper EU cross-border research

Germany hopes for better research conditions as revision of the EU Clinical Trials Directive is nigh

The European Union invests over €2 billion a year in clinical research, in the context of Agenda Europe 2020, making an important contribution to growth politics. However, European research projects require not only sufficient funding but also a standardised framework. The EU Commission’s announcement, in July 2012, about the revision of the 2001 European Clinical Trials Directive has raised hopes that the massive downward trend in the number of research applications of the last decade in Germany can be reversed. If Europe does not want to be left behind in research by international comparison, says Professor Gerhard Ehninger, Director of the Medical Clinic 1 and the Centre for Internal Medicine at the University Hospital Carl Gustav Carus, at the Technical University of Dresden and Executive Chairman of the German Society of Haematology and Oncology, massive efforts are needed.

Although the 2001 Directive provides a European framework, it is interpreted very differently by the individual EU Member States and converted into national law; he explains. Pan-European studies with participants from several EU countries are therefore hardly possible any more and the trend is definitely moving towards national studies. In Germany in particular, the general parameters for clinical research are very difficult. Across Europe we have the highest expense with regards to costs and staff, but only every tenth research project and every twentieth clinical study are being approved and financially supported, he points out.

As an assessor on the Selection Commission, the professor indeed holds solid insights in this field. He sees one of the causes in the fact that the German legislator puts clinical studies with licensed drugs that have already been marketed for 20-30 years on a level with studies concerning the licensing of new drugs. This results in the same administrative expense for the Licensing and Ethics Commission and the same insurance requirements as that of the licensing procedure for new drugs, making the studies very expensive, requiring a lot of staff and making the implementation very difficult in the light of limited budgets.

A comparison with other countries shows that working under meaningful, simplified conditions is possible, and for many years we have asked AKW for studies involving already licensed drugs to be subject to other guidelines than those involving substances which have not yet been used to treat any patient, he explains.

Overall, the DGHIO Executive Chairman expresses four requirements that should make research in Germany easier. 1. In studies involving licensing, in addition to the reporting of known side effects should not be subject to the same timing as that for new drugs: only collected reports on observed side effects should be required, with the exception of unexpected incidents. 2. For these kinds of studies, compulsory insurance should not be needed. 3. Germany is the only European country that actually requires compulsory insurance for studies with licensed drugs. Why can’t Germany have public accident insurance, which applies when there are problems involving blood or marrow donors, instead of insuring every study participant individually? he asks. An example for the overregulation of the interests of lobbyists at the cost of the general public. In the other EU countries individual patients are only insured if the drug has not yet been licensed for use on humans. There is another special guideline in Germany that affects insurance: ‘When we carry out an ultrasonic examination, for instance to ascertain whether or not a patient is responding to a certain medication, this is being treated as a so-called so-called pilot study, with all the known impositions, because the ultrasound scan allegedly represents an additional risk. Small wonder then that other countries are laughing about our definition of ‘study’. Therefore, [point 1] we are demanding, in the case of non-risk additional exams or interventions there should be no need to classify these as clinical studies that need licensing and insuring. ’

The fourth demand relates to the Federal Office for Radiation Protection and its inevitably long authorisation requirements. With authorisation processes lasting up to a year, there is a good chance that a

Dr Frank Wissing, Programme Director for Clinical Studies at the German Research Foundation: ‘In the last few years, we definitely stepped up our efforts, with the amount of funding for clinical research rising to €30 million as well as with the infrastructure, because there are now clearly more clinicians and networks experienced in carrying out these studies. However, our funding is only a fraction of what is invested into clinical studies in the USA and the United Kingdom.’

Last year the DFG could only support 10% of the 170 proposals submitted. ‘The need for these studies is enormous, but they are very expensive. 20% of our budget is spent on pay, he points out. Although it has recently been possible to support so-called pilot studies for medical products through the Federal Joint Committee (GBA), all in all clinical research in Germany should be markedly extended, because needs will increase.

The EU has now also recognised the important role of clinical studies. ‘Clinical research in the case of research projects subsidised by the EU is now far more comprehensive and much more important than seven or eight years ago, although this funding is programme-controlled and the EU decides where the money goes. Moreover, reimbursement and costs are clearly more elaborate than those for national studies, requiring experienced administrators for their implementation; Dr Wissing explains. However, he also shares Prof. Ehninger’s hope that a revision of the European Clinical Trials Directive will further support the expansion of clinical research.

To date, transnational research projects that are supported, for example, by the American National Institute of Health in the US and Europe, with several European countries involved, often end up not going ahead due to the enormous regulatory complexity. But, especially in the case of rare diseases, we cannot do without cross-border studies. Therefore, we are hopeful that the new directive will help to increasingly standardise requirements for clinical studies in Europe, and that there may be just one coordinated and central licensing procedure.

MAKE A NOTE: In our next EUROPEAN HOSPITAL issue, due for publication in late December, the focus of our European research series will fall on the state of funding and medical research in France and the United Kingdom.
The EU wants to become one of the most dynamic, competitive, knowledge-based economies worldwide. Progress in medicine plays a crucial role in this endeavor. After all, healthcare is considered a key driver to increasingly dominate European and strengthen economic prosperity. In Europe, collaborative research projects are systems medicine, bio-banks and biotechnology. personalised medicine has become a major challenge, Birgit Fuchs points out, ‘means we carry a high risk. Therefore we only take on projects we believe in.’

Researchers usually cannot do on the fly. It takes two to three months to finalize the documents thoroughly and convincingly.

The application consultant helps scientists throughout Europe to acquire EU funding for joint research projects. Over the past five years she and her team successfully applied for and managed projects with a total volume of €280 million. ‘Our application success rate is 70 to 80 percent compared to a usual rate of 10 to 20 percent today. Over 10 to 15 institutions participate in the collaborative research projects.’

A homogeneous application
In healthcare, one of the fields in which GABO:mi specialises, applications that focus on personalised medicine, or healthy aging, stand a particularly good chance to receive funding under FP7. ‘These issues remain a major challenge,’ Birgit Fuchs points out, adding, ‘the last two years personalisation medicine has become a huge thing.’ Other top issues in healthcare funding are systems medicine, bio-banks and biotechnology. The core competency of GABO:mi business is project management of EU research projects – which means the application is only the first step. ‘In the end, the application has to be of one piece and it has to reflect the actual research process. Later on, only minor deviations are allowed. That is one of the main challenges,’ Birgit Fuchs explains.

Years ago, Professor Dieter Schuster, a friend of hers and today her co-managing director, had asked her to help him with the management of a research project: ‘This coincidence inspired our business idea. It had quickly become evident that there is a real gap in the market particularly in view of the fact that collaborative research, which includes several organisations, has long been favoured by the EU. Prof. Schuster, an engineer by training, recalled: Together, in 2001, they founded GABO:mi, a spin-off from IT service provider GABO. Today 22 project managers are on the team. About 50 percent of the clients come from Germany, 25 percent from the UK and the remainder from various European countries.

Success-based compensation
To prepare the application the Fuchs team advises the researchers, coordinates the initial steps, fine-tunes the application text and ensures all national idiosyncrasies are taken into account and all deadlines met. ‘This frees up time for the scientists to concentrate on their core competence – science – and to contribute the scientific content of the application. When it has been approved and funding secured, GABO:mi manages the project. This is above all people management: promoting communication between the parties, ensuring compliance with all national and European regulations, and facilitating any emerging crises. ‘It does happen that project partners go off board, for example when they change jobs or, particularly with small start-ups, when they shift their focus or fail. Then it’s our task to work with the major actors to come up with sustainable solutions,’ Birgit Fuchs explains.

Establishing communication patterns is a core project management instrument to make sure that the information flow is smooth across all levels. A proprietary web-based platform and regular telephone conferences facilitate this process, but even more important are meticulously planned personal meetings. ‘The stunning aspect of the GABO:mi business concept: the consultancy is compensated for their services only when funding has been granted. “Money changes hands only if the application has been approved,” she points out. “Only the actual project management fee, a funding line item, finances the firm. Approximately seven percent of the funding total is earmarked for this task. “This concept; she points out, “means we carry a high risk. Therefore we only take on projects we believe in.”

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Height and weight are not enough.
The first medical body composition.
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Doctors know that the Body Mass Index (BMI) alone is not enough for extensive analysis of a patient’s health status and body composition. Because what about contents of fat, muscle or water? All of which are important indicators of serious medical conditions. This challenge gave seca enough reason to develop a device measuring body composition with all important values – and only the BMI measurement by seca mBCA fulfills medical requirements.

After studying business information systems, in 1992 Birgit Fuchs became a project manager at IT consultancy and software developer GABO mbH & Co. KG. Five years later, she was an officer of the company and co-responsible for key accounts such as Deutsche Telekom AG and Siemens AG. She also headed business development. In 2004, the Division Management of EU Research Projects, established the previous year, became the spin-off company. GABO:mi mbH & Co. KG with Birgit Fuchs and Dieter Schuster as managing directors, today, the Munich-based firm supports about 30 large European collaborative research projects.
The new Evis Exera III in practice

Higher quality images, pre-freeze and several other advances promise a rise in diagnostic and treatment standards in endoscopy

Dual focus, brighter Narrow Band Imaging (NBI), and pre-freeze are key breakthroughs of the new generation of endoscopy devices – and new features such as these, embodied in the new Evis Exera III, open up a bundle of opportunities for endoscopy-based diagnoses and treatments, says Olympus. How might they benefit hospitals? European House spoke with expert users.

Paul Fockens, Professor and Chair of Gastroenterology & Hepatology at the renowned Academic Medical Centre (AMC), University of Amsterdam, which provides endoscopy services as a tertiary centre.

As chair of gastroenterology and hepatology at the AMC, Professor Fockens manages the department and combines clinical routine, education and academic research. ‘In patient care, my focus is on advanced therapeutic endoscopy as well as some advanced diagnostics of the stomach, small bowel, large bowel and pancreas. To a large extent my cases are large colonic polyps and colonic mucosal resections, endoscopic ultrasound with drainage pancreatic fluid collections, ERCP as well as most interventions in the upper gastrointestinal tract.

Roughly 50 percent of my cases are referrals after radiology with a requirement for interventional endoscopy; and another 50 percent are sent from other endoscopists requiring high level endoscopic intervention at a tertiary centre. For top-quality therapeutic endoscopy of the organs and regions, you need a very good diagnostic workup, neoplastic lesions are a good case in point. We can only remove superficial lesions using endoscopy; MRI merely helps in cases of large-volume lesions, which are removed surgically.

Asked to outline the main differences between the new Evis Exera III and its predecessor, Professor Fockens explained that the main advantage is in the systems’ diagnostic capabilities. ‘In many cases the images we receive from referring surgeons prove insufficient for the preparation of an intervention. The Evis Exera III gives us more detail and images are more in focus. We prefer our referring surgeons to use the new system too, in order to achieve better image quality. Currently, we invest about a third of our time in creating a more precise diagnosis; when we get really low-quality images from referring surgeons, we schedule a diagnostic appointment first and go for therapy after our diagnosis.

‘If every physician in the care chain were to use high quality endoscopic imaging such as the Evis Exera III, this would cut down the time we take to verify a diagnosis to around 20 seconds. Better images would also make planning of the individual interventions a lot more to the point, with less need to adapt, reducing scheduling risks – meaning a significant improvement for us and the patients.’

What form does interaction with other disciplines take?

‘Patient cases are discussed, mostly after the procedure, within the tumour board. This measure partly serves quality assurance purposes and helps confirm follow-ups, and its interdisciplinary character ensures a competent therapeutic approach. For malignant tumours, going through the board is a must.

What about the therapeutic benefits of the device?

‘For therapeutic purposes, the improved image quality of the Evis Exera III is also significantly relevant. Able to switch back and forth using NBI is very positive, knowing exactly where to execute a cut in the region of interest is one thing; better manoeuvrability is another asset.

Better vision helps to ensure that the procedure has been properly performed. In addition, motor-driven jets allow the physician to spray fluids on the lesion, which is convenient.

Is special training required?

‘Well, handling endoscopes expertly has been and will be continue to be large-ly dependent on endless routine hours spent using the instrument. Quality in what the physician does is totally tied to this expertise – and it will not change with the new instruments that have even more features.’

Where does hepatology come in?

‘As far as endoscopy is concerned, portal hypertension is the key focus. Patients with, for example, a long history of a liver disease, develop varices in the oesophagus or stomach, which tend to bleed. We treat them endoscopically using bands. Interventional radiologists will do TIPS procedures for long-term effects. These two techniques are becoming increasingly complementary today. We discuss cases with surgeons, interventional radiologists, and pathologists in 100 years of suture technology

We have known since the beginning of October who will receive the Nobel Prize for Physiology or Medicine in Stockholm, this December. Since 1901, according to Alfred Nobel’s legacy, the award has been given to the person(s) who ‘has made the most important discovery in the field of Physiology or Medicine’ – this year to John Gurdon and Shinya Yamanaka, for their work with stem cells. A hundred years ago, in 1912, a French President Marie Francois Sad Carnot died as the result of an assassination attempt in the Silk City of Lyon – his portal vein had been severed. In 1939 by Supramid® a perlon suture man-made fibres were also used for surgery. For other hollow organs anastomosis can only be created through sutures techniques with great difficulty, and often not at all – the leak rate would be just too high. Here, started in 1908 by the Hungarian Humer Hültl, the staple suture technique was developed (see EH 2/2011 p. 45), which is actually what really made diabetics surgery possible (see EH 3/2011 p. 57).

A large part of suture materials is not used for the connection of tissues. Plaited and coated, this material is highly tear resistant and facilitates the use of liver sutures. For other hollow organs anastomosis can only be created through sutures techniques with great difficulty, and often not at all – the leak rate would be just too high. Here, started in 1908 by the Hungarian Humer Hültl, the staple suture technique was developed (see EH 2/2011 p. 45), which is actually what really made diabetics surgery possible (see EH 3/2011 p. 57).

We will exhibit at

EUROPEAN HOSPITAL Vol 21 Issue 5/12

Paul Fockens is Professor of Gastroenterology & Hepatology at the Academic Medical Centre, University of Amsterdam, and Chair of the AMC’s gastroenterology and hepatology department. He is also President elect of the European Society of Gastrointestinal Endoscopy (ESE).

Enhanced image quality

Dr Paul Fockens, AMC, Dr. Shinya Yamanaka, Kyoto

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**Monitor supports flexible and rigid endoscopy**

Sony reports that, for medical care, its PVM-2551MD 24.5” monitor is the first of its kind to harness the benefits of Sony’s unique Super Top Emission OLED technology. It includes TRIMASTER EL technology to maximise image performance: a wide colour scale, and an outstanding black level. With full HD resolution (1,920 x 1,080 pixels) and 10-bit signal processing for accurate colour management it supports several colour standards and delivers optimal colour reproduction in natural shades, the firm adds. Suitable for a range of medical applications, particularly flexible and rigid endoscopy and surgical microscope operations, Sony adds. In combination with modern HD endoscopy cameras, users can recognise even the smallest details, such as in screening for early indications of cancer, detecting flat lesions, or differentiating tumours.

**A LITTLE LESSON IN SUTURE MATERIAL**

Surgical sutures can be resorbable, absorbable or non-resorbable. They are made from biological or synthetic material. Biological material can be of animal (sheep gut or botanical origin (cotton, silk)). Synthetic sutures consist either of synthetic material (polymides, polyestere, polypropylene) or steel (stainless steel). Surgical suture material is divided into monofilament, polyfilament (plaited, twisted, twisted, pseudo-monofilament (shaven individual fibres), coated (gummed individual fibres).

**Details:**

www.pro.sony.eu/medical
Surgery means more than operating

Surgery today requires not only skilled surgeons but also a trauma leader to set up the team and manage the intervention. Thus surgery is more than operating was an apt motto, coined this phrase; he explained. ‘It makes it clear that surgery is a complex issue: today in surgery the entire perioperative process has to be planned, managed, adapted and controlled in order to be able to help the patient efficiently.

The number of disciplines involved depends entirely on the individual patient’s situation. In Berlin, the emergency hospital where I work admits about 55,000 patients per year. There are patients with myocardial infarctions or stroke as well as accident victims. We treat about 250 severely injured people per year for those patients, we have core teams comprised of the surgeon, anaesthesiologist, radiologist, specialist nurses and paramedics. Depending on the kind of accidents, other specialists are needed. When there is a serious motorbike accident we might call in a facial surgeon or an ophthalmologist, sometimes we need a urologist or for female patients, a gynaecologist.

How do you manage such a large team? Do you train for such emergencies?

Yes, we do that among other things. At our hospital it’s the core task of the Centre for Emergency Training to prepare the staff for these cases. The colleagues use dummies to go through emergency procedures. Our guidelines for an emergency are called ‘shock room algorithm’. They map all processes and these are displayed either as posters or on the flat screen. Checklists, hygienic, technical equipment – from your point of view what are the most important instruments to improve trauma care?

All these instruments have helped to improve the quality. Documentation, however, is the core component of process quality. You have to know how long the individual process steps take, to be able to compare and to optimise them. For example, a modern hospital should be able to complete diagnostics of an accident victim within 20 minutes. This is an indicative timeframe that helps you to assess the processes in your hospital.

Germany has a top-notch trauma care system. In no other country in Europe does the emergency physician come to the patient. An ambulance car with specially trained physician on board ensures that medical care is available within eight minutes. ‘So, our care system in Germany is highly developed and closely knotted. Now we have to make sure that we can continue to finance it and maintain its quality. There is always room for improvement, be it in medical technical or organisational terms. We have to continue to work on the system.’

Professor Hartwig Bauer, long-time Secretary General of the DGCH MD, one of the two Conference Presidents, about the complexity of peri-operative management in trauma medicine, initially asking him to explain the conference motto.

The German Society for Trauma Surgery offers two-day seminars in Advanced Trauma Life Support for surgeons to become so-called trauma leaders. The participants learn to assess the status of the trauma patient quickly and precisely, to determine which treatments are to be initiated first and whether their own facility is equipped for this particular patient or whether the patient has to be transferred. The trauma leaders are in charge of perioperative management. This means it may well be that the intern who is a certified trauma leader is the boss, rather than the university medical professor who happens to be on the team. An important tool to ensure trauma surgery quality lies in the trauma networks initiated by the German Society for Trauma Surgery.

These networks allow close cooperation between the different care stations and provide clearly defined workflows. In a first step, the currently 1,000 participating hospitals are certified, taking stock of which competencies and care services they can contribute to the network and where there are gaps. In a second step, the hospitals negotiate cooperation agreements and define efficient procedures in quality circles and they try to anticipate the obstacles that might turn up and how they can be overcome.

Checklists, hygienic, technical equipment – from your point of view what are the most important instruments to improve trauma care?

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In 1997 Professor Axel Ekkernkamp became Medical Director and later Managing Director (from 1999) of Unfallklinikum Berlin (luk), and is a specialist in general and trauma and reconstructive surgery and orthopaedics. Following his medical and dental studies in Munich, Germany and Berne, Switzerland, he became a visiting physician in Vienna, a German Army physician in Cambodia, worked at Harbourview Medical Centre in Seattle, USA, and became a professor at the University of Thai Binh in Vietnam. From 1984 to 1997 he was at the Surgery Clinic and Polyclinic at Berufsgenossenschaftliche Kliniken Bergmannsheil in Bochum, Germany, where he received his habilitation. He has been Professor and Chair for trauma surgery at Ernst Moritz Arndt University Greifswald, Germany, since 1999. Active in several professional associations the professor has received many awards and citations, e.g. the Order of Merit First Class of the Federal Republic of Germany.

Atraumatic leader and team for every patient

Imaging in a major trauma unit

In Portsmouth, England, the prestigious Queen Alexandra Hospital has been using a MobileDaRt since its 2009 opening. Recently, this unit was joined by five 4th Generation siblings, three incorporating the latest CXDI-70C wireless digital imaging detector, the other with the unique CXDI-90C wireless, small format detector. Both detector types offer exceptional direct digital images within three seconds at the point of care. With major trauma unit status, the hospital is part of a national project to improve that field of care. Thus high quality X-ray images are needed to meet and respond to the changing demands of medical emergencies. Replacement of our mobile fleet required equipment that could travel around the large distances in our hospital, while providing almost instantaneous diagnostic images to our clinicians, explained Nicola Sanchez, the hospital’s Advanced Practitioner Radiographer. ‘We also need versatility in imaging our wide range of patients including NICU. The Dräkt Evolution was the only unit that fulfilled all of these necessities.’ In March 2012, Portsmouth Hospital NHS Trust appointed Gloucestershire-based Xograph Healthcare, an independent UK medical equipment provider and Shimadzu’s exclusive sales partner for digital mobile Xray in Great Britain, to supply the new mobile digital X-ray systems for rapid radiographic imaging in the ER, at the bedside and in the Neonatal Care Unit. ‘It was the right decision,’ Nicola Sanchez concluded.

Panasonic ideas for life

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The French Advanced Trauma Life Support Forum (ATLS®) and Advanced Trauma Life Support for Doctors (ATLS®) courses are held in cooperation with the European Society for Trauma Surgery (ETS).
Embracing a nano-size silken promise

Silk fibroin is the best material in the world, enthused Professor David Kaplan, Director of the Bioengineering and Biotechnology Centre at Tufts University in Massachusetts, USA, and a pioneer in this field. It was he who, in a paper published ten years ago, laid the foundations for the use of silk for tissue reconstruction and regeneration. Silk fibroin is not detected as foreign matter by the immune system and is therefore not rejected by the body; it grows into the body’s own tissue without any problems and is only broken down slowly. Silk fibroin is harder than steel and is therefore also used in the production of bullet-proof vests. Above all, silk fibroin can be tuned into any desired form: fibres, gels, sponges or particles. At the Ludwig Boltzmann Institute for Clinical and Experimental Traumatology in Vienna, which forms a research cluster with – among others – the Technical University and the Medical University of Vienna, Di Dr Andreas Teuschl heads the City of Vienna Competence Team Tissue Engineering Bioreaktoren, Department of Biochemical Engineering, University of Applied Sciences Technikum Wien. He studied biochemistry at the Technical University Vienna. His PhD thesis was on Silk Fibron – a versatile and tunable biomaterial for tissue engineering and regenerative medicine. During his studies, he worked at the Ludwig Boltzmann Institute for Clinical and Experimental Traumatology in Vienna, forming a research cluster with – among others – the Technical University and the Medical University of Vienna.

Surgical lighting

Starled 5 LED lamp for the operating room

Starled 5 is part of the ACEM Medical Company’s Starled series, and, as the whole range is made with LED technology (light emitting diodes), the firm reports that this is an extraordinary light source which is becoming more and more popular for its reduced dimensions, duration in time, low energy consumption, high performance, lack of heat and excellent colour rendering index. The LED technology guarantees a light beam without IR (infrared) rays hence eliminating heat under the lamp and on surgeons’ heads, ACEM adds. The 50 LEDs are circularly positioned around the handle, generating a light spot of 21 cm at one metre, with a high illumination level of 135,000 lux (160,000 lux optional) for a steady life cycle of about 50,000 hours. Starled 5 guarantees a colour rendering index of 95 (CRI) with a cold temperature of 4,900 °K. These two values allow reproduction of the exact chromatic scale of the colours of the human body.

To achieve the necessary illumination of the surgical field, the light can produce a focused illumination as well as a uniform ambient one due to the manual focusing system in its central handle. A new light-up system (invented by ACEM), which has particular beams of light coming from the upper part of the lamp, offers perfect visualisation of the surgical field, making the lamp suitable for minimal invasive surgery, the firm adds. Starled 5 also can be integrated with a video camera in the lamp’s central handle (or on a separate arm). There are also various configurations available according to needs. Details: www.acem.it

New offering includes C-arms and operating tables

Due to a new global distribution agreement, C-arms specialist Ziehm Imaging, of Nuremberg, can now supply hybrid operating theatres with surgical tables from the Swedish manufacturer Stille to complement its Ziehm Vision RFD Hybrid Edition. The Ziehm Vision RFD Hybrid Edition offers a cost-effective alternative for fixed installed systems in hybrid operating rooms – excellent image resolution, a powerful 20 kW generator and an active liquid cooling system provide reliable intraoperative imaging even for complex procedures. Ziehm reports adding, ‘The mobile C-arm and the Stille iamap62 OR table for vascular surgery presented in April 2012, form a powerful duo for interventional surgery. The new OR table delivers maximum precision, reduces radiation exposure and, with its high level of flexibility, is ideal for use in hybrid operating rooms.’

For your diary: January 27-30, 2013

TERMIS-EU/Expertissues Winterschool

School Theme: "vitro/vivo Preclinical Models and Imaging in Tissue Reconstruction and Regeneration. The conference was also the venue for a meeting of the Who’s Who in the field of tissue engineering and regenerative. The conference was also the venue for a meeting of the Who’s Who in the field of tissue engineering and regenerative. The conference was also the venue for a meeting of the Who’s Who in the field of tissue engineering and regenerative.
Total artificial hearts and ventricular assist devices today

Artificial hearts, originally designed to bridge the time on the waiting list for a heart transplant, in recent years have increasingly become an independent treatment option for patients with chronic heart failure (CHF). Interview with Professor Roland Hetzer, heart surgeon and chairman of the Deutsches Herzzentrum Berlin (DHZB, German Heart Institute Berlin), he explained that the DHZB, a specialist centre for heart treatment, has the most comprehensive programme worldwide for the implantation of artificial hearts. In the past 23 years over 1,670 of these devices have been implanted in HF patients.

If TAHs failed to permanently replace a heart, could VADs be an option to permanently replace the natural heart?

Heart transplantation is, beyond controversy, still the best therapy for chronic heart failure. I personally oversaw patients living for 28 or 29 years with an implanted natural heart. However, mainly due to organ scarcity, a heart transplant is an option only for a highly select group of patients, to a degree that I call it a cassoistic therapy. In addition to this, significant improvements have been made in VAD technology. Therefore, we have increasingly used VADs for permanent therapy in recent years. I’ll give you some data. At the beginning of the 1990s, we still performed 120 heart transplants at the DHZB per year; in 2011 only 34 and this year just 15, so far by contrast, implantation of VADs has increased in recent years we had around 170 and for 2012 we anticipate 200 implants - and I think this trend will continue.

Why do I think the rate of heart failure will increase because the more successful we are in treating acute heart disease, such as acute infarct or acute myocarditis, the more of these patients will eventually die, and for further years, develop chronic heart failure. In the demographic curve you see that, the rate may even trend to 70-75 years of age, chronic heart failure is by far the most prominent heart disease; but we only perform heart transplantation up to the age of 65-70 years due to increasing complication rates beyond this age. Therefore the only way to treat this patient group even nowadays is to implant a VAD.

Is VAD implantation difficult?

The surgical procedure is not very demanding and I think it is so standardised that every cardiac surgeon can perform it. Particularly for older patients it’s a good therapy because they don’t have a great trauma and are immediately better. The oldest patient in whom we have successfully implanted a VAD is 85 years old.

How does a VAD work?

‘Nowadays, practically all such assist devices follow the rotational principle, working like a fast-running turbine with a rotor producing continuous blood flow. These small turbines are becoming smaller and smaller at present weighing about 90 to 130 grams. This year we are expecting pumps that are not larger than my thumb. The pumps are implanted into the body and only the energy source is located outside, connected by a cable running through the skin. For the patient, the energy support is relatively easy to manage and he or she can wear it in a bag on the body, which means mobilising is possible.’

Does the chronic blood flow unhealthy?

‘As I implanted the first rotational pump in humans in 1998, of course I was quite curious whether something unusual would happen because of this non-physiological blood flow, but we did not see any immediate sequel. Now, after a while, we can see that some things may develop, for instance aortic valve incompetence, some clogations disorders, or the formation of some abnormal small vesels in the bowels that might bleed. Of course, since we only have experience about over eight years, we don’t know what this type of malfunction might cause in humans after 20 years. It has been speculated that arteriosclerosis or hypertension might be accelerated, but this is not proven.’

How long can patients live with a VAD?

‘Patients who have had such rotational pumps the longest have had them for nine years. We estimate that the current generation of VADs will still be available for patients beyond the time to heart transplantation, in a so-called bridge-to-transplant therapy.

We can assume the waiting list will continue to grow. Until recently, we had two to three (new) patients per year. Then, in 2002, we had 30. This year, however, we have 40 (new) patients on the waiting list, waiting for a heart. In 2009, we had 30 patients and in 2010 50 patients. Therefore the only way to treat this patient group even nowadays is to implant a VAD.’
TAVI's unsung hero

The Danish inventor of an aortic valve for transcatheter implantation (TAVI) gains recognition for his achievement by colleagues within the European Society of Cardiology

A stupid idea came home to Denmark last year in a brilliant stroke that saved the life of an 86-year-old man. The idea was for a balloon-inflated aortic valve that could be implanted using a guide wire passing through the femoral artery instead of open-heart surgery.

The dying man who received the valve was Jorgen Rud Andersen, the father of the inventor of transcatheter aortic valve implantation (TAVI), Henning Rud Andersen MD. The success of that procedure, which gave back a robust life to his father, was a personal triumph that closed the circle on a journey that began for Dr Andersen in 1988 in Phoenix, Arizona. Still in training as an interventional cardiologist that year, he was inspired by a presentation of coronary artery stents. Why not make the stent bigger and place a valve inside, he asked.

No one was listening, so he built such a device himself, patiently bending wires to create a stent and buying pig hearts from the local butcher shop for the aortic valves. He then built a transcatheter delivery device inspired by the Cribier-Letac balloon catheter pioneered in France during the 1980s for balloon aortic valvuloplasty (BAV) by Alain Cribier MD. From conception to proof-of-concept took Andersen just 75 days.

Today, TAVI valves, placed in more than 50,000 patients, range in sizes from 29 French down to 18 French. Dr Andersen’s hand-made valve, which he successfully placed in a pig’s heart, measured an enormous 41 French with rough surgical knots stitching the porcine valve to the metal frame.

A long journey to success

Presenting a poster demonstrating the feasibility of the idea at international conferences proved to be a lonely, discouraging experience, he said, attracting the attention of no one. The rejection was complete when his paper describing the experience was turned down by the leading heart journals. Yet, this idea, most kindly described as a low priority, caught the attention of one colleague, Patrick Serruys, editor of the European Heart Journal who attended Andersen’s presentation to the Danish Cardiology Society in 1990 and accepted the paper for publication in 1992.

For Andersen, the journey ended in 1995 when he was granted a patent, which he sold to a start-up company called Percutaneous Valve Technologies led by Dr Cribier. At that stage, I was convinced the idea was dead, Dr Andersen recounted to colleagues in an article published by the University of Aarhus. The task was too big for us. We tried, but it was impossible.

The only thing that I regret a bit is that I did not contribute to developing the idea until it could be used in humans. I would have liked to have been part of that, he said.

Dr Cribier’s company was greeted with even greater resistance on the part of industry, with one executive famously calling DAVI the most stupid project ever heard of. Nevertheless, the start-up persisted, finally finding an industrial partner to further develop the valve and its delivery system, leading to a successful first-in-man implantation in April 2002. The Andersen patent was acquired by Edwards Lifesciences and today is the foundation for the Sapien valve that won the CE mark in 2007 and approval from the American FDA in 2011.

This year a joint task force of interventional cardiologists and heart surgeons included the TAVI procedure in guidelines, recommending its use for patients like Andersen’s father.
Cardiac ergometry in an MRI

Ergospect develops ergometers for muscle exercises inside the magnetic resonance bore. The company has added two new MRI-compatible ergometers to existing devices for musculoskeletal examinations. The Diagnostic Pedal Cardio for cardiac stress MRIs, enables examination of perfusion, motility and energy metabolism of the myocardium under stress. Today, MRI magnetic resonance imaging of the heart during physical stress is carried out routinely. Due to the lack of suitable devices, drugs such as Dobutamin or Adenosin are usually used to stress the cardiovascular system. However, this does not reflect the physiological reality. The Diagnostic Pedal Cardio modules are suitable for MR and have been specially designed to stress the heart in an MRI bore.

Thus it is possible to investigate the performance and perfusion of the myocardium during a dynamic exercise via MRI or magnetic resonance spectroscopy (MRS), which provides an effective early diagnosis of risk patients and a more accurate diagnosis of a patient with coronary heart disease (CHD) and with myocardial infarction (MI).

All pedals are compatible with all MRI systems (up to ‘T-Tea’) and consist of a basic platform to be combined with different modules. The firm will also develop and deliver patient individual solutions according to customer specifications. Details: www.ergospect.com

ECG analysis detects 40% more atrial fibrillation patients

Stroke publishes University Hospital Heidelberg study results

More than 30 hospital stroke units in Germany and Austria are now successfully using SRAclinic® (SRA = Stroke Risk Analysis), a fully automated ECG analysis to detect atrial fibrillation, according to its manufacturer AlokA Cardiovascular Technologies GmbH, Freiburg, Germany. Stroke, the American Heart Association journal, has published clinical trial results that proves a clear superiority in detecting atrial fibrillation, compared to the current standard procedures in stroke units.

Study Patients were randomly allocated to patient monitoring with SRAclinic, to identify patients with previously unknown paroxysmal atrial fibrillation, or ECG monitoring with 24-hour-long ECG recording. 14 (34.1%) patients were found with 24 ECG recordings, 27 (65.9%) with the continuous bedside electrographic monitoring and 38 (82.7%) were identified with SRAclinic. Conclusion: SRAclinic can increase the detection rate for paroxysmal atrial fibrillation more than twofold compared to the widely used 24-hour-long ECG recording. SRAclinic has clearly proven it’s superiority over the elaborate methods used in our stroke unit to detect atrial fibrillation” Prof. Veltkamp confirms. After the study results analysis at our stroke unit, we changed the routine diagnostic to detect paroxysmal atrial fibrillation completely to SRAclinic, because this becomes the standard procedure for the detection of paroxysmal atrial fibrillation in stroke units.

In about 25% of all strokes in Germany (the origin of the stroke can not be identified) a substantial part of these is assumed to be caused by undetected paroxysmal atrial fibrillation, which increases the risk for secondary strokes with worse consequences for the patients.据 Albert Hartz, Managing Director of apollo medical technologies GmbH.
France: 61-year-old receives the first fully-biodegradable stent

A novel, entirely biodegradable device has been successfully implanted in a blocked artery patient needing a percutaneous coronary intervention

The successful implantation of a fully-biodegradable stent has been achieved in Toulouse. The surgery was the first in a clinical test called ARTDIVA (Art Remodeling Transient Dismantling Vascular angioplasty), which could lead to a revolution in coronary angioplasty. The implant used is the first truly biodegradable stent and it was developed by the French firm ART (Arterial Remodeling Technologies), founded a decade ago by cardiologist Professor Antoine Lafont and Professor Michel Vert, a leading specialist of bioresorbable polymers at CNRS-Montpellier (National Centre for Scientific Research).

ART’s technology is based on intellectual property that originates from three outstanding institutions: the Cleveland Clinic (Cleveland, Ohio), the French National Centre for Scientific Research CNRS, and Necker University (Paris).

Avoiding anti-agregants

‘Our stent is a completely new device, which begins to dismantle in vivo after three months, allowing the artery to recover its freedom of movement progressively, unrestricted by the presence of a permanent metallic stent. Arterial walls remodel naturally, adjusting their size for optimal blood flow. The stent gradually breaks up and will disappear completely after 18 months.’ According to Professor Antoine Lafont use of this stent avoids prescribing anti-agregants for a long time.

Some thirty patients should receive such a polymer coronary stent over the next three months in five hospitals across France, and the first evaluation of these clinical tests could be available in six months for the potential complications and in one year for the evolution of the arteries. ART explains.

Since the 1990s, stents have been used by surgeons to unblock arteries during angioplasty. They are sorts of metal spring mechanisms, to which drug-eluting stents (DES), which contain medicine that is delivered in progressively, were recently added.

Research has been going on in a few countries to obtain bioresorbable stents in order to avoid the possible side-effects of traditional techniques, primarily chronic inflammation and to delay scarring, which can lead to increase thrombotic risk.

A bioresorbable polymer stent developed by US company Abbott had been clinically tested since 2009, with expected results by 2013. This particular stent is impregnated with a drug, rather than the one developed by ART.

Totally natural stents

‘Our stents are designed to be both haemo-compatible and biocompatible, therein causing little or no inflammation while disappearing over time; explains Machiel van der Leest, CEO of ART, previously co-founder and technology manager of Minvasys and, during his career, developer and successful introducer of 15 Class III medical devices, which require premarket approval and a scientific review to ensure safety and effectiveness.

To avoid any complication caused by a pharmaceutical product, ‘Our stent is totally natural, and contains no active substance at all, says Antoine Lafont MD PhD, former Chairman of the Interventional cardiology group within the European Society of Cardiology (ESC).

Since its foundation, ART has gathered €17 million from both public and private sources. The InnoBio fund, specialising in biotechnologies, has invested more than 60 million in the firm, considering that biodegradable stents represent the most promising breakthrough in interventional cardiology.

Antoine Lafont MD PhD, Professor of Medicine at the Necker medical school, University of Paris V and currently head of interventional cardiology at the European Hospital Georges Pompidou in Paris, is also Director of the INSERM unit U-849 (arterial repair).

He is the Past Chairman of the European Association of Percutaneous Cardiovascular Interventions of the European Society of Cardiology. His research focuses on the mechanisms of restenosis and vascular healing. He participated to the creation of the start-up ART (Arterial Remodeling Technologies), which is developing bioresorbable peripheral and coronary polymer stents.

Prof. Lafont is involved in experimental and clinical programmes for cell therapy in myocardial and vascular diseases, has been on a research fellowship at the Cleveland Clinic foundation, and was in active interaction with the departments of cardiology, cell biology, and biomedical engineering.
Top billing for cardiac MRI

Today, magnetic resonance imaging receives top billing in cardiology next to the co-star computed tomography while much hailed single-photon emission computed tomography (SPECT) plays but a minor role. "While ECG triggered computed tomography allows us to completely exclude a coronary artery stenosis," Professor Schönberg explains, "despite all technological progress, we can determine the degree of a stenosis only with 70 to 80 percent precision: Indeed it is the radiologist’s job to determine the degree of stenosis as precisely as possible and adenine stress MRI, Prof. Schönberg adds, can provide important information on the haemodynamic relevance of a stenosis prior to elective revascularisation (Fig. 1).

Today, MRI, which has been improving technically over the last decade, offers better results than SPECT, the competing functional modality that many cardiologists nevertheless still consider the gold standard. Research results corroborate the professor’s thesis. More sensitive than SPECT

For example, lead investigator Juerg Schwitter, associate professor at the University Hospital Lausanne, recently published the results of the MR-IMPACT trial, which analysed 515 patients in 35 centres who underwent SPECT as well as MRI to detect ischemic coronary artery diseases (CAD). The prevalence of CAD in the sample was 49 percent. With a score of 0.67 MRI had a higher sensitivity than SPECT (0.59) while in terms of specificity SPECT (0.72) yielded better results than MRI (0.61). Superior sensitivity and lower specificity confirm MRI as safe alternative to SPECT to detect perfusion defects in coronary arteries [Source: Eur Heart J (2012), doi: 10.1093/eurheartj/ehs222].

More than an ischemia detector

With the help of suitable MRI sequences, MR contrast agent enhancement in a cardiac structure can be visualised after 10 to 15 minutes. It has been known for some time that this so-called delayed contrast enhancement (DCE) can show myocardial infarction scars no matter how old they are. Moreover, the analysis of the DCE distribution pattern in the heart provides vital information to differentiate CAD from other forms of cardiomyopathy.

Prof. Schönberg is even going one step further: ‘In cooperation with the cardiologist Professor Martin Borggrefe, a specialist in structural heart diseases in Mannheim we were able to show that in hypertrophic cardiomyopathies (HCM) the extent of DCE, and thus the anomalies of the myocardial structures, correlates with risk factors of sudden cardiac death and with the likelihood of inducible ventricular tachyarhythmia under programmed stimulation.’ [Source: J Cardiovasc Mag Res 2010;12:50] (Fig. 2) Furthermore, Professor Papavassiliou et al found that in 87 patients with HCM with (n=37; 42%) and without atrial fibrillation (AF) HCM patients with AF displayed significantly more DCE than those without AF [Source: J Cardiovasc Mag Res 2009;11:54].

While this method is not as reliable in predicting AF than measuring the left atrium, Prof. Schönberg points out ‘in imaging we have to learn not only use phenomenology for differential diagnoses but also to look at predictive values with regard to clinical endpoints’ severe ventricular tachyarhythmia for example, is such a parameter, which means that MRI is increasingly becoming a marker for patient outcome.

High evidence

‘Coronary stenoses which are not relevant do not require stenting – a simple guideline which also saves costs,’ Prof. Schönberg says and emphasises it is ‘crucial for us radiologists to understand these clinical endpoints. A young athlete who has severe arrhythmia for the first time requires a cardiac MRI scan because it tells us more about the risk of life-threatening tachyarhythmia. This is the kind of endpoint we have to use in order to convince the payers.’

What he is concerned about is the exclusion of severe events, of the kind of endpoint we have to use when I can safely say that a patient shows a certain DCE, which indicates a significantly increased risk of severe arrhythmia and thus requires a defibrillator for prevention purposes we clearly prevent mortality, which is quite legitimately evidence grade 1. A single important precaution: radiologists and cardiologist must work as well together as they are doing at Mannheim University Hospital!

The future?
Preliminary studies with ‘Tesla systems indicate that MRI might even become more precise and might be able to show even more minute structural changes. Sodium imaging, for example, is becoming a routine procedure with 3T scanners. Developed in the 1980s, diffusion tensor imaging provides increasingly better insights into the deeper structures of the heart. Prof. Schönberg is convinced. ‘We need high standardisation with good precision and robustness before new methods can be integrated into clinical routine as a meaningful way and can be widely used. We have now reached that point. Today 3T can generate high-resolution perfusion maps – a fact that secures top billing.’
Hearts in motion

Ultrasound is enthusiastically embraced by cardiologists in guidelines as essential for evaluating a patient’s heart. Now visualisation of 3-D wall motion takes ultrasound to a higher level, opening a new understanding of heart mechanics.

Captured in a single heartbeat, images of the human heart are breathtaking and suitable for framing. Which is actually a problem. For clinicians these frozen images have a limited value for diagnosis, for helping to understand how a patient should be treated. On the other hand, the truly useful images of a beating heart created by ultrasound have been impossible to understand, let alone interpret, except for a highly expert elite. Practicing cardiologists are left scratching their heads after examining scattered dots in black and white, or strange colour patterns that resemble modern art abstracts.

Thanks to the same advances in computer processing power and software that allow CT to show snapshots, ultrasound signals today can also be filtered and displayed as video-like images that cardiologists instantly recognize. In the same way that you might wipe the fog off a window on a rainy day to suddenly see the world outside, cardiologists for the first time are looking into the workings of the heart.

Hans-Joachim Nesser MD, a professor affiliated with three Austrian university teaching hospitals, is one of the elite experts in echocardiography who can actually interpret the arcane images of two-dimensional speckle tracking and the wavy colour blotches of Doppler ultrasound. He is also a pioneer in the emerging visualisations of 3-D ultrasound that are rapidly revolutionising the way cardiologists can diagnose a patient’s condition while at the same time challenging the current approaches.

3-D ultrasound reveals heart function in ways cardiologists have never seen before.

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An echocardiography system that conveniently slips into a coat pocket, this kind of miniature device is now commercially available. Portable ultrasound has been around for about a decade, but until recently the machines were about the size of a laptop rather than that of a smartphone device is now commercially available. Portable ultrasound has been around for about a decade, but until recently the machines were about the size of a laptop rather than that of a smartphone.
Mending Hearts

A new device promises minimally invasive repair of a failing mitral valve for patients who cannot withstand surgery

Report: John Brophy

There is nothing magic in mitral valve repair. Yet, for a select group of patients suffering from mitral regurgitation, cardiologists agree there is potential for relief and a higher quality of life with a new procedure. Patients at a high risk for open-heart surgery who have heard of the MitraClip are believed in replacing mitral valves using a minimally invasive technique might think the mitral valve could be fixed in the same way. Unfortunately, this is not the case. A device to replace the mitral valve is still off in the future due to anatomical challenges. What is possible today is a repair of the valve using the MitraClip from Abbott Laboratories to treat both functional and degenerative mitral regurgitation.

Based on experience with 6,000 patients at 150 heart centres worldwide, cardiologists have found the MitraClip feasible and safe with acceptable risk for a complex patients. Key to further investigations will be better quantification of valves, and thereby better patient selection. The MitraClip is feasible in the right hands, he said, adding, the alternative is not to treat the patient or to experiment with other techniques that are perhaps more challenging. Beyond repairing the mitral valve a recent study suggests that improved valve performance may help mend the heart.

The study shows a treatment exists for these patients, and that it is feasible in the right hands; he said, adding, the alternative is not to treat the patient, or to experiment with other techniques that are perhaps more challenging. Beyond repairing the mitral valve a recent study suggests that improved valve performance may help mend the heart.

Salvatore Scandura MD, reported in a recent issue of the Journal of the American Society of Echocardiography that at six months after implantation 77% of MitraClip patients showed reverse remodelling, in other words, a positive reshaping of the left ventricle with significant improvement in ventricle size and function.

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UK researchers are working on a new MRI technique

UK researchers are working on a new MRI technique called hyperpolarised MRI – or Dynamic Nuclear Polarisation (DNP) – that can utilise more of the available nuclei than traditional MRI, helping to overcome some of its limitations by increasing sensitivity by 10,000-fold or more. DNP is part of a longer-term aim to improve cancer mortality with the help of novel imaging tools.

Report: Mark Nicholls

Dr Ferdia Gallagher, Cancer Research UK Clinician Scientist Fellow at CRUK Cambridge Research Institute & the University of Cambridge, said that MRI has the power to distinguish different molecules non-invasively within tumours. ‘The concentration of these can report on how metabolically active the cancer is and its rate of growth – both of which are important for predicting survival and for determining appropriate cancer therapy,’ said Dr Gallagher. ‘However, the great weakness of MRI is its lack of sensitivity; a typical MRI image utilises only a few nuclei in every million to produce the image that we are familiar with in radiology.’ His work on DNP in collaboration with Professor Kevin Brindle of the CRUK Cambridge Research Institute, is focused on overcoming this problem and increasing sensitivity by considerable magnitude. The end result, he added, is a technique that can probe carbon metabolism non-invasively using MRI in patients; naturally occurring molecules can be labelled with a non-radioactive form of carbon, hyperpolarised using DNP and then injected into an animal or patient. ‘The spatial distribution of the injected molecule can be imaged as well as the molecule(s) formed when the substrate is metabolised: he said. ‘This approach is similar to the use of a radio labelled tracer in PET imaging but, unlike PET, the metabolites formed can be differentiated from the injected substrate using MRI, albeit with a lower sensitivity than with PET. The lead molecule is called pyruvate, a breakdown product of glucose, and both it and the lactate formed from it in a tumour can be detected sooner using molecular imaging techniques, and then the patient could be quickly commenced.

Free-text

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on a more effective therapy. By probing specific and fundamental biological properties of tumors (such as how acidic the cancer is, or the surface expression of specific proteins), we may be able to stage cancers more easily and predict patient outcomes more accurately in the future. The long-term aim of molecular imaging in oncology is to improve cancer mortality with the help of novel oncological imaging tools.

What continues to motivate Dr. Gallagher and collaborators is that, while radiology has made great advances over the last 40 years in improving morphological imaging, the limits of anatomical resolution that can be achieved with conventional imaging methods such as CT and MRI has largely been reached. "We are therefore increasingly turning towards functional and molecular imaging techniques to provide new information about our cancer patients," he said. "The expectation is that these methods will be more sensitive and specific than morphological information alone. For example, hyperpolarised MRI could help us to reveal early changes in tumor metabolism following treatment, as well as predict the best form of treatment for patients."

For patients - as medicine becomes more personalised and tailored to the individual - molecular imaging could also be used to detect tumors earlier, he added, which is likely to have an impact on patient survival. "What continues to motivate Dr. Gallagher and collaborators is that, while radiology has made great advances over the last 40 years in improving morphological imaging, the limits of anatomical resolution that can be achieved with conventional imaging methods such as CT and MRI has largely been reached. We are therefore increasingly turning towards functional and molecular imaging techniques to provide new information about our cancer patients," he said. "The expectation is that these methods will be more sensitive and specific than morphological information alone. For example, hyperpolarised MRI could help us to reveal early changes in tumor metabolism following treatment, as well as predict the best form of treatment for patients."

For patients - as medicine becomes more personalised and tailored to the individual - molecular imaging will play an increasingly important role in this by revealing some of a tumor’s molecular signature. "Functional and molecular imaging could also be used to detect tumors earlier," he added, "which is likely to have an impact on patient survival."
Single photon emission computed tomography (SPECT) is a non-invasive imaging technique that uses a radioactive tracer to visualize physiological and metabolic processes in the body. It is particularly useful in the diagnosis of diseases such as cancer, infections, and cardiovascular conditions. SPECT is often used in conjunction with other imaging modalities like computed tomography (CT) to enhance diagnostic accuracy. SPECT-CT, for example, combines the functional information of SPECT with the anatomic detail of CT, providing a more comprehensive view of the body.

The introduction of new tracers and hybrid systems has significantly enhanced the applications of SPECT. These tracers, when combined with appropriate imaging techniques, can target specific disease processes or anatomical structures, improving diagnostic sensitivity and specificity. Hybrid systems like SPECT-CT and PET-CT (positron emission tomography) allow for the simultaneous acquisition of functional and anatomic data, offering a significant advantage in clinical decision-making.

Although most nuclear medical examinations using SPECT (single photon emission computed tomography) take place beyond hospitals, two to three times more examinations than PET-CT exams are carried out within hospitals. Thanks to new tracers, SPECT-CT is expected to present new possibilities of application for this imaging modality.

In the context of nuclear medicine, the use of iodine as a tracer is prominent, especially in the evaluation of the thyroid gland. Iodine incorporation can be seen by the number of iodination treatments written on this subject. Nowadays PET only exists as PET-CT, which enhances the opportunities for application for this procedure. Although SPECT is also now available as SPECT-CT, for example, its use is largely limited to university hospitals in Germany, but the trend looks different worldwide because every other machine sold is a SPECT-CT, so there’s a trend towards a fusion of both procedures.

SPECT-CT represents a clear improvement in diagnostic imaging. Just as in the case of PET-CT, two examinations are carried out directly after one another without the patient having to shift position. The nuclear medical CT image can be overlaid with a radiological CT image and the concentrations of a radioactive tracer, visible in a SPECT image, can be correlated with the CT image. This results in two distinct advantages: first, concentrations can be characterised better than before; in the case of an iodine SPECT-CT, we can see faster whether a concentration in the neck is benign or malignant, i.e. whether it corresponds with a normal thyroid rest or for instance with a lymph node metastasis.

Studies have shown that the precision of diagnosis could be increased by up to 30% through this. Secondly, the changes can be better localised by overlaying the two procedures, for instance to see if they can be surgically removed. This was not previously possible because the resolution for nuclear medical images is much weaker and the tracers only show the disease process, but not the rest of the organs. Through the combination with CT, the SPECT-CT now also shows the anatomy and therefore delivers a significantly better effectiveness for many indications.

PET-CT also shows the anatomy, so where is the boundary between SPECT-CT and PET-CT?

The difference is mainly with the tracers. While we largely work with F-18-Deoxyglucose as a universal oncological tracer, there is no such substance for SPECT. Here we work with the classic nuclear medicinal radiopharmaceutical products, such as iodine scintigraphy. After thyroid cancer bone scintigraphy is also among the classic procedures, where the conclusion can be clearly improved with SPECT-CT and cardiac scintigraphy, where the procedure is used for the attenuation correction of images. Then, of course, there’s tumour scintigraphy – although this works with specific tracers for SPECT, such as the octreotide scintigraphy, which facilitates the detection of neuroendocrine tumours, or the MIBG scintigraphy to diagnose neuroblastoma. With SPECT in particular, there are some promising approaches for new tracers. In my view a new tracer for prostate cancer is simply ground breaking. This tracer, developed by an American company and already trialled in studies, can be used for diagnostic as well as therapeutic purposes.

Could there be a SPECT-MRI in the future?

It’s certainly conceivable, although the development costs of such a scanner also need to pay off. The examination time would be longer because the MRI sequence is definitely longer than that of a SPECT. Moreover, there is the difficulty of integrating the detectors into the magnetic field. For PET this became possible after a few years of development. However, it’s debatable whether we should continue to follow this path for SPECT because PET-MRI is already available as an alternative, and besides it’s possible to fuse the MRI data with the SPECT retrospectively. With SPECT-MRI we could get very high resolution and running costs whilst only being able to carry out a limited number of examinations due to the length of examination time.

New tracers and hybrid systems enhance applications for SPECT

As new tracers become available, their use in SPECT imaging is expected to expand, providing additional diagnostic possibilities. For example, the use of targeted tracers like anti-HER2 antibodies in breast cancer imaging or the use of targeted radionuclides in oncology. These developments are driven by advancements in molecular biology and the increasing need for precise and personalized medicine. Hybrid imaging systems will continue to play a crucial role in integrating functional and anatomic information, allowing for more accurate and comprehensive diagnostic evaluations.
In their infancy but new PET tracers have a rich future

Dr Peter Choyke, Chief of the Molecular Imaging Programme at the National Cancer Institute in Bethesda, USA who believes that new tracers will have an evolving role to play and represent an exciting development in the imaging of cancers, will outline the potential of new PET tracers in a session at the ECR 2013 congress in Vienna next March. In an interview with European Hospital he explained why he believes they represent such an advance.

Due to the sensitivity of PET (nannopicolar sensitivity vs. macromolar for MRI) it is possible, he said, to image cell membrane based receptors responsible for the abnormal growth associated with cancers and detect subtle changes in the integrity of cancer cells. FDG-PET/CT has been the trailblazer agent, demonstrating unique sensitivity for cancers, but he said while FDG uptake does reflect glycolysis, it is relatively non-specific and, to date, has not dictated the choice of therapies.

The promise of new PET agents is that they will aid clinicians in adding or deleting therapies depending on the pharmacodynamics of the imaging biomarker: he added. For instance, classes of agents have been developed to investigate angiogenesis, proliferation, hypoxia, apoptosis, hormone sensitivity and amino acid transport. Each of these provides a unique window on the biology of each cancer and will hopefully guide therapies in the near future.

In the specific example of metastatic prostate cancers, he said, Sodium Fluoride PET is proving far more sensitive than conventional bone scans. Agents such as F-ACBC (amino acid transport) F-DCFBC (Prostate Membrane Specific Antigen PSA) F-DHT (androgen receptor) and F-Choline (cell membrane turnover) are proving efficacious in the detection of metastatic disease and reflect actual tumour burden in contrast to existing methods that only indirectly image tumour (bone uptake).

The new tracers he will mainly focus on at ECR 2013 will be F-18 FLT, F-18 Fluciclitide, F-18 FACBC, F-18 DCFBC, F-18 Estradiol and F-18 Sodium Fluoride - newer agents that are more specific and target receptors on cancer cells - and they have a clear application for oncology with F-18 Fluorodeoxyglucose being useful in identifying tumours with high integrin expression or angiogenesis, possibly suggesting that an anti-angiogenic agent or anti-integrin agent would be a useful adjunct to the treatment.

Similarly, he added, F-18 Estradiol (FES) shows whether the oestrogen receptor is active in a tumour. This can be useful in determining which drugs targeting ER are appropriate for a specific tumour.

Some of the agents may also be useful in determining whether inflammation is present (e.g. in inflammatory bowel disease) or if there is ischemia (vascular disease). Moreover, these tracers will allow earlier assessment of the benefit of particular therapies. Ineffective drugs can be dropped earlier while more effective drugs can be added to the regimen.

For the patient, he pointed out, molecular imaging provides the opportunity to treat each tumour individually and monitor for success or failure by using specific markers expressed by the tumour. This also may change the approach to diagnosis and treatment.

“Molecular imaging, along with new tissue and serum/urine based biomarkers. Dr Choyke confirmed, offers the possibility of customising treatments based on individual tumour molecular expression profiles.”

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Breast density is a key risk factor for breast cancer. Accurate measurement may be made possible by a new approach to mammography, according to early research presented at the 54th Annual Meeting of the American Association of Physicists in Medicine (AAPM). That new method, spectral mammography, could also reduce the radiation dose of mammography by up to half, said Sabee Molloi PhD, professor and vice chairman of research for the department of radiological sciences, University of California at Irvine. Dr Huanjian Ding, who is a member of his research group, presented results of a feasibility study last July in Charlotte, N.C.

The denser a woman’s breasts, the higher her risk is for breast cancer. Less dense breasts are fattier, while denser breasts have more connective tissue. Denser breasts are more difficult to read on a mammogram because tumours are harder to see; standard mammography therefore is not suitable for precise measurement of breast density.

Spectral mammography provides precise measurement of breast density. The group, led by Prof Molloi, Dr Ding, and Dr Justin Ducote, used a photon-counting spectral mammography system and applied both computer simulations and physical phantom studies. They imaged four models of breasts, which represented various configurations including thickness and density. The results suggest that spectral mammography could measure volumetric breast density in a screening exam with an error rate of less than two percent. This could help identify women at higher risk of breast cancer incidence at an earlier time in the screening process. The researchers now plan to conduct pilot studies of women as part of regular screening programmes.

Spectral mammography vs standard mammography is like comparing colour television to black and white TV. Researchers, dose exposure is cut by up to half in comparison with standard mammography.

The method may evolve into the standard of care if further validated and approved. Spectral mammography could become the standard of care for breast cancer screening. It could help define a woman’s appropriate mammography frequency and any need for further testing. A woman with denser breasts might benefit from having regular screening mammograms more frequently, or at a younger age. Women with extremely dense breasts, a family history of cancer, and genetic predisposition to the disease might benefit from having a more sensitive test such as MRI.

Study suggests a new method to measure breast density can help determine cancer risk.

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Intensity modulated radiotherapy is a very precise technique that uses hundreds of collimators to shape the radiotherapy area. The collimators can move during treatment and vary the beam intensity as they are aimed at a tumour from different directions during each treatment dose. IMRT can also create a dipped dose profile to spare structures that would otherwise be damaged by radiotherapy, such as the spinal cord or salivary glands.

IMRT is aimed at a tumour from different angles and varies the beams intensity as they are directed at the tumour. This allows for a more effective treatment, sparing surrounding healthy tissue. IMRT is based on computerised calculations to ascertain the dose intensity pattern to match closely to the tumour shape and thus spare surrounding tissue.

Several developments and improvements to IMRT have taken place over the years, such as the use of 3-D CT images to plan treatment, dynamic processes that must be considered, such as the behaviour of the tracer over time. 'Time can play an essential role, for instance in the differentiation between a radiation necrosis and tumour recurrence in the case of brain tumours, where it's important to determine whether the tracer accumulates in the focal lesion or whether it's quickly excreted,' explains Professor Eilles.

PET images. Beyond the question of which modality is the best procedure, it's the experience and expertise of the person operating the machine that's decisive.
The Southampton Traffic Light test

Dr Nick Sheron and colleagues at the University of Southampton and Southampton General Hospital have developed a test to help identify people at risk of liver disease – a condition that develops silently and presents late, often with fatal complications. The team also hopes it will help reduce unnecessary hospital referrals.

The Southampton Traffic Light (STL) test combines several different tests and clinical markers, which are given a score that indicates the patient’s likelihood of developing liver fibrosis and cirrhosis. A simple algorithm transforms this into a red, amber or green rating: red means the patient has liver fibrosis and may even have cirrhosis; green suggests there is no cirrhosis, and amber indicates at least a 50% chance of scarring with a significant possibility of death within five years, and patients are advised to stop drinking to avoid further disease.

The test is part of the Alcohol and Liver Disease Detection Study (ALDeS) and comes at a time that coincides with the 25% of the population drinking alcohol-related problems. With Royal College of Physicians President Sir Ian Gilmore, he co-founded the Alcohol Health Alliance, consisting of 27 organisations including Royal Colleges, NGOs and charities, to lobby for evidence-based policies to reduce alcohol-related harm in the UK. He is also a founder member of the European Union Alcohol Forum and an Adviser to the House of Commons Health Select Committee on Alcoholism.

Dr Sheron, Head of Clinical Hepatology at the University of Southampton and Liver unit at Southampton General Hospital, is involved in a clinically based research programme on various aspects of alcohol related problems, with Royal College of Physicians President Sir Ian Gilmore, he co-founded the Alcohol Health Alliance, consisting of 27 organisations including Royal Colleges, NGOs and charities, to lobby for evidence-based policies to reduce alcohol-related harm in the UK. He is also a founder member of the European Union Alcohol Forum and an Adviser to the House of Commons Health Select Committee on Alcoholism.

The aim was to develop a liver disease ‘traffic light’ suitable for community use to enhance liver risk assessment and allow rational referral of more severe disease to specialist care. That led to the use of fibrosis markers (procollagen-5 N-terminal peptide [PINP] and hyaluronic acid) along with routine liver function tests to create the Southampton Traffic Light test.

In trials the test, from a routine blood sample, was given to over 1,000 patients and proved to be accurate in severe liver disease detection. It was also shown to provide GPs with an objective means to accurately assess the potential severity of liver fibrosis in high-risk patients such as heavy drinkers, type 2 diabetics, or obese people.

As part of on-going research, the Local Care and Treatment Evaluation (LOCATE) study funded by the British Liver Trust, aims to further assess the test in primary care settings but Dr Sheron said there are clear benefits for hospitals too. A large number of referrals to hospital liver clinics are by the number of people developing liver disease. A test in primary care settings can reduce unnecessary referrals and lead to a reduction in the number of people developing liver disease.' Professor Sir Ian Gilmore, chair of the Alcohol Health Alliance, said the test offered ‘the right patients towards specialist care in a timely way’.

The World Congress for Biomedical Laboratory Science (IFBLS) 2012 in Berlin yet again emphasised that infections require safe and low-cost diagnostics worldwide.

How can effective yet low-cost diagnostics be ensured worldwide? The question was among those raised at the IFBLS Congress 2012. In Africa, where 2 million people are diagnosed every year, Europe is being hit by sudden outbreaks such as the EHEC outbreak in 2011. About 800 participants from 58 countries attended the Berlin congress, held in Germany for the first time in 46 years and hosted by the International Federation of Biomedical Laboratory Science (IFBLS) with the German Association of Medical Technologists e.V. (dvr).

Pathogens can change very quickly. Diagnostics must be able to react to this. The question asked this year was ‘How can diagnostics be developed and utilized worldwide to ensure it really helps with solutions to local problems? One person who knows the answer is Dr Sabine Rüscher-Gerdes (see box), congress speaker on infectious diseases. She heads the National Reference Centre for Mycobacteria at the Research Centre Borstel, which is among the Supranational Reference Centres of the World Health Organisation (WHO). The microbiologist has argued that diagnostics are gaining in importance: ‘For decades, it has been neglected. Patients were given antibiotics without reasons for the resistance situation. The large number of antibiotics resistant to pathogen in that person, she explains. She constantly travels the world to develop standardised diagnostic solutions and high local quality control and assurance.

Increased automation speeds up results

Siemens platform provides tracking, biochemistry, haematology, serology and coagulation services in a single automated laboratory system.

As automation eases the logistics of laboratory operation, new systems enable clinical laboratory scientists to provide clinicians with a quicker and more robust results service. Dr Bill Bartlett, Joint Clinical Director of Diagnostics at NHS Tayside, Scotland, believes automation will also enable lab staff to better educate clinicians to ask the right questions to enable the correct choice of tests at the point of care, in turn leading to more focused results and potentially improve patient outcomes.

NHS Tayside is deploying the Siemens-Apito Automation, a platform that will see the introduction of state-of-the-art tracking, biochemistry, haematology, serology and coagulation services on to a single automated laboratory system.

It sees a shift away from the conventional departmental approach and separate analytical lines towards an integrated service, further facilitated by the formation of a Department of Blood Sciences headed by Dr Bartlett. ‘This, he said, will provide us with opportunities to deliver new ways of working, new ways of applying knowledge and skills and a new way of managing the delivery of the service.’

The department provides laboratory services for a population of about 475,000 people in Tayside and North Fife and includes routine blood science and biochemical invest.
Adv Anced LAb

Worldwide training and education

The second central question at the congress was: How good is training in laboratories globally? Germany is the only country that does not provide academic training for medical and laboratory technologists, Annette Arteel explained. Many MTLAs in Germany already work independently and hold managerial roles in hospitals. The dvta therefore changed its name in spring. Instead of medical-technological assistant the job description is now medical technologist – in line with the terminology of neighbouring European countries. This should be a signal to German politicians to also change the job description respectively. ‘We are’, she added, ‘running the risk of falling behind in scientific work in Germany does not promote the “academisation” of this profession.’

Having begun her career at the National Reference Centre for Mycobacteria at the Research Centre Borstel in 1977, in 1999 microbiologist Dr Sabine Rüsch-Gerdes became its head. Her research has focused on the diagnosis and treatment of pathogens that cause tuberculosis (TB), and she advises international organisations such as the WHO, ‘Médecins sans Frontières’, the German Agency for International Cooperation and the International Red Cross. The microbiologist is particularly active in Eastern Europe and Africa, where she works to develop the infrastructure to combat and treat TB. Since 2010 she has been the WHO speaker for all Supranational Reference Centres, as well as head of External Quality Control for all 30 European countries. In December 2005 Dr Rüsch-Gerdes was awarded the Federal Republic of Germany Order of Merit for her significant commitment.

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Dr Bill Bartlett is a Clinical Scientist and joint Clinical Director of Diagnostics, NHS Tayside, based at Ninewells Hospital, Dundee, Scotland, and the authority’s clinical lead for Blood Sciences. He is also honorary senior lecturer in College of Medicine, Dentistry and Nursing at the University of Dundee.
**Under the microscope: Embryos are monitored minute by minute**

**Assisted reproductive treatment**

Fathers as well as mothers provide a fertile field of study for Unilabs-Eylau Centre for Assisted Reproduction in Paris

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**C. difficile test guidelines are being ignored**

Inadequate testing may mean one of the most common healthcare-acquired infections could go undiagnosed

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**Increased automation**

The European scope of the larger Unilabs group across 11 countries represents a significant opportunity for expanding the specialised services offered by Eylau Laboratories to other international networks. The Eylau Centre for Assisted Reproduction is part of the larger operation of Unilabs-Eylau that conducts more traditional laboratory analyses.

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Nine UK hospitals participate in a red cell immunohaematology electronic reporting pilot

Nine British hospitals are working with National Health Service (NHS) Blood and Transplant (NHSBt) on an electronic reporting pilot that may offer quicker access to patient test results and data. When rolled out nationally, hospitals will no longer receive traditional printed reports and antibody cards from NHSBt. The implementation of a web browser will also make access to results more secure and, where appropriate, enable sharing of information and patient results between hospitals.

The current pilot is for requests for Red Cell Immunohaematology (RCI) results. NHSBt also plans a similar project for Histocompatibility and Immunogenetics (H&I) in January 2013, a system to become available across England and North Wales early next year.

NHSBt, the NHS Special Health Authority responsible for optimising the supply of blood, organs, and tissues, has been working closely with Sunquest and the pilot hospitals to implement the initiative known as Sp-ICE.

Hospitals in the electronic reporting pilot: the Freeman, Newcastle; Manor Waall, Poole General; Russell Hall, Dudley; Southampton General; Royal Bournemouth; Birmingham University; Coventry University; and North Staffordshire University. These nine were chosen because they expressed an early interest in NHSBt developing and rolling out an electronic reporting system; explained Dr Carol Ash, who leads the project for NHSBt. They are also hospitals that send a large number of samples to NHSBt every year and early adopters of the NHSBt OBOs (Online Blood Ordering System), which allows them to order blood electronically. ‘For a number of years, users of our diagnostic services have been telling us they want more rapid access to patient results and their preference would be to have these results electronically; Dr Ash added. ‘So, the drive has come very much from the hospital users of our services.’

The project aims to deliver a reduced risk of transcription errors, results within one hour of authorisation, a full audit trail of report access, access to historic test results and the ability to search and display reports for a single patient or requesting location.

NHSBt say early feedback indicates that hospitals would like the ability to view test results from other Trusts, to help with the care of patients who move between different healthcare providers. If all organisations taking part in the project give permission for all other organisations to view their results, NHSBt will be able to provide a national antibody database for NHSBt-generated results. Sp-ICE has functionality that can cover all NHSBt customers.

The project for Histocompatibility and Immunogenetics (H&I) in January 2013, a system to become available across England and North Wales early next year.

Molecular diagnostics platform

Second cartridge on the way to detect pathogens and antibiotic resistances in implant and tissue infections

Curetis has developed its CE-marked Unyvero molecular diagnostics platform to provide clinicians with crucial information on infectious disease pathways. Curetis is being developed with Heraeus Medical. One key application area will be orthopaedics, e.g. to diagnose infections after knee and hip replacements. ‘Wound and surgical site infections are increasingly caused by bacteria carrying multiple antibiotic resistances,’ explained Oliver Schacht, CEO of Curetis. ‘In orthopaedic indications, infections often involve biofilms, i.e. communities of microorganisms that are very hard to open up and cultivate. Presently, it may take 7-15 days to obtain results from biofilm samples. This often leads to prolonged empiric treatment, follow-on surgery and increased morbidity and healthcare costs.’

The partners have teamed up with key European clinical opinion leaders to determine the pathogens and antibiotic resistances that need to be included in the ITI panel. The ITI cartridge is likely to include more than 40 and possibly up to 50 analytes; he said. ‘We expect an EU launch by the end of 2013.’

Curetis is also completing a European clinical trial to further substantiate the clinical benefit of its P50 Cartridge. By the end of September, enrolment was complete; with over 800 patient samples collected. The trial will compare the cartridge performance with conventional microbiology culture, the current standard of care. The primary endpoint will be clinical sensitivity and specificity for the identification of 17 pathogens covered by the P50 panel. Curetis will systematically resolve discrepant results by PCR and sequencing.

As of October, the Unyvero products are distributed in Germany, Austria and Switzerland by Curetis, in The Netherlands by Mediphos, Russia by Bioline LLC, Turkey by Mikromed, and the Middle East by ATC.

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Accolades for London 2012 Olympics doctors

No one who had the good fortune to be at the London 2012 Olympics could argue that the organisation and volunteers were exemplary. Due to these ‘behind the scenes’ people, the entire period was a dazzling success – not least for the emergency care system for all Olympic and Paralympic venues, covering all athletes, officials, Olympic and Paralympic families and spectators, estimated to be over 200,000 people per day in the Olympic Park alone. Who pulled off this successful medical coverage?

In September, consultant anaesthetist David Zideman MD, the Clinical Lead for Emergency Medical Services of the 2012 Olympic and Paralympic Games, was awarded an Honorary Membership of the Association of Anaesthetists of Great Britain and Ireland* (AAGBI), to reflect his highly distinguished career in the fields of anaesthesiology and emergency care. This was in recognition of his Honorary Secretary, ‘is one of the AAGBI’s highest honours and recognises David Zideman’s substantial contributions to anaesthesia, emergency care, resuscitation and the success of the London 2012 Olympic and Paralympic Games. He has played and continues to play an important part of the association’s Honorary Secretary. ‘

As the Clinical Lead for the Emergency Medical Services, Dr Zideman was part of a team that recruited more than 4,000 medical volunteers (2,000 in the emergency medical teams) from all parts of the health service. I planned the emergency medical service that included the recruitment of volunteers, the selection and provision of equipment, and undertook the training of all our volunteer staff, he explained. One significant need was to match the professional skills of his team members carefully to each individual sport, to ensure an effective and efficient service, for example, in the boxing arena compared with swimming at the Aquatics Centre. ‘It was,’ he added, ‘all about having the best possible system for optimising pre-hospital care for anyone in an Olympic or Paralympic venue who became seriously ill or was injured.

Comprehensive training system for volunteers was an essential element, he said. ‘I had the very simple message to the system worked thanks to our trained volunteers. Each volunteer received around 18-20 hours training in total. This included teams arriving before their shifts and practicing various scenario thereby familiarising themselves with the venue and pieces of equipment they might not be familiar with. Most importantly it ensured that they got used to working as a team with other volunteers who might change on a daily basis.

During the Games Dr Zideman visited up to four venues per day, and participated and provided clinical support and advice to his volunteer teams. ‘It was a great pleasure providing the structure for our tremendous emergency medical volunteer teams.’

He said he was delighted to report that across the entire Olympic and Paralympic games we did not have to perform a single anaesthetic or emergency traumatic intervention. ‘He hopes that the lessons learnt from London 2012 will be carried forward to the Olympics in Sochi and Rio.

A renowned international lecturer, David Zideman MD, a consultant anaesthetist at Hammersmith Hospital, Imperial College Healthcare NHS Trust, London, from 1983 to 2010, when he retired from the UK’s National Health Service, although he still works in an honorary capacity for the Trust. He has been an honorary senior lecturer at the University of London since 1981 and was Chief of Service for Anaesthesia at the Hammersmith from 1999 until 2008.

His appointment as Clinical Lead of Emergency Medical Care for the 2012 Games was among the most senior medical positions of the Olympics. An Honorary Physician in the Queen, he became Lieutenant in the Royal Victorian Order (LVO) in the 2008 Queen’s Birthday Honours list. In 2012 he was appointed Honorary Fellow of the Royal College of Physicians, London, a Foundation member of the Royal Colleges of Advanced Training (UK) and is a member of the European Resuscitation Council from 2004 to 2008, and has been a member of the International Liaison Committee on Resuscitation (ILCOR) since 1994 and its Treasurer since 2009. Dr Zideman also chaired the British Association for Immediate Care (BASIC), which plays a fundamental role in the provision of pre-hospital resuscitation and trauma care in the UK. As a volunteer, he regularly undertakes pre-hospital medical shifts for London BASICs, the London Helicopter Emergency Medical Service (HEMS) and the East Anglia Air Ambulance.

AAGBI President William Harrop-Griffiths MD (LVO) presenting the association’s award to David Zideman, who says his Olympic role was ‘a pinnacle of my work in pre-hospital medical care’.

* The Association of Anaesthetists of Great Britain and Ireland (AAGBI) has over 11,000 members in the UK and Ireland. Details: www.aagbi.org

Cutting risks to surgical patients

Anaesthetist advises expansion of post-operative high-dependency services

A leading UK anaesthetist has said many hospitals could significantly reduce risks to patients undergoing surgery by expanding and developing their post-operative high-dependency services.

Report: Mark Nicholls

Dr John Carlisle explained there are a number of indicators that can identify and quantify risks to patients facing an operation, and steps that can be taken to reduce post-operative mortality. That includes managing patient expectation, fully informing a patient as to those risks – with the patient even opting not to undergo the surgery – and striking a balance between hazardous care and less hazardous partial care.

However, Dr Carlisle, who is consultant in preoperative preparation, anaesthesia and critical care at Torbay Hospital in S-W England, said: ‘Probably more important is postoperative monitoring and care, partly because this phase lasts much longer than surgery and is associated with greater physiological demands. To deliver this safety, we need to expand the provision of postoperative high-dependency services and for many hospitals this might mean trebling or quadrupling their current HDU beds.

The subject of ‘How to identify a high risk patient and quantify their risk is on the agenda at the annual congress of the Association of Anaesthetists of Great Britain and Ireland in a presentation by Dr Carlisle. ‘Anaesthetists have an ethical duty to quantify harm and benefit to patients to help those undergoing surgery make better informed decisions about the procedure they may be having. He said. Failing to do so risks people making decisions based upon false assumptions. We also have a clinical or organisational duty to quantify these risks, because the safe perioperative care of patients depends upon us recognising how much hazard each patient faces and distributing scarce resources – such as intensive care and Monday morning lists – appropriately.

When it comes to surgery, Dr Carlisle says patients who are older, male, less mobile, under-weight or already have a life threatening disease are at most risk of dying, along with those undergoing emergency surgery because they are acutely unwell and more likely to undergo surgery outside normal working hours.

‘Most people having scheduled surgery don’t die or become inured because of the surgery; but substantial proportions can be unhappy with the results; he pointed out. ‘Therefore an important part of patient preparation is in the assessment of their expectations and if necessary realigning them with reality. This process can contribute indirectly to a reduction in postoperative mortality and morbidity because about a quarter of patients fully-informed of postoperative outcomes decide to decline surgical treatment.

Anaesthetists can quantify that risk for mortality by factoring in the average mortality risk for a person of a given age and sex, and adjusting it for all known factors that independently affect this risk. However, to simplify the process Dr Carlisle has developed a calculator that can work out the risk at https://sites.google.com/site/informrisk

An anaesthetist also needs to ensure his colleagues are ‘in the loop’ as the role of other clinicians around the anaesthetist, and effective communication with them, is crucial in reducing that risk.

In helping reduce the risk of surgery, anaesthetists should look to strike a balance between hazardous care and less hazardous partial care or palliation. ‘The risk of dying will often be higher for a year or so after hazardous curative treatment, for instance complete resection of a colorectal tumour compared to, say, stenting of a colorectal cancer that threatens bowel obstruction,’ he said and added that the safety of the postoperative care is even more important. ‘Ensuring that the right patient has the right operation at the right time, ‘An Honorary Physician to the Queen, and that the relevant equipment, such as intraoperative cardiac output monitor, is in place through ensuring that ‘the right patient has the right operation at the right time, is a vital part of patient care,’ he said. ‘And that, the postoperative care is even more important. ‘Ensuring that the right patient has the right operation at the right time, is a vital part of patient care,’ he said.

Key learning points Understanding and communicating risk is important; risk quantification is an ethical and
Mounting systems for anaesthetic units

Intelligent mounting systems featuring CIM med GmbH’s integrated data and power lines for anaesthetic technology increase hygiene in operating theatres and protect cables from damage, the manufacturer reports.

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Details: www.cim-med.com

World Sepsis Day aims to raise awareness

13 September 2012 was the first World Sepsis Day initiated by the Global Sepsis Alliance and supported by hospitals, professional associations and individuals from 95 countries. More than 100 events took place in 40 countries, inter alia in the cities Berlin, London, New York, Houston, Orlando, Beijing, Seoul, Delhi, Mumbai, Sao Paulo and Lima. It aims to raise awareness among physicians, nursing staff and the general public about this devastating disease which, despite medical care, kills about one third of all infected patients.

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“We are ultrasound professionals.”

Dr John Carlisle is consultant in preoperative preparation, anaesthesia and critical care at Torbay Hospital, South Devon NHS Foundation Trust. His main areas of interest are perioperative risk compared to ‘at home’ risk; cardiopulmonary exercise testing; evidence-based medicine including systematic review; detection of data fabrication. He is editor & author for the Cochrane collaboration, editor for the journal Anaesthesia, author for Oxford Handbooks of: anaesthesia; day surgery; vascular surgery and an instructor on the biannual CRIT workshop course. At the Association of Anaesthetists of Great Britain and Ireland annual congress, this September he presented the session: How to identify a high-risk patient and quantify their risk.

practical imperative, and anaesthetists should not only estimate mortality risk but other outcomes of postoperative damage and patient dissatisfaction.
Giving the tiniest patients a chance

‘An environment that promotes development improves the survival chances of premature babies’

The number of premature births increases continuously in all European countries – with the exception of Sweden. Every year around 500,000 children – every 10th baby – in Europe are premature, i.e. born before the end of the 37th week of pregnancy and with a birth weight below 2,500g. Along with these ‘near term babies’, the number of ‘extremely low birth weight infants’, who can now survive from the 24th week of pregnancy, has also been increasing. However, premature babies are at risk of future health problems.

At a symposium held by Dräger during the 108th Annual Congress of the German Society of Paediatrics and Adolescent Medicine experts explained how the neonatal ward environment and parental involvement can positively impact on the neurological development and growth of a baby’s brain.

Since its inception in 2008, the European Foundation for the Care of Newborn Infants (EFCNI) has lobbied for the causes of newborn and premature infants and their parents. For Silke Mader, founder member and chairwoman of the foundation, the promotion of better neonatal care is something very close to her heart as much as it is a purpose. Based on her own experience of giving birth prematurely she is raising awareness of this topic amongst the public and with the European Parliament. The benchmarking report compiled by the foundation in 2010, which compares neonatal standards across Europe, uncovered alarming differences and a north-south divide. The EFCNI White Paper on Maternal and Newborn Health and Aftercare, published last year, based on the findings of this report, is the first evidence-based paper to substantiate demands for improved care of pregnant women and newborns. The fact is that, so far, there are no unified standards across the EU, no standardised documentation systems and no obligatory hygiene guidelines for the care of newborns. This leads to very different quality standards and outcomes for those affected. The main demand is the implementation of family-oriented care, parents’ rights are not acknowledged in many countries: Instead of viewing them as the guarantors of the children’s wellbeing, they are often treated as guests on the special care baby unit; says Silke Mader. The foundation is also lobbying for high, unified standards for the care of children and for the professional design of neonatal intensive care units. Based on the premise that everything revolves around the child, the foundation is defending building blocks for the design of the different areas on the ward, ranging from the patient area with a protected environment for the care of babies and parents via a buffer zone to a zone with a normal, adult-appropriate environment. Professional groups have defined ideal case standards for this purpose. Apart from conceptual approaches, examples of recently built or refurbished wards are to inspire the viewers’ imagination and also to show decision makers what can actually be achieved. Neoträume consists itself as an open-ended, continuous project and a place to record dreams and wishes.

Care concept with parents

Dr Erna Hattinger-Jürgensen, Consultant at the Neonatology Centre of the University Hospital Salzburg, spoke of her experiences with the implementation of a type of environment and care that promote the development of premature infants, the first ward of this kind in German speaking countries. She was no longer content with the fact that, whilst physical closeness between parents and newborns is now considered to be a matter of course, it is often not possible to realise this for premature babies due to various technological limitations. After a planning stage lasting seven years, two years building and overcoming many prejudices, the Parent-Child-Centre and Perinatal Centre opened in Salzburg in June 2010.

Based on Scandinavian ward designs, parents are automatically integrated into the care concept. A maximum of two incubators are in a sufficiently large room, with comfortable beds, along with five parent-child-rooms to enable parents to carry out frequent, long sessions of ‘kangaroo care’, i.e. direct skin-to-skin contact with their babies. Families also have a lounge and respite area on the ward in the immediate vicinity of the intensive care ward, with bedrooms, kitchen and play area for siblings. The design of the egg-shaped children rooms to enable parents to be a matter of course, it is often not possible to realise this for premature babies due to various technological limitations. After a planning stage lasting seven years, two years building and overcoming many prejudices, the Parent-Child-Centre and Perinatal Centre opened in Salzburg in June 2010.

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Jürgenssen, the objective of optimum care for premature babies is to continue the neurological development begun before birth, within the context of intensive care medicine. This obviously cannot be identical, but the differences compared to development in the womb should be kept as little as possible.

Silke Baehr, Marketing Manager Neonatology for Central Europe at Dräger introduced the technical opportunities that can help achieve an environment that promotes development. Apart from a lighting concept based mainly on indirect lighting, the noise level can also be monitored with the help of a noise display. If noise levels around the incubator rise too much, an ‘ear’ lights up in red and visually alerts for noise reduction.

Improved incubators

The incubator design has also undergone many improvements in recent years. Dräger incubators can be closed quietly, the motor supplying warm air runs on as quiet a noise level as possible and light from the monitors is minimised via a daytime mode setting. Potential false alarms during Kangaroo care sessions, which stress babies and parents, can be excluded. Customers can see 3D visualisations when planning the design of a neonatal ICU. At the Dräger design centre in Lübeck the entire plan can be reconstructed true to scale and inspected for evaluation.

Anaesthetists are part of a team providing optimal peri-operative care for the patient

A key part of peri-operative risk stratification must include cognitive and frailty assessments of patients in order to help identify those who may be most at risk of post-operative cognitive dysfunction, according to a leading anaesthetist. Dr George Djaiiani MD, Associate Professor of Anaesthesia at Toronto General Hospital and the University of Toronto, warns that post-operative cognitive dysfunction (POCD) and delirium are relatively common after major surgery, particularly amongst elderly patients.

He said anaesthetists could play a key role in highlighting those who may suffer POCD and as a consequence must be given an influential part in planning the surgery and treatment. Anaesthetists are often perceived as physicians who put people to sleep. However, the first patient encounter occurs in the pre-operative clinic, well before surgical intervention takes place, except for emergencies. Furthermore, anaesthetic care extends to the postoperative period as well.

Consequently, anaesthetists assume a role of peri-operative physicians being part of the team providing optimal peri-operative care for the patient. Identification of patients at risk of POCD and delirium per-operatively, choosing the optimal anaesthetic and cerebral monitoring techniques during surgery, and provision of best analgesia after surgery is pivotal in improving cerebral protection peri-operatively.

Figures show that POCD and delirium occurs in 60-70% of patients after cardiac and major non-cardiac surgery, while one year after surgery it is around 5-15%. With POCD more common in elderly patients, he said that the peri-operative team would face growing challenges to offer better outcomes as the elderly population presenting for surgery increases.

Pre-operative risk stratification models should include some cognitive, frailty, and daily living activity assessments to establish baseline and determine brain reserve; he points out. Impaired cerebral auto-regulation, and altered cerebral reactivity may get recognised during the pre-operative ‘brain stress testing’.

Sometimes, for patients at high risk, less invasive surgery or at times even medical management might be a preferred option. If it is decided to proceed with surgery, more rigorous cerebral monitoring may be required and certain pharmacological agents should be avoided. Anaesthetists have been in the driving seat for years testing different hypotheses, including pharmacological agents as well as different equipment and anaesthetic techniques to minimise POCD and delirium after surgery.

Among the pharmacological agents he suggests should be avoided are benzodiazepines, and opioid use should be minimised, though continuing the use of statins during the perioperative period.

At Toronto General Hospital there are currently five anaesthesia-driven trials looking at reducing delirium after surgery. However, as there is no known treatment for POCD at this stage, Dr Djaiiani said, it is important to continue POCD and delirium research to ‘better understand the pathophysiology of these complex conditions and develop new prevention and treatment strategies’.

Teamwork is paramount in helping to improve outcomes, with the patient’s family, psychiatry, surgery and nurses working together to achieve best outcomes but Dr Djaiiani said that less invasive surgery and further development of interventional radiology and cardiology techniques will also have an impact and modify the type of anaesthesia used for procedures.

Recently, he added, ‘we reported that endovascular repair of abdominal aortic aneurysm was associated with less delirium after surgery compared to the open approach’.

Suk Leong Tan - The importance of improving post-operative care has been highlighted in recent years, particularly for those patients who are at high risk of developing delirium.

Dr George Djaiiani is Associate Professor of Anaesthesia, Director of the Cardiac Anaesthesia Fellowship Research, and Associate Director Anaesthesia Research Cardiovascular Anaesthesia and Intensive Care at Toronto General Hospital and the University of Toronto. An authority on post-operative cognitive dysfunction (POCD), the current focus of his research team is directed at identifying risk factors, managing perioperative care, and reducing short- and long-term adverse outcomes after cardiac surgery. The main area of his research concentrates on brain injury and cardiac surgery, as well as perioperative coagulopathy and thrombosis identifying aetiology, pathophysiology, prevention, and treatment.

As a key speaker at the recent Association of Anaesthetists of Great Britain and Ireland, Dr Djaiiani presented the session Postoperative cognitive dysfunction - How much is down to the anaesthetist?
Personalised cancer medicine is much discussed, with high expectations for biomolecular decoding of various tumours and the global pharma industry developing targeted drugs to attack tumours at a molecular level. However, during EFO 2012, Alexander Eggermont, Professor of Oncology at Maastricht University, The Netherlands, stated: ‘Personalised cancer medicine is not a done deal yet, says expert, but it's absolutely where we are heading!'
Today’s antibiotics misuse threatens future patients

Poor quality medications also play a role.

A situation has evolved that places future patients at serious risk: resistance to antibiotics has risen drastically. Microorganisms – as small bacteria, fungi, and viruses – have become increasingly resistant to third-generation cephalosporins, according to Jean-Claude Cazals, medical director of the Hospital’s Institute of Infection Control.

Infections in ICUs

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Antimicrobial use and consumption in Europe continues to rise, and is a key driver for antimicrobial resistance. The use of antimi-

 serialization is beneficial. This suggests that treating all ICU patients with a daily chlorhexidine bath and a five-

day treatment of mupirocin ointment in the nose.

For better understanding route medical care in each hospital researchers spoke with the quality improvement team and patients. Working with these teams enabled important questions to be answered during routine medical care. As such, the study’s findings about ‘universal decolonisation’ for methicillin-resistant Staphylococcus aureus (MRSA) have implications for hospitals across the country.

The scientists believe that the findings of the project could help implement changes in bedside clinical practice. However, the results come with a warning: those winning consequences, such as worsening of resistance in key pathogens or evidence of increased mortality due to the change in the types of antibiotics used; he pointed out. “The measurement of other unintended consequences [e.g. aminoglycoside related toxicity] remains a key component of the programme.”

Summing up the role of the hospital in this field, he said: “The multi-disciplinary stewardship team at Ninewells has been at the forefront of this national work and instrumental in developing & using robust scientific methodology in the evaluation of the impact of the stewardship interventions on core clinical outcomes. We continue to work with other NHS Boards in Scotland, with the Scottish National Patient Safety Programme – the Sepso Collaborative – as well as European and international collaborations to measure the intended and unintended impact of our stewardship interventions. We remain committed to sharing our experience and learning with other European and international groups.”

Lead researcher

Professor Dilip Nathwani MB FRCP

(London, Ed. Glasg.), DTMM+ is a Consultant Physician in Infectious Diseases and Honorary Professor of Infection, Ninewells Hospital and Medical School, Dundee, UK. He chairs the Scottish Government-funded Scottish Antimicrobial Prescribing Group (SAPG), which has been tasked by the Scottish Government to take forward a national clinical antimicrobial stewardship programme. He also chairs the European Study Group on Antibiotic Policies (ESGAP), one of the study groups of the European Society of Clinical Microbiology and Infectious Diseases (ESCMID).

For the 2011 3rd World Healthcare-Associated Infections (HAI) Forum. “Moreover, in many countries, they are also resistant to carbapenems and therefore susceptible only to tigecycline and colistin,” they added in their call for action.

Investigators found that the number of antibiotics prescribed in the community and hospitals that are associated with C. diff, with a substantial reduction in the prevalence of this serious infection at a national level. We implemented it through organisations supporting and clinical leadership, through the introduction of hospital and community antimicrobial management teams; measures for improvement, and accountability targets for prescribing linked to national targets for disease reduction, such as C. diff. Stewardship was also a component of external inspection by the Health Environment Inspectorate. “The programme included the development of an integrated framework for surveillance of microbial resistance and measurement of antimicrobial consumption and quality and a blended approach to educational support for all prescribers. Presently, the programme has not led to unintended consequences, such as worsening of resistance in key pathogens or evidence of increased mortality due to the change in the types of antibiotics used; he pointed out. “The measurement of other unintended consequences [e.g. aminoglycoside related toxicity] remains a key component of the programme.”

In Europe, and globally, a number of initiatives are being implemented to do this. In Scotland, since 2008, there has been a government-funded multi-stakeholder antimicrobial stewardship programme – the Scottish Antimicrobial Prescribing Group* – which I chair. The programme has led to a significant reduction in the number of antibiotics prescribed in the community and hospitals that are associated with C. diff, with a substantial reduction in the prevalence of this serious infection at a national level. We implemented it through organisations supporting and clinical leadership, through the introduction of hospital and community antimicrobial management teams; measures for improvement, and accountability targets for prescribing linked to national targets for disease reduction, such as C. diff. Stewardship was also a component of external inspection by the Health Environment Inspectorate. “The programme included the development of an integrated framework for surveillance of microbial resistance and measurement of antimicrobial consumption and quality and a blended approach to educational support for all prescribers. Presently, the programme has not led to unintended consequences, such as worsening of resistance in key pathogens or evidence of increased mortality due to the change in the types of antibiotics used; he pointed out. “The measurement of other unintended consequences [e.g. aminoglycoside related toxicity] remains a key component of the programme.”

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