CARDIOVASCULAR MEDICINE

Interventional cardiology: from keyhole to pinhole

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Prophylactic statins: yes or no?

The many advances in cardiovascular diagnostic imaging technology, interventional procedures, drug development and elucidation of risk factors have resulted in a steady reduction in deaths from cardiovascular disease in most European countries. However CVD still remains the leading cause of mortality in Europe, with an annual toll of 4.3 million deaths, and experts predict that, with the ageing population as well as lifestyle changes that are increasing the prevalence of obesity and Type 2 diabetes, we are now facing a CVD epidemic that could overwhelm our health services. Because of effective dissemination of information on CVD, people are increasingly aware of the modifiable risk factors, which include tobacco use and excessive alcohol consumption, a paucity of suitable exercise and a high fat and sugar diet. Many patients also know that statins, which reduce Low-Density Lipoprotein Cholesterol levels, can be taken for primary prevention of CVD; some even expect these drugs on demand. Indeed over 10% of UK residents now take statins, and The National Institute for Health and Care Excellence (NICE) is currently updating its guidelines to recommend statin therapy if the assessed risk of developing CVD within 10 years is 10% (the previous guidelines stated 20%). The American Heart Association and American College of Cardiology’s latest recommendations even advocate statin therapy for patients between 40 and 75 years old if the estimated 10-year risk of CVD is as low as 7.5%. A recent Dutch study established how many of approximately 5000 older people in the Netherlands, followed medically for over a decade, would have been prescribed statins using the latest guidelines and risk assessment tools. All drugs have side effects. A recent meta-analysis of data from randomized controlled clinical trials involving over 8000 patients taking either statins or placebo found that new cases of diabetes were significantly higher in the group taking statins. A longitudinal analysis of over three thousand older men reported significantly lower levels of physical exercise in those taking statins, explained as due to the common side effects of muscle pain and fatigue. But statins users may well feel less responsible for their own health, resulting in unhealthy diets and a dearth of physical exercise. Maybe we should go back to the drawing board?

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HCAHPS
Towards the patient-centred hospital

The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) is a patient survey that provides structured inputs to monitor and assess hospital services, and drive their improvement. HCAHPS (pronounced ‘H-Caps’) was launched in the US in 2008.

Changing healthcare models
HCAHPS is one of the latest efforts in the field of structured patient surveys. These are seen as a solution to challenges accompanying the evolution of health care from a "disease-centred model" - in which physicians make all treatment decisions based on clinical experience - toward a "patient-centred model" - where patients become "active participants in their own care".

HCAHPS has recently become the subject of considerable interest in Europe, due to key differences in design and approach compared to alternatives like the Picker Patient Experience Questionnaire, used in Britain and elsewhere.

From consumers to patients
The first steps towards HCAHPS were made in 1998, when the US Agency for Health Care Policy and Research released the foundational Consumer Assessments of Health Plans Survey (CAHPS). This survey aimed to “help consumers and group purchasers compare health plans and make more informed choices based on quality.” CAHPS achieved several targets. The first consisted of developing standardized questionnaires and report formats. It also secured an anchor customer in the US government, which encouraged its staff to use CAHPS for selecting health plans. Finally, CAHPS catalysed a consensus-based, best-practices approach for further development; all tools were available in the public domain, for use, testing and improvement.

In 2002, four years after the launch of CAHPS, the US Centers for Medicare and Medicaid Services partnered with the Agency for Healthcare Research and Quality to develop a version of CAHPS for hospitals, which was labelled the CAHPS® Hospital Survey or HCAHPS. The AHRQ effort involved inputs from scientific experts, clinicians and hospital staff, patients and the general public - with responses to over one thousand comments. After numerous proofs-of-concepts and field demos, the effort was scaled up into a pilot test in three US States. In May 2005, HCAHPS was endorsed by the National Quality Forum - which represents consensus positions of healthcare providers and purchasers, patient groups, research and quality organizations, professional associations and US government agencies. At the end of that year, the federal Office of Management and Budget approved national implementation for reporting purposes.

HCAHPS was officially launched in summer 2008, compiling results from about 1.1 million surveys at about 2,500 acute care hospitals in the US.

HCAHPS use in US encouraged by carrot and stick
Financial incentives (and penalties) have reinforced the case for HCAHPS. Since 2007, all US hospitals subject to the Inpatient Prospective Payment System (IPPS) must submit HCAHPS data to receive annual payment updates. Those failing to publicly report this and other quality data face reduction in payment by up to 2 percent.

In 2010, the US Patient Protection and Affordable Care Act included HCAHPS as a metric for calculating value-based incentive payments in the Hospital Value-Based Purchasing program, covering patient discharges onward from October 2012.

Securing patient inputs: the challenge
Until the early 2000s, there was no uniformly structured system for patient assessment of hospital services. Though hospitals in both the US and Europe had sought and encouraged patient feedback for years, variations in survey questions and content, and the high risk of subjectivity in gauging responses to questions, hampered meaningful progress.

As The Rand Corporation reported in 2000: All definitions of healthcare quality acknowledge that patients wished to be treated in a humane manner and participate in deciding about their therapy.

However, securing patient participation was a major challenge, as were the means to assess data validity and reliability. The Rand report cited the example of a person diagnosed with cancer, too distraught to register a doctor’s explanation of treatment choices, while the doctor may have skipped noting the conversation in the medical record.
The problem with inadequate survey design
In the early 1990s, there had been frequent warnings - for example, in the ‘Journal of Public Health’ - about the risk of designing surveys “without realizing the complexity of the task”, and warning about “the disasters” that could occur due to inadequate survey design. During this period, researchers made efforts to determine whether different patient survey methods yielded consistent results. Their conclusions were not encouraging. For example, a 1996 report in the ‘British Medical Journal’, comparing four separate surveys in Scotland, observed: “Some important aspects of patient satisfaction” could be reliably estimated by all surveys. However, “certain questions may have underestimated the extent of dissatisfaction, possibly as a result of choice of wording.” The results were similar in an evaluation of a much larger number of surveys in 1999.

Survey methods improve in the 2000s
Survey design methods appear to have markedly improved in the early 2000s. In 2002, a study in the US and four European countries (Britain, Germany, Sweden and Switzerland) recommended that a core set of 15 items in the Picker Questionnaire provided “a meaningful picture of patient experiences of health care,” with easily interpretable and actionable scores. This, the authors said, would allow comparison of hospital performance with national or international benchmarks.

One year later, a randomized trial of four patient questionnaires in Switzerland found that none emerged “as uniformly better than the others in terms of acceptability and patient evaluations.” All, it concluded, could therefore be used.

HCAHPS makes a strong case in Europe
The most compelling evidence that new patient survey design had become far more usable came in 2012, after an EU Commission-funded study of translated versions of HCAHPS in 5 countries found it to be relevant across different countries, cultures and languages. Evidence about the robust design of HCAHPS lay in its effectiveness in “not only translating the instrument from the source language to the target one, but also performing a cross-cultural evaluation of (its) applicability to the new context.” This involved the ascertaining of “content, context, conceptual, semantic and technical equivalence”. In other words, HCAHPS seems to have clearly targeted the core data sets required from patients at different hospitals to make a meaningful, reliable and comparative assessment of the latter. As the authors of the EU study note, such a challenge had previously felled health-care questionnaires on much simpler subjects than patient ‘satisfaction’.

OMNI (K)
In Malta, in May 2011, HCAHPS received a ringing endorsement at an EU-funded conference on nursing and patient safety, which described it as a consensus- and standards-based metric for patient satisfaction “endorsed in a battery of measures for quality-monitoring, alongside clinical performance information.”

The first European user of HCAHPS was Ireland’s Mater Private hospital, which saw it as a means to benchmark itself against “top hospitals in the US.” HCAHPS has also been adapted for use in the Netherlands.

British CQUIN links patient surveys to funding
It may be some time before patient questionnaires are standardized across Europe. One reason is that, with some exceptions, patient satisfaction scores are yet to be accompanied by financial incentives or penalties, as in the US.

The closest European parallel to the US, in terms of linking funding to patient surveys, is Britain. In 2008, Britain launched the Commissioning for Quality and Innovation (CQUIN) framework, which provides financial incentives for quality improvement schemes. The CQUIN incentive payment was raised from 0.5% of provider contract value in 2009-10 to 1.5% in 2010-11, and is now at 2.5%. Questions from patient surveys are used in the CQUIN model.

Risk of mission overstretch
The CQUIN questionnaire is, however, part of the wide-ranging Hospital Intelligent Monitoring framework, set up by Britain’s Care Quality Commission (CQC) regulator. Questions are targeted not only at patients, but also at doctors and staff. The goal is to formulate performance indicators for use in official inspections of acute care hospitals - as well as maternity services, community mental health, accident and emergency, and others. The questionnaire, which is designed and administered by the Picker Institute, is also routinely updated.

According to HCAHPS proponents in Britain, such a multitude of missions, target audiences and objectives, and the evolving content of the questionnaire itself, carries design and methodological risks which the ‘Journal of Public Health’ warned about in the early 1990s. They may well have a point. In 2012, a study found that NHS trusts were “improving the patient experience in areas where they receive financial incentives while neglecting others.”

HCAHPS and other patient surveys: jury still out
One of the key differences between HCAHPS and the Picker Questionnaire is the upfront effort to eliminate subjectivity: HCAHPS seeks to measure how often (and routinely) key actions are taken rather than “how well hospitals perform” them or even how ‘satisfied’ patients are with these actions.

Due to its contained application universe, HCAHPS is also simpler to administer and interpret. Compared to 78 questions in the British Picker-derived CQC survey, HCAHPS consists of just 27 questions; 18 of these concern critical aspects of patients’ hospital experiences.

The need for highlighting the core patient experience lay behind the 2002 US-EU study (discussed previously) to restrict the Picker questionnaire to just 15 items. More recently, it also inspired a Nordic initiative called NORPEQ, which was released in early 2012, with only 8 questions. However, a key argument made by the NORPEQ designers - that HCAHPS had not been tested in a translated/trans-national setting - was dispelled within a few months, after publication of the EU Commission-funded study of HCAHPS (mentioned above).

The jury will still be out for a few years - about which patient survey system eventually prevails in Europe. For now, the greatest advantage of HCAHPS lies in its reach, and its legacy experience. In 2013, HCAHPS had a total of 3.1 million surveys. By contrast, the British CQC reports a mere 62,443 responses for that year. Such a gap is likely to grow with time.
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Interventional cardiology: from keyhole to pinhole

Interventional cardiology, like minimally invasive surgery, has for decades been driven by miniaturization. New lightweight, biocompatible and sometimes self-expanding materials (for catheters and stents), alongside sophisticated digital imaging algorithms, have been the key technology enablers. These, in turn, have reduced vascular complications and hemostasis as well as the use of contrast agents.

The emergence of transradial access
One recent development is transradial access, where a catheter is introduced through the radial rather than femoral artery. Making this feasible has been the arrival of automated contrast injectors which permit improvements in angiographic image resolution. Typically, smaller catheters in use today are 5 Fr. Sheathless catheters promise to reduce the miniaturization envelope even further, since the catheter sheath typically adds 1-2 Fr in diameter. In such circumstances, some foresee a future with what are effectively equivalent to 3 Fr interventions based on a 4 or 5 Fr sheathless catheter.

Cardiologists divided over smaller catheters
However, there is still doubt about the impact of smaller catheters on procedural efficiency and outcomes. In turn, this dovetails into a longer-running debate about the utility of radial access (one of the drivers of demand for smaller catheters) versus the femoral route.

Interventional cardiologists seem divided into two camps on the issue. The first consists of those who believe 6 Fr (considered ‘standard’ since only the late 2000s) can do the job well enough. For them, the priority is to give more training to practitioners with existing catheters, before demanding they perform the tougher task of cannulating arteries in far more constricted spaces than 6 Fr. The 5 Fr catheter, for example, reduces a peripheral puncture site by 31% compared to 6 Fr. The second group of cardiologists is made up of first-movers. Many have built up islands of excellence with smaller, next generation catheters but seem reluctant to share their knowhow - not least due to professional rivalries and competition between cardiology practices.

US study in 2009 links small catheters to reduced adverse events
The year 2009 witnessed a major step in favour of reduced catheter size, after publication of a retrospective analysis of data from over 100,000 patients in the US State of Michigan, who had undergone percutaneous coronary intervention (PCI) between January 2001 and December 2007. The study showed that, compared to 7 Fr and 8 Fr, 6 Fr procedures were associated with fewer adverse events, “ranging from renal dysfunction and vascular complications to myocardial infarctions (MI) and in-hospital mortality.” The composite MACE (major adverse cardiac events) index was 3.84% for 6 Fr, 4.54% for 7 Fr and 7.21% for 8 Fr.

New generation stents drive demand for small catheters
Meanwhile, interest in even smaller catheters had by then already been growing, not least due to the arrival of new generation 4mm stents. Until the end-1990s, an 8 Fr catheter was required for stent implantation in a coronary lesion. Less than a decade later, Japanese cardiologists were routinely using 6 Fr catheters for implanting drug-eluting stents, while studies established that a 5 Fr catheter is effective “for the majority of noncomplex, selected cases.”

5 Fr becomes focus of study in early 2000s
The 5 Fr catheter had become the subject of serious attention in the early 2000s. In 2000-2001, a German study on 1,200 consecutive PCI patients sought to assess 5 Fr guiding catheters, focused on the recanalization of total occlusions. Success was attained in 95% of cases. The remainder required an upgrade to 6 or 7 Fr due to coronary anatomy or poor back-up (especially in “reaching the target lesion with the guidewire in severe lesions”), but some of the procedures with the larger catheters still failed. An even higher level of success (99%) was achieved in a Swiss 5 Fr trial on 201 elective and emergency patients, run over approximately the same period as the one in Germany. Still-smaller catheters had also been investigated during the same period, but there seemed, at the time, to be little benefits. For example, a trial in France in 1999 compared 4 Fr and 5 Fr on 100 con-
secutive patients. Although the investigators found that "the majority of coronary angiograms" could be performed with a 4 Fr catheter, they concluded there was no difference in vascular complication rates.

In other words, a new paradigm in catheter miniaturization seems to have begun around the beginning of the last decade, with 6 Fr as the new standard and 5 Fr as the next threshold.

Catheter size and access route

Most of the trials on catheter size mentioned above were via the femoral route and did not seek to address the issue of radial versus femoral access. However, this debate in fact has run roughly in parallel with that on reducing catheter size.

In 1993-1995, the ACCESS randomized trial in the Netherlands on three 300-patient groups undergoing percutaneous transluminal coronary angioplasty (PTCA) compared femoral and radial, as well as brachial access. The investigators used today's standard 6 Fr catheters, which had then just been commercialized. In 1997, they reported that procedural and fluoroscopy times in all three groups were similar, as was the consumption of guiding and balloon catheters. So too was the length of hospital stay.

On the other hand, "major entry site complications" were reported in 2.3% and 2% of brachial and femoral interventions, respectively, while there were none in the transradial group. Vascular complications too were completely absent in the transradial group, unlike the others. The biggest challenge for radial access consisted of coronary cannulation, with failures of 4.6%, twice that of the brachial (2.3%) and far above the 0.3% in the femoral group. The investigators, however, reported this was probably due to the exclusion of patients with a previous entry site problem from the study.

A learning curve for radial intervention

A key finding of the ACCESS study, which retains relevance to this day, was that procedural and fluoroscopy times took longer in radial interventions during a first, interim evaluation, with more guiding catheters consumed. The differences on all these counts, however, disappeared by the end of the trial, indicating the existence of a learning curve with the need for “experienced hands” to succeed with radial techniques.

The RIVAL Trial: 2006-2010

The ACCESS study has since been eclipsed by two randomized trials in the second half of the 2000s, comparing radial and femoral approaches. Both used 6 Fr or smaller catheters in over 90% of patients.

The RIVAL (Radial vs. Femoral Access for Coronary Intervention) trial covered the years 2006 to 2010. It involved 7,021 patients with acute coronary syndromes in a total of 32 countries, and remains the largest trial of its kind to date.

Preliminary findings from the RIVAL trial were reported in 2011. The rate of death, myocardial infarction, or stroke at 30 days was 3.2% in both groups, while major bleeding at 30 days was 0.7% in the radial group versus 0.9% in the femoral group. At 30 days, 1.37% of radial patients had large hematoma versus 3% in the femoral, while pseudoaneurysm requiring closure occurred in 0.2% of radial patients compared with 0.65% in the femoral group. In effect, though both approaches were found to be "safe and effective for PCI", the radial route was accompanied by a reduction in local vascular complications.

More recently, in December 2012, the RIVAL investigators provided further, in-depth analysis in patients with STEMI (ST-segment elevation myocardial infarction) versus those with unstable angina.

Some of these findings have generated intense debate. Firstly, it was found that primary outcomes via the radial approach were lower in patients at high-volume intervention centres, thus re-establishing the clinically significant existence of a learning curve which was first indicated in the early-1990s Access study.

Secondly, patients with STEMI saw radial access significantly reduce primary outcomes (3.1% vs. 5.2%) as well as all-cause mortality (1.3% vs. 3.2%). Such benefits were not found in patients without STEMI.

The case, however, has not been fully closed. While ACUITY definitions of major bleeding seemed to demonstrate the advantage of the radial route, this was not the case when using OASIS-5 (Fifth Organization to Assess Strategies in Acute Ischemic Syndromes).

The RIFLE-STEACS Trial: 2009-2011

The second trial on radial versus femoral access was called RIFLE-STEACS (Radial Versus Femoral Randomized Investigation in ST-Elevation Acute Coronary Syndrome) and performed at four sites in Italy in 2009-2011, with 1,001 patients. Compared to RIVAL, enrolment included higher risk patients with symptoms up to 24 hours, and those with cardiogenic shock. To date, RIFLE-STEACS is the only trial with such a complex patient population. In spite of several differences versus RIVAL in terms of concurrent pharmacological (and other) interventions, the radial approach saw a sharp reduction in primary outcomes (13.6% vs. 21%) and in cardiac death (5.2% vs. 9.2%), as well as shorter hospital stays. Investigators highlighted a key advantage in radial access as a reduction of major bleeding (7.8% vs. 12.2%), almost entirely in the access site.

Once again, however, using TIMI (Thrombolysis in Myocardial Infarction) definition of major bleeding, the difference between the two groups reduced sharply (1.8% in the radial group vs. 2.8% in the femoral).

In spite of ‘striking’ results, case not yet closed

In effect, the case for radial access via smaller catheters is not yet closed, but the radial approach is conclusively associated “with a striking relative reduction in mortality,” by 44% in all-cause death in the RIVAL trial and 60% from cardiac death in RIFLE-STEACS. In STEMI patients, the RIVAL findings “support the use of the radial approach in primary PCI as first choice after proper training.” Meanwhile, follow up investigations to the RIFLE-STEACS findings suggest that the radial approach “should become the recommended approach in patients, provided adequate operator and center expertise is present.”
TAVR procedure saves more lives than open-heart surgery

For the first time, a minimally invasive transcatheter valve - tested by Baylor Research Institute in Dallas (BRI) - has been shown to save more lives than open-heart surgery, according to new research revealed at the American College of Cardiology’s 2014 Scientific Sessions. The research is part of a clinical trial that studied the Transcatheter Aortic Valve Replacement (TAVR) procedure, which uses a wired catheter to implant a self-expanding valve device through a small incision in the leg. As a principal investigator in the Medtronic CoreValve U.S. Pivotal Trial, Robert C. Stoler, MD, FACC, FSCAI, led the study of patients at Baylor Heart and Vascular Hospital (BHVIH), one of 45 national trial sites participating in the research. According to the study’s findings, patients with the TAVR CoreValve device experienced significantly improved survival rates (85.8 percent vs. 80.9 percent) at one year, compared to participants who underwent invasive, open-heart surgery to implant replacement valves. Additionally, CoreValve patients showed better quality of life indicators at 30 days, compared with open-heart participants. BRI is involved in several other studies exploring TAVR’s application to valve patients. “There are new generations of valves coming out from several different manufacturers, and we’re interested to see how those affect outcomes, including stroke,” said Dr Stoler.

News Medical
http://tinyurl.com/oelzm6y

Resuscitation drug adrenaline in cardiac arrest study

Ethical approval has been given for a study where some cardiac arrest patients will be given a dummy pill, rather than adrenaline to kick-start their heart. There are concerns the resuscitation drug, used for more than 50 years, can do more harm than good. But the study will mean some patients across England and Wales being given a placebo without their consent. Experts say the research throws up a number of ethical challenges. More than 50,000 people suffer cardiac arrests outside of hospitals each year in the UK. During arrests their hearts stop beating completely and most people do not survive. Currently only 8% leave hospital alive. Paramedics follow a protocol for anyone found without a heartbeat - this involves chest compressions, shocking the heart with a defibrillator and giving a shot of adrenaline if shocks don’t work. But over the past decade some scientists have suggested adrenaline could do more harm than good. There is some evidence it may damage the brain by reducing blood supply to the head and could diminish the chances of survival. The Warwick University study will involve 8,000 people in London, Wales, the West Midlands, and the South Coast and north-east of England who have a cardiac arrest. Half the patients will receive the dummy pill and half will get adrenaline - but as they will be unconscious there will be no consent gathered as the drug is administered. Paramedics will also not attempt to get consent from relatives or passers-by as the researchers emphasise that time is critical during resuscitation. But they say local residents will be given information on the trial and details about how to opt out. Depending on local arrangements, this could involve ringing their ambulance service and being put on a computerised register - but details are yet to be finalised. After the arrest, relatives will not be told whether their family members received the drug or the dummy pill - whether they survive or not. Dr Daniel Sokol, a medical ethicist and barrister who is not involved in the study, said: “A challenging aspect of this research is the lack of informed consent regarding a life-and-death intervention; “The question then is: ’Is this research sufficiently potentially beneficial that we can forego proper consent?’”

BBC
http://tinyurl.com/lu2zo47

Meta-analysis: bivalirudin vs. heparin increases risk for MI, stent thrombosis, decreases bleeding

Results from a new meta-analysis have found that an anticoagulation regimen of bivalirudin vs. heparin increases the rate of MI and stent thrombosis while decreasing the risk for major bleeding in patients undergoing percutaneous coronary intervention (PCI). The extent of bleeding reduction with bivalirudin was dependent on concomitant glycoprotein IIb/IIIa inhibitor use, according to the researchers. “It can be challenging to wade through the seemingly disparate data in the literature. These findings should help clinicians make a more informed decision when selecting an anticoagulant to support coronary stenting in different types of patients by weighing the trade-offs between risks of thrombotic and bleeding complications,” Marc S. Sabatine, MD, MPH, senior study author with Brigham and Women’s Hospital (BWH), Boston, said in a press release. The study included 16 randomized controlled trials, totalling 33,958 patients. The trials were culled from searches of Medline and Cochrane Library databases for trials evaluating bivalirudin (Angiomax, The Medicines Company) vs. heparin in patients planned for PCI. The primary efficacy endpoint was major adverse cardiac event (MACE) incidence at 30 days and the primary safety endpoint was major bleeding at 30 days. Death, MI, ischemia-driven revascularization and stent thrombosis were defined as secondary efficacy endpoints. Overall, 2,422 patients experienced MACE and 1,406 had a major bleed. Patients in the bivalirudin-based anticoagulation regimen group had a higher rate of MACE compared with those given heparin (RR=1.09; P=.0204). This difference was primarily driven by increased rates of MI (RR=1.12; 95% CI, 1.03-1.23) and ischemia-driven revascularization (RR=1.16; 0.997-1.34) in the bivalirudin group; however, these differences did not affect mortality, which was similar between groups. In addition, compared with heparin, bivalirudin increased the risk for stent thrombosis (RR=1.38; P=.0074), which the researchers attributed to an increase in acute ST Elevation MI cases in that group (RR=4.27; P<.0001). Conversely, bivalirudin reduced the risk for major bleeding compared with heparin (RR=0.62; P<.0001), although the magnitude of the reduction differed greatly depending on whether glycoprotein IIb/IIIa inhibitors were used primarily in the heparin arm only (RR=0.53; P<.0001), provisionally in both arms (RR=0.78; P=.25) or planned in both arms (RR=1.07; P=.53). These findings, Sabatine and Matthew A. Cavender, MD, MPH, study author also with BWH, wrote, should “serve as impetus to continue to investigate specific strategies to minimize thrombotic complications during PCI without substantially increasing the risk of bleeding. Prolonging bivalirudin infusion after PCI could decrease the risk of acute stent thrombosis; however, this strategy would need to be studied with rigorous clinical outcomes trials before being used.”

Healio
http://tinyurl.com/ln62t9g
As we all know, standard 12-lead ECG is widely applied in hospitals and physicians’ offices to diagnose heart diseases, such as arrhythmia, atrioventricular conduction block, myocardial infarction (MI), etc. It is easy to diagnose inferior and anterior MI, but difficult for right ventricular MI and acute posterior MI from 12-lead ECG. More and more studies have demonstrated that additional right-sided precordial leads (V3R/V4R/V5R) and additional posterior leads (V7/V8/V9) are very useful for the diagnosis of right ventricular and posterior MI, especially AMI. In the AHA/ACC/HRS recommendations for the Standardization and Interpretation of the Electrocardiogram, recording of additional right-sided precordial leads during acute inferior-wall left ventricular infarction is recommended, and so are the additional posterior leads in settings where treatment will depend on documentation of ST elevation during infarction or other acute coronary syndromes.

SEMIP® Smart ECG Measurement and Interpretation Programs, an algorithm originally designed for standard 12-lead ECG by EDAN Instruments, Inc., has made great progress in diagnostic accuracy in recent versions. In order to improve the reliability in diagnosing right ventricular and posterior MI, the six additional leads mentioned above have been utilized in the SEMIP® algorithm. Equipped with the latest SEMIP® version, EDAN’s world’s first 18-lead ECG brings a new dimension to the world of ECG diagnosis.

Figure 1 recorded from a 83-year old male patient shows abnormal q wave in II, III, aVF, QS complex in lead V1, V2, V3, V3R, V4R, V5R, and poor r progression in lead V4. Indicating MI location in the inferior and anterior wall and right ventricle.

Figure 2 recorded from a 49-year old male patient shows abnormal QS complex in leads III, V8, V9, and Inverted T waves in leads V7, V8, V9, which strongly support the diagnosis of posterior MI.

Clinical advantage and application of 18-lead ECG
Transcatheter aortic valve implantation (TAVI) is the use of catheterized access via a blood vessel to replace the heart’s aortic valve. The procedure is also known as transcatheter aortic valve replacement (TAVR) or percutaneous aortic valve replacement (PAVR). Occasionally, the term ‘transarterial’ is used before ‘aortic’.

The question of terminology
Such overlaps in nomenclature are common with a new procedure, which has been in use for less than a decade in Europe, and barely three years in the US. There seems to be a general preference for TAVI in Europe, from where the technique originated. TAVI proponents also emphasize that the term ‘implantation’ is a more accurate description of the procedure, rather than ‘replacement’. Some claim, only partly tongue-in-cheek, that TAVR replaced TAVI in the US, while being considered for Food and Drug Administration (FDA) approval, since ‘replacement’ would be associated with higher reimbursement levels than ‘repair’.

In reality, TAVI does not repair or remove the damaged valve. Instead, rather like a stent placed in an artery, it wedges a new valve into the aortic valve’s place. The new valve expands and pushes out the leaflets in the old valve and then takes over the regulation of blood flow.

Key difference is against open-heart surgery
What, however, is of significance is the major difference between the minimally invasive approach of TAVI as compared to the longer-standing practice of open heart surgery or sternotomy, during which the chest is surgically separated or opened. There are several pathways to enable percutaneous access via a catheter: transfemoral (via the upper leg), subclavian (under the collar bone), transapical (between two ribs, through the heart wall) and direct aortic (based on a minimal incision into the aorta). Recent efforts also aim at transcervical access.

Access is generally assessed through angiography or contrast MDCT. The TAVI procedure can be conducted with fluoroscopic guidance alone under local anaesthesia.

The French connection
TAVI was first described as ‘Percutaneous Transcatheter Implantation of an Aortic Valve Prosthesis.’ It was developed and demonstrated in France in 2002, when a team at Rouen’s Hopital Charles Nicolle implanted a balloon-expandable stent with three bovine pericardial leaflets in the heart of a 57-year old patient.

There are longer French links to this clinical area. TAVI is indicated for severe forms of aortic stenosis, in which the opening of the heart’s aortic valve is seriously restricted - leading to a sharp fall in blood flow to the rest of the body, and the risk of blood backing up into the lungs. The earliest description of calcific aortic stenosis dates back to a 17th century French physician, Lazare Rivière.

The challenge of severe aortic stenosis
If untreated, survival rates in severe aortic valve stenosis are as low as 50% at two years and 20% at five years. The problem is especially pronounced in the elderly, for who valve replacement via open-heart surgery is not advised due to heavy collateral risks. Overall, 2% of over-65s and 3% of over-75s have the disease, but they are also at high risk from open heart surgery. As a result, in clinical practice, an estimated one out of three patients with severe aortic valve stenosis does not undergo surgery for replacement of the aortic valve. Apart from age, other factors for this include left ventricular dysfunction, and the presence of a variety of coexisting conditions which impact adversely on outcomes.

Pharmacological treatment offers little, if any, respite. The first candidates to be investigated were statins, with a 2007 study on rosuvastatin suggesting some slowing in the progress of aortic stenosis. However, a large randomized controlled trial in 2008 failed to confirm its findings. On their part, ACE inhibitors and angiotensin receptor blockers appear to only offer hope for milder forms of stenosis, due to left ventricular remodelling, while bisphosphonates were discarded in 2012 after a
3-year retrospective analysis of 801 female patients revealed no benefits.

**TAVI only therapy to prolong survival**

TAVI has now become “the only therapy in any aortic stenosis patient group demonstrated to prolong survival in a randomized trial” and is increasingly accepted as the standard of care for patients incapable of undergoing open-heart surgery. National observational registries, for example, in France and the UK, also broadly supported these conclusions.

**Clinical trials offer hope as well as reason for caution**

TAVI has been the subject of two major clinical trials. The first, called PARTNER (Placement of AoRtic TraNscathetER Valves), was sponsored by Edwards Lifesciences. It evaluated patients with severe aortic stenosis who were deemed incapable of supporting surgery. 173 underwent TAVI, while balloon aortic valvuloplasty was performed on another 150. The results, released in 2010, were persuasive, with one-year death rates of 30.7% for TAVI against 50.7% for valvuloplasty. Nevertheless, it was also clear that there were risks associated with TAVI, in terms of 30-day death rates of 5.0% compared with 2.8% for balloon valvuloplasty.

PARTNER also evaluated TAVI against surgical replacement. 699 high-risk patients with severe aortic stenosis were randomly assigned to two groups, one for TAVI, and the other for surgical replacement. The trials were launched at 21 centres in the US, 3 in Canada and 1 in Germany. In May 2012, PARTNER investigators reported similar rates of survival, reduction in symptoms and valve hemodynamics in both groups after a two-year period.

Short-term risks were, however, evident from an earlier, June 2011 report. PARTNER investigators noted that a month after the procedures, major vascular complications were significantly more frequent with TAVI than surgical replacement (11.0% vs. 3.2%) although differences between the two groups narrowed within a year. The key 30-day risk with TAVI appears to be neurological. The number of transient ischemic attacks and strokes was almost double, affecting about 9% of patients undergoing TAVI against less than 5% for the surgical replacement group, with an especially high incidence within a week of intervention.

On the other hand, TAVI was associated with less than half adverse events like major bleeding and new-onset atrial fibrillation (9.3% vs. 19.5%, and 8.6% vs. 16.0%, respectively).

A more recent randomized trial involves 795 patients at 45 centres in the US to evaluate TAVI against surgical intervention, and is sponsored by Medtronic. In May 2014, investigators reported death rates at one year of 14.2% for TAVI compared to 19.1% for surgery (see also page 12). More crucially, unlike PARTNER, preliminary analyses appear to indicate “no increase in the risk of stroke.”

In spite of the generally encouraging results above, there is clearly a need for more research before TAVI is expanded. The key complications of TAVI are stroke, vascular complications, paravalvular regurgitation, cardiac-rhythm disturbances and bleeding.

One of the most contentious topics for debate is defining the preferred access route for particular patients. Though transfemoral routes seem to be the most commonly used, many physicians say it is impossible to state that one route is better than another because of the absence of comparative trials.

**More experience with TAVI needed**

Clearly, more experience with TAVI is needed to give answers to these questions. The key sources of information expected to continue are PARTNER and the Medtronic-sponsored trials discussed above, which are scheduled to last until 2017. These will also no doubt provide answers to another major question, namely durability and longevity of the prostheses. “To date, late leaflet failure has been exceedingly rare and in vitro accelerated wear testing is consistent with durability comparable to surgical bioprostheses.”

Apart from national registries, a group called the Valve Academic Research Consortium (V ARC) is also helping efforts to evaluate TAVI. V ARC has come up with specific definitions to facilitate the reporting of clinical outcomes for patients undergoing TAVI. The Consortium consists of representatives from several academic research organizations, professional surgery and cardiology societies, members of the FDA, as well as experts affiliated with leading medical device companies; its findings are reported by leading cardiology journals including the European Heart Journal and the Journal of the American College of Cardiology.

**Potential of TAVI remains vast**

In contrast to its potential, the use of TAVI still remains low. According to a report published last year, there are approximately 189,836 TAVI candidates among the above-75s in Europe and 102,558 in North America, with the number growing every year by 17,712 in Europe and 9,189 in North America.

For the period 2007-2011, a study on 11 European countries found that only 34,317 patients had undergone TAVI. There was also significant variation between different countries (ranging from 6.1 per million individuals in Portugal in 2011, to 88.7 in Germany). One reason was the difference in per capita healthcare spending, with richer countries tending to spend more on TAVI. The second explanation was the existence of TAVI-specific reimbursement systems, which were associated with higher use.

Overall, the study found that the weighted average TAVI penetration in Europe was just 17.9%, or accessing a mere sixth of the potential patient population. Usage of TAVR in the US is likely to be even less. The procedure was only approved by the FDA in November 2011, for inoperable patients and in October 2012 for patients at high surgical risk.

**New products in pipeline**

At present, global sales of TAVI products are dominated by US vendors Edwards Lifesciences and Medtronic. The former produces Sapien, a balloon-expandable tubular metal stent with a tri-leaflet valve fashioned out of bovine pericardium, while the competing Medtronic product, CoreValve, is a self-expanding valve prosthet consisting of a nickel-titanium frame with a tri-leaflet valve fashioned out of porcine pericardium mounted within. In 2013, Sapien accounted for 60% of global sales and CoreValve for 35%.

Germany’s JenaValve has a growing presence in Europe, with a product based on a porcine root valve sewn onto a Nitinol self-expanding stent and fitted with an outer porcine pericardial patch. Several other products are in clinical evaluation, among others from US medical device vendors Boston Scientific, St. Jude Medical, HLT and Direct Flow Medical. European contenders include Symetis in Switzerland, which begun trials in 2013. In general, most aim to “reduce delivery catheter diameter, improve ease of positioning and sealing, or facilitate repositioning or removal.” Many are based, like JenaValve, on self-expanding nitinol.
How SCHILLER is redefining heart rate variability (HRV) analysis

The prognostic value of heart rate variability (HRV) was already established at the beginning of our era in China. Physiological research and technological developments then provided the means for using HRV in experimental and clinical settings.

SCHILLER is now offering a unique tool for the diagnosis of autonomic dysfunctions, based on an uncompressed graphical representation of the heart rate. Autonomic nervous system disruptions go hand in hand with reduced HRV, the heart being a central target organ of the autonomic nervous system. The heart rate is also an important control parameter for many regulatory processes in the human body and provides a large amount of information on the functioning and status of these regulatory systems.

In order to identify the relevant information, a statistical analysis of the heart rate is performed. This includes a spectral analysis. The difficulty lies in processing the data, in part highly compressed, resulting in loss of valuable information. An attempt is thus made at describing the status of an extremely complex system (i.e., the autonomic nervous system) with only a few parameters. One should however bear in mind that the whole information is actually just contained in the 120'000 RR intervals over 24 hours.

The Fire of Life
SCHILLER has developed the “Fire of Life”, an uncompressed graphical representation of the entire information contained in a 24-hour heart rate signal. This approach enables a highly differentiated representation of the functions of the autonomic nervous system, paving the way for a wide range of clinical applications:

- Assessment of autonomic balance: ratio of sympathetic to parasympathetic activation / 24-hour rhythm
- Analysis of sleep architecture / sleep quality / respiratory events
- Generation of a baroreceptor graph / status of blood pressure regulation
- Stress and recovery management (burn-out prevention)
- Quantification of an autonomic dysfunction, e.g. diabetes mellitus

A wide variety of applications
Many different clinics and prominent physicians already use SCHILLER’s HRV analysis program. One of them is Dr. med. René Hefit, specialist for internal medicine, psychosomatics SAPP, medical director and head physician at the SGM Clinic Langenthal. According to Dr. Hefit, in addition to its high resolution and innovative technology, a major benefit of SCHILLER’s tool is that it enables a differentiated evaluation of the regulatory capacity of the autonomic nervous system, and thus of the whole body. This HRV analysis can thus be applied to such different medical specialties as internal medicine, cardiology, occupational medicine, psychiatry and psychosomatics, as well as sleep medicine. The patient’s ability to recover at night is a crucial indicator of healthy regulatory processes. In the daytime, the analysis focuses on the body’s regulatory capacity under everyday stress.

Thanks to the clear data representation in the spectrogram, even patients with no medical knowledge are able to read the results and identify signs of progress.

The following HRV case study, courtesy of Dr. med. Albrecht Seiler M.Sc. (specialist FMH for internal medicine, senior physician of psychosomatic outpatient clinic), illustrates the benefits mentioned above: a 43-year-old woman with chronic fatigue syndrome and depression, under psychosocial stress, probably post-traumatic stress, eating disorder, etc.

HRV reference values

<table>
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<th>Point in time</th>
<th>10 months later</th>
</tr>
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<tbody>
<tr>
<td>average HR</td>
<td>93/min</td>
</tr>
<tr>
<td>diurnal HR</td>
<td>98/min</td>
</tr>
<tr>
<td>nocturnal HR</td>
<td>85/min</td>
</tr>
<tr>
<td>SDNN</td>
<td>80.0 ms</td>
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<tr>
<td>PNN50</td>
<td>1.5 %</td>
</tr>
<tr>
<td>RMSSD</td>
<td>15.4 ms</td>
</tr>
</tbody>
</table>
Initial findings

Heart rate trend

RR histogram

HRV spectrogram

Scatterplot

Progression 10 months after clinical stabilization

Heart rate trend

RR histogram

HRV spectrogram

Scatterplot
Escalating costs make new business model unavoidable

There is still no consensus about where hospitals should be positioned in the healthcare service spectrum of the future. However, it is widely accepted that relying wholly on growth in patient numbers, bed-days and on more expensive equipment, procedures and physicians has become untenable.

Some hospitals are enthusiastically embracing change. Many more remain cautious. Few however doubt that spiralling healthcare costs will force hospitals to be funded and operated via new business models, more akin to that of other economic sectors.

All things to all people, all the time

Innosight, a healthcare consultancy founded by Harvard Business School Professor Clay Christensen, puts the problem in perspective. In marked contrast to general hospitals, few organizations “define their business as delivering every type of service to everybody all the time.” One reason, he says, is history. In the past, transport was expensive and difficult, while physicians were relatively cheap. It therefore made sense to centralize care. Today, the situation has reversed.

Prof. Christensen explores these issues in depth in a bestseller ‘The Innovator’s Prescription: A Disruptive Solution for healthcare’, co-authored with Jerome Grossman MD and Jason Hwang MD. Modern hospitals, the book finds, are “extraordinarily capable” of dealing with very complicated problems, but have overshot what patients can use for straightforward disorders. These ever-new capabilities are hugely expensive. However, calculating their real cost-effectiveness is impossible since market-based metrics for performance and customer-centredness are absent in the modern healthcare system.

In a review of the book, business journal ‘Forbes’ notes that “were it not for today’s tangled web of subsidies, administered prices and regulations that constrain competition,” today’s general hospitals would be economically unviable.

Status quo unsustainable

The pressure for radical change peaked, since some years. In 2012, a healthcare CEO Summit in the US emphasized that “no one” believed the status quo was sustainable. One columnist noted that industry is being forced, “for the first time in decades, to compete for market share based on performance.” Indeed, the term ‘burning platform’ - a description for an untenable status quo - has become commonplace in references to hospitals in the US.

The tipping point is expected to be reached in a few years, catalysed by President Obama’s Affordable Care Act (ACA), which is spurring the formation of ‘medical homes’ and ‘accountable care organizations’ (ACOs). The goal of what has come to be known as ‘Obamacare’ is to provide genuine value, by both improving healthcare quality and slowing the unremitting rise of healthcare spending in the US.

ACOs, on their part, have the potential to “revolutionize the hospital business model as payment reform evolves from fee-for-service to fee-for-value,” according to Leavitt Partners, an influential consultancy founded by a former US Secretary of Health and Human Services.

Europe: of politics and entitlement

The situation in Europe is somewhat different. Europe’s traditions of universal public healthcare stand in marked contrast to the US, which “never enacted national health insurance.” As a result, healthcare in Europe is seen as an entitlement. This embeds a cardinal principle of equity of access to hospitals for all citizens, regardless of income, and has encouraged large, public, general hospitals.

The European hospital model is also innately political, and “political involvement in decisions about hospitals” is tough to escape, as a recent Healthcare Summit found. Nevertheless, in spite of “big questions” about the future of hospitals, there is “surprisingly little public debate,” along with “insufficient policy analysis” on the subject.

In spite of a “lot of rhetoric” in Europe about new models, the Summit found that steps to reform, even in market-oriented countries like Britain, was to simply “make the old model of hospital provision bigger.”

European command-and-control system may offer some advantages

The role of political factors is central to understanding differences in Europe vis-a-vis the US.

An evaluation by the European Obser-
vatory on Health Systems in 2011 found that Europe's public hospitals have been operated "according to a strict command-and-control model," with funding by the State and administration, and political appointees implementing decisions made by the 'owners,' namely governments. This, it found, has made it tough to separate operational decisions in a hospital from the priorities of politicians. There may however be an unexpected and somewhat ironical corollary to such a situation. The direct political role in the European hospital system may mean it is more strongly positioned than the US to embrace the next wave of change. Such a process has in fact begun several decades ago.

**Operational reforms date to late 1980s**

In 1997, the World Health Organization published 'European healthcare Reform: Analysis of Current Strategies.' The book notes that major structural reforms in Europe's hospital business model date to the late 1980s. Though driven by governments, they drew directly on management strategies developed for private businesses. The private sector inspiration has gone to the heart of hospital reforms in Europe. The European Observatory on Health Systems divides decision making at public hospitals into three layers. Governments (and, increasingly the European Union), it finds, are key players at the macro-level, determining the basic structure, organization and finance of the healthcare system, and of hospitals. There is, however, significant autonomy at the micro-level, encompassing clinical and personnel management as well as typical support services. What is significant is the middle layer - between the macro- and micro-levels - which the Observatory calls the 'meso level.' This is where all important organizational policy decisions are made. Meso-level decision-making at public hospitals generally lies today in a separate supervisory board and the chief executive officer.

The meso-level governance structure in Europe in fact, as the Observatory concludes, already resembles that of a private company.

**In-patient growth capped earlier in Europe**

Since the late 1980s, Europe has seen in-patient spending growing slower than total health spend - a key indicator of the withering away of the traditional general hospital model. Once again, the reason is political, according to a report by the European Hospital and Healthcare Federation (HOPE). The role of the State as principal paymaster has allowed for quicker cost control against increased efficiency and productivity in hospitals. In contrast, reduced utilization is new in the US. In August 2013, a report highlighted the first significant decline in national in-patient utilization rates, and correlated this with the market’s shift to value-based care.

The impact of the drop in in-patients is however likely to be dramatic. For one commentator, the trend indicates an inflexion point in development of the US business model, with healthcare transformed "from a hospital-centric to a population-centric model," delivering value.

**Conflation of two business models: the costs of complexity**

A true measurement of value would be the Holy Grail of healthcare reforms. However, the path to it is hardly straightforward.

As explained by The Christensen Institute (set up by Harvard's Prof. Clay Christensen), modern hospitals effectively confute two business models - "a Solution Shop and a Value-Adding Process". Solution Shops involve doctors diagnosing and treating patients iteratively and intuitively. Such artisanal processes were indispensable in earlier stages of medicine, but are rarely required today. Like other businesses, standardization and technology (in equipment and information use) allow healthcare today to be a Value-Adding Process - by which consistent inputs and consistent processes deliver consistent results. The costs and profitability of the two models are very different. Payment for Solution Shops must be based on fee-for-service, since a host of (unknown) factors (can) impact outcomes. In contrast, Value-Adding Businesses sell outputs for a fixed price, and guarantee results. The Institute observes that hospitals may "successfully employ either business model, but by combining the two, (they) create massive costs of complexity." These costs are however impossible to break down. In both the US and Europe, reimbursement systems price both models as fee-for-services, with overheads shared out to make the sums add up.

The result is that real value cannot be measured.

**Deconstructing the future: results can be dramatic**

The way forward, for Prof. Christensen, is to deconstruct hospitals into the two different business models, if necessary by creating hospitals-within-a-hospital. Within these units, tasks must be organized differently, and cost accounting and pricing firewalled. Such a process has indeed already begun. Some of the examples cited by Prof. Christensen, published in the 'Forbes' review of the "The Innovator's Prescription," are persuasive.

Unanticipated complications requiring additional surgical intervention arise in 5-10% of cases in typical US hospitals, compared to 0.5% in facilities operating on the new deconstructed business model.

Cost reductions, too, are dramatic. For example, a four-day hernia repair at "a truly country-club-like setting" in a 'deconstructed' hospital costs 30% less than at an outpatient facility in a general hospital. Cases from Europe too are assessed, with equally impressive results. For example, The Coxa Hospital in Finland reports complication rates of just 0.1%, compared to 10-12% for the 64 general hospitals in the country.

**Privatization not part of next healthcare reform, business models are**

Due to its political control systems, and longer history of discarding the in-patient treatment model, Europe may well be quicker to implement another shake-up of its hospitals. Rather than contentious questions on privatization, the next step will be to change the business model by which hospitals operate, not who 'owns' them.

**Shape of the future: new no-frills hospitals**

The best instance of a new and genuinely business-like hospital model is however in the US, which has witnessed something inconceivable less than a decade ago - the launch of the first no-frills hospital chain called Steward Health. Its CEO says he "created the ultimate business model for the age of Obamacare." A no-frills hospital is hardly going to be all things to all people all the time. It is already turning the traditional general hospital model upside down.
Hospital quality: A product of good management as much as good treatment

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ABSTRACT: In Norway, as in most countries, the demands placed on hospitals to reduce costs and improve the quality of services are intense. Although many say that improving quality reduces costs, few can prove it. Furthermore, how many people can show that improving quality improves patient satisfaction? Diiokyheimmet Hospital in Norway has designed and implemented a hospital management system based on lean principles and the PDCA (Plan-Do-Check-Act) quality circle introduced by WE Deming (Deming 2000). The results are quite impressive with improvements in quality and patient satisfaction. The hospital also runs at a profit.

The effects of preventive mental health programmes in secondary schools

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ABSTRACT: The author wanted to test the effects of preventive mental health programmes in schools and established a longitudinal study with a test group and a control group, using Solomon's method. Data was collected through questionnaires prior to intervention and at 1, 6, 12, and 24 months after the intervention. The size of the effect on the various indices were estimated in terms of (a) differences in improvement of total percentage scores and (b) Cohen's d. From t0 to t1, t2 and t3 the intervention group showed significantly greater progress in six out of seven knowledge indexes, and 12 months later we found significant effects on the level of mental health problems.
Health and health systems performance in the United Arab Emirates

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ABSTRACT: In the early 2000s, the United Arab Emirates (UAE) had good levels of health and its health system was ranked twenty-seventh in the world by the World Health Organization. Since that time, to further improve the situation and to address cost and quality challenges, the UAE has embarked on an ambitious programme of health system reform. These reforms have focused on the introduction of private health insurance and encouraging the growth of private health provision.
In these areas there have been impressive achievements but while it is too early to say whether these reforms are succeeding some anxieties are emerging. These include the rising cost of services with no obvious improvement in outcomes, a growth in hospital provision that may not best meet the needs of the population, rising levels of chronic disease risk factors and an insufficient focus on public health services, public health leadership, health workforce planning and research.

Testing payment-for-performance in French acute care hospitals: A point of view from the French Federation of Comprehensive Cancer Centres

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ABSTRACT: In 2004, France began a diagnosis related groups-based financing system for both public and private acute care hospitals. France opted for a mix of financing systems with over 80% of funding based on diagnosis related groups (DRG). After seven years of DRG-based financing, the French government is testing a payment-for-performance system in acute care hospitals, based on the USA experience. France is currently fine-tuning this model. So far, observations have raised doubts as to whether this approach will improve the value of health care in French hospitals: the budget appears insufficient, the quality of the available indicators is poor and the model is complex. However, it has focused attention on the question of health care quality.

The CASSANDRE Project: Automated alerts for optimal coding of diagnosis and interventions

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ABSTRACT: As of 1 January 2012, all Swiss hospitals have had to charge acute somatic care hospitalization according to the Swiss disease related group (DRG) System. In this system, hospital bills are based on the discharge summaries. Coders analyze these in order to identify diagnostic and interventional codes. These codes are used by the system grouper to determine a specific DRG code and cost-weight. The amount to be charged per episode is based on this cost-weight. Since acute care billing relies on discharge summaries and knowing that these are incomplete, our aim was to improve the completeness of these documents by automatically detecting pathologies that should have been coded and charged. We also aimed to help improve the selection of the main diagnosis. We have implemented algorithms for the automatic detection of pathologies that directly inform the coders whilst bypassing the physician. Final validation of the new pathologies remains with the physician. Our results are very encouraging from a financial point of view.
Making medical and research strategic choices: A case study from Antwerp University Hospital

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ABSTRACT: In the early 2000s, Antwerp University Hospital witnessed drastic changes to its circumstances: large general hospitals in the area were merged and the university hospital was privatized and separated from the University of Antwerp, which is primarily a teaching university. In light of these developments, Antwerp University Hospital adopted a strategy of transforming itself into a more specialized centre of expertise. Three fields of specialization were selected by the management as centres of excellence, based on clinical and scientific indicators. In a renewed synergy with the university, a clinical research centre was established to direct joint translational research. The core facilities for translational research were also selected in limited numbers based on strengths and opportunities. After six years, the centre had demonstrated that small, more specialized institutions can also be successful.

Disaster resilient hospitals: An essential for all-hazards emergency preparedness

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ABSTRACT: Hospitals and health facilities play a crucial role in providing health services for their communities, in particular during crises and emergencies. Well prepared and disaster resilient hospitals are therefore essential to be able to meet the increased demands for life saving services in large scale emergencies, which can quickly overwhelm the surge capacity and functional safety of the hospitals and of the health system at large.

The World Health Organization (WHO) has developed tools like the Hospital Safety Index, the WHO Regional Office for Europe’s Hospital emergency response checklist and Toolkit for assessing health-system capacity for crisis management to assist emergency managers to assess the structural and functional safety of health facilities, to enhance emergency preparedness to respond effectively to the most likely disaster scenarios and to strengthen overall health system preparedness with an all-hazards approach through fostering the crisis management capacities of hospitals.

This article briefly introduces these WHO tools and provides an overview of their implementation and roll out in Member States of the WHO European Region.

Global health care trends and innovation in Korean hospitals

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ABSTRACT: Health care is one of the most significant global issues. The Korean health care system, which has both good and bad features, is grabbing international attention because of its cost effectiveness. However, it is also facing a lot of challenges such as a rapidly ageing population, increases in expenditure and too many competing acute hospitals. Therefore, many Korean hospitals have been trying to find innovative ways to survive. This article introduces some possible answers such as expansion and consolidation strategies, quality assurance, converging ICT and health care, attracting foreign patients, research-driven hospitals, public-private partnerships and a focus on service design and patient experience.
TITRES EN FRANÇAIS

- La qualité hospitalière résulte autant d’une bonne gestion que de bons traitements
- Effets de la prévention de la santé mentale dans les écoles secondaires
- Santé et performances des systèmes de santé dans les Emirats Arabes Unis (UAE)
- Premier test de paiement à la prestation dans les hôpitaux français de soins actifs: le point de vue d’une Fédération française de centres intégrales de cancer.
- Projet CASSANDRE: alertes automatisées pour codification optimale du diagnostic et des soins reçus
- Des choix stratégiques pour la médecine et la recherche: l’étude de cas du CHU d’Anvers
- Hôpitaux à l’épreuve des catastrophes : indispensables pour être prêts à affronter toutes les situations d’urgence
- Tendances et innovations à l’échelle mondiale des hôpitaux coréens

TITULOS EN ESPAÑOL

- La calidad hospitalaria: un producto de buena gestión tanto como de buen trato
- Los efectos de la salud mental preventiva en las escuelas secundarias
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- Las decisiones estratégicas en los campos médicos y de investigación: estudio de un caso del Hospital Universitario de Amberes
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- las tendencias y la innovación a la escala mundial de los Hospitales de Corea

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Internet use can help ward off depression among elderly

It's estimated that as many as 10 million older Americans suffer from depression, often brought on by feelings of loneliness and isolation. However, new research — a project that followed the lives of thousands of retired older Americans for six years — found that Internet use among the elderly can reduce the chances of depression by more than 30 percent. “That’s a very strong effect,” said Sheila Cotten, a Michigan State University professor of telecommunication, information studies and media who led the project. “And it all has to do with older persons being able to communicate, to stay in contact with their social networks, and just not feel lonely.”

Cotten and her colleagues analyzed the data collected by the Health and Retirement Survey, a survey collecting information from more than 22,000 older Americans every two years. This particular sample included more than 3,000 respondents. “This is one of the largest and most comprehensive surveys of its kind,” Cotten said. Other smaller studies have been inconclusive about the role Internet use and technology, in general, play in helping people overcome depression.

One way in which this study was different is it took into consideration the subjects’ depression levels before they began using the Internet. The researchers wanted to know if past depression affected current depression. What they found is yes, some people did remain depressed despite Internet use, although it wasn’t substantial. “Internet use continues to reduce depression, even when controlling for that prior depressive state,” Cotten said.

The researchers also confirmed what was found in other studies that for older people who live alone, Internet use had a greater impact on their levels of depression. “This study makes significant contributions to the study of Internet use and depression in the older, retired population,” Cotten said.

She said it all comes down to how you choose to use your technology. As with most things in life, moderation is best. “If you sit in front of a computer all day, ignoring the roles you have in life and the things you need to accomplish as part of your daily life, then it’s going to have a negative impact on you,” Cotten said. “But if you’re using it in moderation and you’re doing things that enhance your life, then the impacts are likely to be positive in terms of health and well-being.”

Source: Michigan State University
http://tinyurl.com/q5SoRsd

New technique detects microscopic diabetes-related eye damage

Indiana University researchers have detected new early-warning signs of the potential loss of sight associated with diabetes. This discovery could have far-reaching implications for the diagnosis and treatment of diabetic retinopathy.

“We had not expected to see such striking changes to the retinas at such early stages,” said Ann Elsner, professor and associate dean in the IU School of Optometry and lead author of the study. “We set out to study the early signs, in volunteer research subjects whose eyes were not thought to have very advanced disease. There was damage spread widely across the retina, including changes to blood vessels that were not thought to occur until the more advanced disease states.”

These important early-warning signs were invisible to existing diagnostic techniques, requiring new technology based on adaptive optics. Stephen Burns, professor and associate dean at the IU School of Optometry, designed and built an instrument that used small mirrors with tiny moveable segments to reflect light into the eye to overcome the optical imperfections of each person’s eye.

“It is shocking to see that there can be large areas of retina with insufficient blood circulation,” he said. “The consequence for individual patients is that some have far more advanced damage to their retinas than others with the same duration of diabetes.”

Because these changes had not been observable in prior studies, it is not known whether improved control of blood sugar or a change in medications might stop or even reverse the damage. Further research can help determine who has the most severe damage and whether the changes can be reversed.

Diabetes has long been known to damage the retina, the irreplaceable network of nerve cells that capture light and give the first signal in the process of seeing. This damage to the retina, known as diabetic retinopathy, is the leading cause of vision loss in the U.S. for individuals under the age of 75. The changes to the subjects in the study included corkscrew-shaped capillaries. The capillaries were not just a little thicker, and therefore distorted, but instead the blood vessels had to grow in length to make these loops. This is visible only at microscopic levels, making it difficult to determine who has the more advanced disease among patients, because these eyes look similar when viewed with the typical instruments found in the clinic. Yet, some of these patients already have sight-threatening complications.

Diabetes also is known to result in a variety of types of damage to capillaries, the body’s smallest blood vessels. The more commonly known changes, such as microaneurysms along the capillaries, were also present in the study, but seen in much greater detail. In addition to the corkscrew appearance and microaneurysms, along with the hemorrhages in the later stages of the disease, there is also a thickening of the walls of blood vessels. This is thought to be associated with poor blood flow or failure to properly regulate blood flow.

In the study, patients with diabetes had significantly thicker blood vessel walls than found in controls of similar ages, even for relatively small diameter blood vessels. The capillaries varied in width in the diabetic patients, with some capillaries closed so that they no longer transported blood within the retina. On average, though, the capillaries that still had flowing blood were broader for the patients with diabetes. These diabetic patients had been thought to have fairly mild symptoms. In fact, the transport of oxygen and glucose to the retina is already compromised.

Previous diagnostic techniques have been unable to uncover several of these changes in living patients. Simply magnifying the image of the retina is not sufficient. The view through the imperfect optics of the human eye has to be corrected.

The instrument designed by Burns takes advantage of adaptive optics to obtain a sharp image, and also minimized optical errors throughout the instrument. Using this approach, the tiny capillaries in the eye appear quite large on a computer screen. These blood vessels are shown in a video format, allowing careful focus and observation of blood cells moving through the blood vessels. After imaging each patient’s eye, highly magnified retinal images are then pieced together with software, providing still images or videos.

Indiana University
http://tinyurl.com/o5Chjk9
Innovative strategy to facilitate organ repair

A significant breakthrough could revolutionise surgical practice and regenerative medicine. A team led by Ludwik Leibler from the Laboratoire Matière Molle et Chimie (CNRS/ESPCI Paris Tech) and Didier Letourneur from the Laboratoire Recherche Vasculaire Translantonnelle (INSERM/Universités Paris Diderot and Paris 13), has just demonstrated that the principle of adhesion by aqueous solutions of nanoparticles can be used in vivo to repair soft-tissue organs and tissues. This easy-to-use gluing method has been tested on rats. When applied to skin, it closes deep wounds in a few seconds and provides an esthetic, high quality healing. It has also been shown to successfully repair organs that are difficult to suture, such as the liver. Finally, this solution has made it possible to attach a medical device to a beating heart, demonstrating the method’s potential for delivering drugs and strengthening tissues.

In an issue of Nature published in December last year, a team led by Ludwik Leibler presented a novel concept for gluing gels and biological tissues using nanoparticles. The principle is simple: nanoparticles contained in a solution spread out on surfaces to be glued bind to the gel’s (or tissue’s) molecular network. This phenomenon is called adsorption. At the same time the gel (or tissue) binds the particles together. Accordingly, myriad connections form between the two surfaces. This adhesion process, which involves no chemical reaction, only takes a few seconds. In their latest, newly published study, the researchers used experiments performed on rats to show that this method, applied in vivo, has the potential to revolutionize clinical practice.

In a first experiment, the researchers compared two methods for skin closure in a deep wound: traditional sutures, and the application of the aqueous nanoparticle solution with a brush. The latter is easy to use and closes skin rapidly until it heals completely, without inflammation or necrosis. The resulting scar is almost invisible.

In a second experiment, still on rats, the researchers applied this solution to soft-tissue organs such as the liver, lungs or spleen that are difficult to suture because they tear when the needle passes through them. At present, no glue is sufficiently strong as well as harmless for the organism. Confronted with a deep gash in the liver with severe bleeding, the researchers closed the wound by spreading the aqueous nanoparticle solution and pressing the two edges of the wound together. The bleeding stopped. To repair a sectioned liver lobe, the researchers also used nanoparticles: they glued a film coated with nanoparticles onto the wound, and stopped the bleeding. In both situations, organ function was unaffected and the animals survived.

“Gluing a film to stop leakage” is only one example of the possibilities opened up by adhesion brought by nanoparticles. In an entirely different field, the researchers have succeeded in using anoparticles to attach a biodegradable membrane used for cardiac cell therapy, and to achieve this despite the substantial mechanical constraints due to its beating. They thus showed that it would be possible to attach various medical devices to organs and tissues for therapeutic, repair or mechanical strengthening purposes.

Source: Inserm
http://tinyurl.com/k93celr

Boomers’ dark secret: booze

By 2015, all baby boomers will be 50 or older. In an editorial for the Journal of Addictions Nursing, Savage writes that, unlike members of previous generations, many of these individuals have been using alcohol (and other drugs) for their entire adult lives. There are consequences.

“Alcohol is a dirty drug, and it causes all kinds of long-term problems,” Savage says. Quoting a 2013 National Institute on Alcohol Abuse and Alcoholism report, she says alcohol contributes to increased risk for more than 65 diseases and conditions, including pancreatic, breast, and ear, nose, and throat cancers, liver disease, injuries, and cognitive impairment.

“It’s an equal opportunity problem that cuts across socioeconomic and gender lines,” adds Deborah Finnell, DNS, PMHNPC, BC, CARN-AP, associate professor in the Department of Acute and Chronic Care at JHSON. “When people come in ... the best practice is to ask questions related to alcohol, tobacco, and other drug use. There are reliable and valid measures -- very simple measures -- that can be used” to screen for these issues. Unfortunately, she says, “those are not being widely implemented.” Savage says, “We tend not to think about the older patient in front of us as somebody whose alcohol use may be putting them at risk, and we’re uncomfortable asking the cute grandmother or the stately older man about their alcohol use.”

Nancy Hodgson, PhD, RN, assistant professor in the JHSON Department of Acute and Chronic Care, emphasizes the importance of making the effort. That older patient could be experiencing “bereavement, isolation, loneliness, an underlying depression or pain, so they’re self-medicating as a numbing agent, using alcohol.”

The system incentivizes an acute-care approach when what is needed takes more time, says Laura N. Gitlin, PhD, professor and director of the Center for Innovative Care in Aging at JHSON. “Insurers, what are they paying for? They’re paying for a six-minute visit. They’re paying for tests. These aren’t tests. They are ways of talking to people and coming up with strategies that don’t require a chest X-ray or an MRI.”

One useful approach to screening and intervention is SBIRT (for Screening, Brief Intervention, and Referral to Treatment), which identifies patients with risky substance use, engages them in a brief conversation about that behaviour, and refers those who need it to further treatment.

Finnell says this kind of screening should be standard practice, just like taking a patient’s blood pressure, pulse, and weight. She describes the brief intervention as a five- to 10-minute conversation that starts with “asking for permission to talk about it. Because of how society views alcohol and other drug use, it’s important to put people at ease.”

Hodgson says the nurse is the perfect person to start this conversation. “They have the rapport with the patients, they have the key assessment skills necessary to pick up the subtle changes -- things like fall history, or unexplained lethargy or confusion -- and dig deeper.”

“Older adults are probably more likely to talk to the nurse about more sensitive issues than they would perhaps the physician,” Hodgson adds. Ultimately, Finnell says, the goal is for nurses to be able to identify every patient with risky substance use and to raise awareness. Patients “may say, ’I’m going to continue to drink at the same level I’ve been drinking.’ But if I can get them, at least, to begin to think about that, then I see that as a real success.” And if they agree they should decrease their alcohol use, she
Says, “then that’s a greater success.” Savage and Finnell are part of a team working on a Substance Abuse and Mental Health Services Administration-funded training grant to integrate more content about alcohol and drugs into the graduate curricula to prepare nurses to meet this challenge. (For a current study, Finnell has developed a 20-minute video illustrating how alcohol affects the brain. She hopes to use it with patients in primary care who are identified with at-risk alcohol use.) “We want for nurses who graduate from the Johns Hopkins School of Nursing to be leaders in the nation for moving this set of clinical strategies … across all healthcare settings, all populations, all settings,” Finnell says, adding that working nurses also need this education.

Science Daily
http://tinyurl.com/pxnn2bm

Stool guide, mobile app to speed up diagnoses of life-threatening liver condition in newborns

Fecal colour and consistency are well-known markers of digestive health in both children and adults, but paying attention to a newborn’s shade of stool can be a decided lifesaver in babies born with the rare, liver-ravaging disorder biliary atresia, commonly heralded by white or clay-coloured stool.

Yet new parents are rarely told to watch out for abnormalities in their baby’s stool. Now, pediatric gastroenterologists from the Johns Hopkins Children’s Center are on a mission to change that by tackling the problem on two fronts.

First, they have designed a simple, one-page stool colour guide that Procter & Gamble Baby Care will distribute for free to birthing centres nationwide. In addition, a free mobile app, developed for Johns Hopkins by HCB Health, uses colour recognition software to allow parents to snap photos of their baby’s stool and receive feedback within seconds. Parents then have the option of sending the photos to their pediatrician. The app also offers reminder notifications for stool-colour checks every two weeks between birth and 2 months of age, the critical window to diagnose the disease. However, the experts caution, the app is an educational, rather than diagnostic, tool and parents should consult a physician if they have any concerns.

Biliary atresia, which occurs in roughly one out of 14,000 newborns in the United States, is the leading cause of liver failure in children and the number one reason for liver transplantation in children. Simple interventions, like the stool colour chart and the mobile app, can greatly enhance recognition of abnormal stool and even make the difference between life and death in some cases of biliary atresia, the Johns Hopkins experts believe. A similar stool colour chart had a dramatic impact in Taiwan after it implemented the stool-colour card program nationwide. The approach led to faster diagnosis and improved the five-year survival rate by 33 percent — from 56 percent to 89 percent — according to a 2010 study.

The Johns Hopkins experts say neonatologists, primary care pediatricians and nurse practitioners who care for infants should educate parents about the importance of stool colour — either formally, by giving them a take-home stool colour chart, or informally, by merely talking to them about stool colour.

John Hopkins Medicine
http://tinyurl.com/pndfexg
European Congress of Radiology
ECR 2015
Vienna
March 4–8
Make a Splash!
ecr.myESR.org
Electronic platform for cross-facility cooperation

In Austria, as elsewhere, integrated healthcare plays a major role in the national healthcare strategy as laid down in the Austrian Healthcare Structure Plan. Long before the ELGA national EHR* scheme, two large hospital operators pioneered in exchanging patient data across institutions and regions.

Exchanging medical data electronically between healthcare providers is indispensable for patient-centric treatment across specialties and facility borders. In Austria, the implementation of a nation-wide electronic health record called ELGA is finally in full swing. By 2017, hospitals, physicians, care facilities and pharmacies are expected to meet the technical prerequisites for participation in ELGA. But the two largest private, non-profit hospital operators in Austria, the religious order hospital groups Barmherzige Brüder and Vinzenz Gruppe, did not want to wait that long.

Cross-institution cooperation

The Vinzenz Gruppe operates seven hospitals as well as other nursing, rehabilitation and convalescent facilities in Upper Austria and Vienna, while the Barmherzige Brüder operate seven hospitals in Salzburg, Upper Austria, Vienna, Burgenland, Carinthia and Styria. Many patients, especially chronic patients, use several different healthcare facilities with different operators in the course of their treatment. Easy and secure information exchange between these facilities is expected to improve quality of care and bring considerable advantages for patients. That is why in 2003 both groups started to cooperate in cross-institutional data exchange. By September 2012, thirteen hospitals of the Barmherzige Brüder and Vinzenz Gruppe were federated in a single electronic health network of religious order hospitals called “eGOR” (Elektronische Gesundheitsplattform der Ordensspitälter).

The cooperation started as a hospital partnership in Linz, Upper Austria. The local hospitals of both operators developed a platform for jointly accessing patient data and results in electronic form. This cooperation has led to very close coordination between departments of the two hospitals. The institutions reduced redundancies in the services provided and consolidated several units, e.g. laboratory, acute care admissions or catering, thus effectively increasing both efficiency and quality of treatment. As a result of this success, the two religious orders decided to expand their cooperation by creating a mutual electronic healthcare data platform for their religious order hospitals.

Patient benefits

“Patient benefits are central to our initiative for our ‘order ELGA,’ says Michael Heinisch, CEO of Vinzenz Gruppe. “The electronic health record used by the facilities of both religious orders ensures that unnecessary repeat examinations and other inconveniences for the patients are avoided.”

For implementing eGOR, both religious orders opted for the IHE infrastructure solution sense® from Siemens Healthcare. The scalable platform is suitable for cross-institutional and cross-sectoral networking of heterogeneous IT landscapes, and supports small healthcare networks, regional cooperations, and national medical care structures alike. The eHealth solution uses networking compliant with standards according to IHE specifications (Integrating the Healthcare Enterprise), interoperates seamlessly with the various hospital information systems of the facilities and also allows connection to province-specific eHealth platforms.

Secure exchange of patient data and results

eGOR enables the exchange of patient data among the hospitals and across federal provinces in compliance with data protection laws. It also provides the basis for connecting to the nationwide electronic health record ELGA which now for its part requires the use of IHE standards as well – not least based on the experiences with eGOR. Data exchange between multiple regions and the connection to the central patient index of ELGA have already been implemented successfully.

Treatment-relevant patient data from the respective hospital information systems (HIS) are published fully automatically on the network. Authorized staff can access required medical documents or DICOM images directly from their HIS. At the end of 2012, eGOR already contained over 1 million results, physician’s letters and other documents for more than 265,000 patients. To protect sensitive patient data, a stringent authorization system has been developed in cooperation with the Austrian Data Protection Commission. Data access requires both user authentication and patient consent. Access to released data is only possible within the context of the treatment, effective for a limited time only and logged accordingly.

Adolf Inzinger, Director of the Barmherzige Brüder Order Province Austria, sums up his assessment: “For the patients, eGOR means improved quality of care; for the healthcare system it provides financial relief.”

Siemens Healthcare Sector
http://www.healthcare.siemens.com/hospital-it
Schiller AG is celebrating its 40th anniversary

The company was founded in 1974 by Alfred E. Schiller, Dipl. Phys. ETH, as a one-man business. Schiller’s success took off with the launch of the smallest emergency electrocardioscope available at that time, the MINISCOPEx. Today, Schiller AG is a world-leading manufacturer and supplier of devices for cardiopulmonary diagnosis, defibrillation, and patient monitoring as well as software solutions for the medical industry. The group employs around 1000 people and has a global sales network.

For the past four decades, the company has been committed to the fight against sudden cardiac death, developing electrocardiographs with an integrated microcomputer for automatic ECG measurement and interpretation. This pioneering achievement led Schiller AG to become the leading ECG manufacturer as early as 1984. Nowadays, the automatic ECG analysis enables the early detection of heart disease. Physicians can thus protect many people of all ethnic groups from sudden cardiac death thanks to suitable therapies and rehabilitation measures. Should a cardiac arrest still occur, Schiller’s defibrillators can now help to resuscitate many patients.

In spite of the company’s continuous growth, size is not as important to Schiller AG as its strength. It relies on a motivated team, creativity, and openness to new ideas. The future of medicine is inextricably linked to networked and mobile solutions. In order to keep up with this trend, Schiller designs innovative, tailor-made solutions for small surgeries and university hospitals alike.

Schiller is not only committed to producing top-class equipment, but is also dedicated to raising awareness of sudden cardiac death. The numbers speak for themselves: in Switzerland alone, up to 10,000 people die each year of heart failure, i.e. approximately 25 per day. A comparison with the number of road deaths, less than one person per day, shows the urgent need for action. While billions are rightly invested in road safety, sudden cardiac death is mostly overlooked by politicians and society, but for a few exceptions.

Siemens Museum for Medical Technology in Erlangen

The Siemens Museum for Medical Technology held its grand opening last May in Erlangen. Occupying 400 square meters in all, the Siemens MedMuseum offers an overview of the development of medical technology, a field in which Siemens has played a key role for more than 160 years – from X-ray technology to laboratory diagnostics. Important innovations and their inventors are taken as examples, bringing home the history of medical technology to visitors in multimedia format from the field’s inception, in the mid-19th century, to the present day. The historic space once occupied by a machine shop dating to 1893 showcases selected pieces such as the first X-ray, computed tomography (CT), and magnetic resonance imaging (MRI) systems from Siemens while also providing background information and explaining how these technologies work. The Siemens MedMuseum also traces the development of the various companies that were predecessors of Siemens Healthcare. Throughout history, medical devices have been used to diagnose and treat disease, relieve pain, and find out more about the structure of the human body and how it works. Numerous advances in medical technology are closely associated with Siemens. “We are proud that our innovations have been helping to shape progress in medical technology for many decades,” says Prof. Dr. Hermann Requardt, Member of the Managing Board of Siemens AG and CEO Siemens Healthcare. The Siemens MedMuseum traces the development of the various technologies and tells the stories of pioneering figures. “They are the ones who, with their inventive spirit and drive, have made our business what it is today, over more than 160 years,” says Michael Sen, CFO Siemens Healthcare. It all started with Werner Siemens, who in 1844 put one of his inventions to use for medical purposes for the first time, using electricity to treat his brother Friedrich for tooth pain. Just three years later, Siemens teamed up with Johann Georg Halske to found Siemens & Halske, a Berlin-based company that produced electromedical equipment in addition to telegraphs. In Erlangen, Erwin Moritz Reiniger joined with Max Gebbert and Karl Schall to form the medical technology company Reiniger, Gebbert & Schall (RGS), which was to supply Wilhelm Conrad Röntgen himself – the discoverer of X-rays – with X-ray tubes not long afterward. The RGS factory’s historic machine shop, from 1893, is now home to the Siemens MedMuseum – just a few hundred meters from the present-day headquarters of medical technology at Siemens.

www.siemens.com/medmuseum

SOREDEX, PaloDEx Group Oy acquires Medical Universal, France

SOREDEX, PaloDex Group Oy has signed and closed the acquisition of Medical Universal, formerly part of Arseus, effective April 28, 2014. This acquisition brings together two business partners having a common history for over 20 years during which Medical Universal has represented SOREDEX leading dental imaging solutions DIGORA®, CRANEX® and SCANORA® in the French market through distributors and direct representation. Arseus decided in the beginning of this year to divest all of its remaining dental and medical activities, including Medical Universal, to focus on growing its core divisions. Medical Universal will become a part of SOREDEX sales and marketing organization. Medical Universal will continue its activities out of Lyon, France, and it will continue to work with its French distributors and customers supporting all SOREDEX products. The acquisition includes all Medical Universal employees. Mr. Thierry Armand will continue as General Manager for the company.

“We are very excited about the transaction that brings together two business partners with a common history for over 20 years,” says Tiina Holkko, VP/General Manager of SOREDEX. Our companies will continue to serve the dental market with great passion and first class products. We are all extremely dedicated to the industry and our customers, and believe that this acquisition strengthens our mission to improve clinical procedures and the workflow of the dental professional, confirms Thierry Armand, General Manager of Medical Universal.

SOREDEX designs, develops, manufactures and markets x-ray imaging systems, with an emphasis on innovative digital solutions. Operating worldwide, the company offers reliable and easy-to-use solutions that help clinicians focus on patient care. SOREDEX is based in Finland and is part of PaloDex Group Oy and Danaher.

www.soredex.com
atrial fibrillation detection, sleep apnea screening and the determination of the patient as a whole. This saves valuable time during arrhythmia analysis by showing patterns of irregular PR and QT intervals of 15,000 beats at a glance. Key advantages include the elimination of beat-by-beat or page-by-page review of Holter recordings. Early detection of atrial fibrillation and atrial flutter also helps reduce cost while improving patient care. The new technology allows preliminary assessment of the need for invasive diagnosis, therapy or surgery, as well as effective patient monitoring following surgery or ablation. Schiller’s medilog Holter system provides a comprehensive analysis of the patient as a whole. Besides atrial fibrillation detection, sleep apnea screening and the determination of the quality of life are also features of the system. Designed with feedback from hundreds of cardiologists and cardiac technicians worldwide, it offers unparalleled accuracy and opens up new possibilities for Holter analysis.

SCHILLER AG
i www.ihe-online.com & search 84062

HIS module for intensive care

Compared with patients in the regular ward, charts in intensive care are much more complex, in view of the special requirements that apply there. In addition to the standard vital parameters, they include information on cardiac and respiratory function. The new “Critical Care” module in the Soarian HIS, available in numerous countries, takes care of these requirements. Data from intensive care monitoring devices feeds automatically into the digital chart, which gives healthcare personnel a rapid overview of the patient’s condition. Unlike dedicated departmental systems for intensive care, Soarian “Critical Care” is fully incorporated into the HIS. This means that information from intensive care can be viewed in the recovery or regular wards, depending on authorization levels. For instance, staff there can read – from their usual HIS user interface – what medications the patient has received and how the patient’s vital parameters have changed, and thus draw conclusions for further treatment. The “Critical Care” module is also designed for comprehensive connection to medical devices in the hospital, and can also be used outside of the intensive care unit.

SIEMENS AG
i www.ihe-online.com & search 46663

Automatic gas control for anesthesia system

MAQUET FLOW-i is now available with optional Automatic Gas Control (AGC). The new AGC option provides staff with an advanced prediction tool for improved efficiency and ease of use in the administration of anesthetic gas delivery. The unique AGC prediction tool with speed selection allows the user to forecast a time to reach the end-tidal agent target level while AGC automatically controls the gas delivery more efficiently than conventional anesthesia systems. AGC smoothes the anesthesiologist’s workflow by freeing up time that can be devoted to other aspects of the clinical care of the patient. MAQUET FLOW-i with AGC improves the oxygen delivery control during anesthesia by a single FiO2 setting which efficiently provides the specific oxygen concentration to the patient. Furthermore, the standard O2GUARD reduces the risk of hypoxia.

MAQUET
i www.ihe-online.com & search 46662
Cardiac stress test system

The system consists of the B612 medical treadmill and Cardi-oTEST software. It is a tool for conducting a cardiac stress test and not only in hospitals and clinics, but also in private practices, where it helps to detect the first symptoms of cardiovascular diseases in their earliest stages. The technologically advanced B612 treadmill has a built-in ECG module. The communication between the treadmill and the software allows the use of exercise protocols based on heart rate control. The integrated inclinometer automatically levels the treadmill and adjusts its inclination. Three emergency stop buttons enhance the patient’s safety. Optionally, the product may be connected to a professional mobile diagnostic station, which simplifies the installation of the whole system at the client’s place.

ASPEL
i www.ihe-online.com & search 46660

FRONT COVER PRODUCT

Mobile monitor

The Surveyor S4 mobile monitor challenges the conventional wisdom of telemetry and proprietary antenna concepts, and embraces the emergence of patient monitoring within today's larger, more interconnected healthcare network. The S4 is a mobile monitor capable of utilizing a facility's existing WiFi network for bidirectional communication with the Surveyor central station. S4 addresses the clinical proficiency and advanced expertise of the ECG parameter, significant cost saving for the healthcare facility and the ability to expand as the institution grows. There is no compromise in ECG quality, nor performance. Continuous 12-lead ECG monitoring can be viewed at the Surveyor central station. The Device incorporates Mortara’s VERITAS resting ECG interpretation algorithm. Its innovative design is 30% less expensive than typical competitive solutions, while the rechargeable lithium ion battery reduces cost-per-use. The S4 reduces limitations and enables monitoring any patient virtually anywhere in the hospital. With WiFi technology, patients are free to roam throughout the coverage area.

MORTARA
i www.ihe-online.com & search 46665

Multiple application ultrasound platforms

Though requiring very little space, the ARINETTA platforms give highly resolved ultrasound anatomical detail due to the newly optimized generation, emission and detection of ultrasound signals, the improved signal processing, as well as the superb quality of the display. Using multi-layer crystal technology and an improved connector, the versatile range of probes achieves very high sensitivities from the enhanced signal-to-noise ratios, in addition to improved durability and handling. The sophisticated, flexible programming of the emitted and received ultrasound signals allows more precise control of the ultrasound beam, guaranteeing higher spatial resolution. Additionally, the new platforms are equipped with fast ultrasound-specific digital signal processors, supporting a great variety of application-related features and advanced data processing. The new ultrasound products are perfectly suited for many advanced applications, such as real-time virtual sonography for a side-by-side display of ultrasound and other modality results, e.g. CT or MRI; real-time tissue elastography, visualizing tissue strain in real-time and giving local stiffness information; 2D-tissue tracking for quantitatively evaluating the movement and the thickening of the cardiac muscle. Detailed ergonomic design that meets recommended industry standards supports a comfortable working environment and includes a 10.5” touch screen panel and a 21” IPS-Pro high-resolution monitor. Two way multi-rotary encoders enable the adjustment of many functions in one control, while the large palm rest at the centre of the operating console is designed to give optimum wrist support. The panel height can be lowered to 70 cm, allowing the operator to perform lower extremity examinations with a comfortable reach to the operating console. Compared with previous models the new systems are lighter by 45%.

HITACHI MEDICAL SYSTEMS
i www.ihe-online.com & search 46669
Calcification subtraction software for coronary angiography

Visualization of the coronary lumen is improved by very advanced subtraction software. This represents a major step forward in diagnosing coronary artery disease in patients with severe calcium or stents for whom cardiac CT angiography was not recommended. This software was developed in close cooperation with the Iwate Medical University in Japan, leading hospitals in the USA and Europe and the European-based research centre, Toshiba Medical Visualization Systems. Severe coronary calcification influences the effectiveness of coronary CT angiography in ruling out coronary artery disease. Frequently these patients are referred for invasive angiography because of clinical suspicion of significant coronary artery disease. Stents placed in the coronary arteries can make visualization of the lumen within the stent difficult, hindering the ability to diagnose in-stent restenosis. SURESubtraction Coronary removes calcification and stents from the coronary arteries, therefore improving visualization of the coronary lumen. Blooming effects caused by calcification are dramatically reduced. An added benefit is that the subtraction can be obtained with a near-dose neutral scanning protocol. Coronary subtraction is performed by subtracting a routine calcium score dataset from a coronary CT angiography dataset. The calcium score scan is used as the non-contrast mask for subtraction. Atlas-based cardiac segmentation and sophisticated rigid and deformable registration algorithms enable accurate subtraction of the coronary arteries to become a reality, leading to improved visualization of the coronary lumen. The unique capabilities of the wide area detector Aquilion ONE series are a perfect platform for this new development. The 16cm z-axis coverage of the Aquilion ONE series allows imaging of the heart in just one rotation, ensuring the scan is performed at the same moment in time, making the registration and subtraction process as simple as possible.
Flexible ultrasound system

MyLab Six is a complete cart-based system that can be used across a broad range of applications from cardiovascular to general imaging and women’s health. It comes with highly advanced CV features, including Compass M-Mode, Tissue Velocity Mapping, Stress Echo, XStrain and QIMT - combining to ensure complete confidence in any diagnosis. The system offers a premium yet affordable solution to customers in terms of performance, flexibility of applications and mobility. Easy workflow options and automation of key options maximize patient throughput without compromising image quality or diagnostic confidence. MyLab Six has been designed with the comfort of the user as a key priority. The rotating keyboard can easily be made the comfort of the user as a key priority. Similarly, an articulated arm for the screen increases comfort, as well as enabling the sharing of results with a patient or colleague quickly and easily. Ergonomic features include appleprobes – transducers that are specially shaped to keep the hand and wrist in their natural grip, helping to prevent tension in the hand from building up. In keeping with its aim of maximizing workflow and performance for a multitude of purposes and individual users, MyLab Six has a simplified control panel including a high resolution touchscreen display. The system has a clear and intuitive eTouch function for quick and easy access to the system’s main functions. Operators have easy access to measurement and report, and can also recall at the touch of a single button the settings they have customized and organized according to clinical preferences. Integrated wireless connectivity facilitates easy one-click networking, and an integrated printer allows the outcome of the exam to be printed without delay. MyLab Six features a class-leading 19 inch widescreen LCD monitor mounted on an articulated arm for improved viewing of high sensitivity images and increased operator comfort. The system is also noiseless - enabling the sonographer to focus fully on the examination and diagnosis. Its highly efficient core is ultra low in terms of power consumption, presenting a more environmentally friendly “green” option which costs less to run. Incorporating advanced technologies, post processing capabilities, and supporting a range of probes, the MyLab Six ultrasound solution suits a range of applications, and includes superb imaging, sensitive colour and spectral Doppler, and advanced features for cardiovascular work as well as general imaging – via both application-specific and shared services. The system configuration offers a wide variety of transducers (including transesophageal multi-plane probe) for use within many type of investigations. DICOM connectivity is incorporated as well as MyLab Desk software suite for off-line post-processing and reporting. Remote service capabilities make it possible to quickly detect and solve system errors, improving efficiency and productivity.

Mobile C-arm system

The innovative surgical mobile C-arm system Opescope Acteno meets the requirements of operating and emergency rooms with easy positioning and optimal performance. The exclusive manual vertical C-arm movements enable much quicker height adjustments in routine operations. The enlarged 78 cm wide C-arm facilitates approaches to the patient and reduces the risk of contact with the operating table. Nevertheless, Acteno is very compact – its small system width of only 80 cm facilitates manoeuvring in smaller and busy operating rooms. The internal cables on the C-arm are organized according to clinical preferences. The system has a clear and intuitive eTouch function for quick and easy access to the system’s main functions. Operators have easy access to measurement and report, and can also recall at the touch of a single button the settings they have customized and organized according to clinical preferences. Integrated wireless connectivity facilitates easy one-click networking, and an integrated printer allows the outcome of the exam to be printed without delay. MyLab Six features a class-leading 19 inch widescreen LCD monitor mounted on an articulated arm for improved viewing of high sensitivity images and increased operator comfort. The system is also noiseless - enabling the sonographer to focus fully on the examination and diagnosis. Its highly efficient core is ultra low in terms of power consumption, presenting a more environmentally friendly “green” option which costs less to run. Incorporating advanced technologies, post processing capabilities, and supporting a range of probes, the MyLab Six ultrasound solution suits a range of applications, and includes superb imaging, sensitive colour and spectral Doppler, and advanced features for cardiovascular work as well as general imaging – via both application-specific and shared services. The system configuration offers a wide variety of transducers (including transesophageal multi-plane probe) for use within many type of investigations. DICOM connectivity is incorporated as well as MyLab Desk software suite for off-line post-processing and reporting. Remote service capabilities make it possible to quickly detect and solve system errors, improving efficiency and productivity.

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CALENDAR OF EVENTS

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<td>Sept 9-11, 2014</td>
<td>Medical Fair Asia</td>
<td>Singapore</td>
<td><a href="http://www.medicalfairasia.com">www.medicalfairasia.com</a></td>
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<td>Sept 13-17, 2014</td>
<td>CIRSE 2014</td>
<td>Glasgow, UK</td>
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<td>Sept 16-18, 2014</td>
<td>18th Health Asia</td>
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<td>Nov 30 - Dec 5, 2014</td>
<td>IRNA 2014</td>
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<td>April 6-8 2015</td>
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<td>April 22-24 2015</td>
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2014

September
- Patient Safety
  16-18 September 2014
- MEDIC East Africa
  23-25 September 2014

October
- Beauty Africa
  7-9 October 2014
- DENTAL AFRICA
  13-15 October 2014
- MEDIC West Africa
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- MEDLAB West Africa
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December
- ICAAM
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2015

January
- ARAB HEALTH
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- ARAB HEALTH CONGRESS

March
- ICJR
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- MEDLAB Asia Pacific
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April
- OBS-GYNE
  19-21 April 2015

May
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- MEDLAB South Africa
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June
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  1-3 June 2015

October
- IMTEC
  1-2 October 2015

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bringing together the world of healthcare
“The health of our patients is a shared responsibility”, says resident Marie Elisabeth Jaeger. “As a team, we need to have all lab results, diagnoses and details of medication in one place, so that everyone who needs them can access them immediately. The University Medical Center Hamburg-Eppendorf uses the hospital information system, Soarian Clinicals from Siemens, to ensure that this is achieved. It bundles patient information and gives immediate access: for consultations, examinations, therapy sessions, and via mobile equipment also on the rounds. While this helps the team at the medical center, it mainly benefits the patients: “It gives me reliable data and time for a more personal level of care. And for most patients this is just as important and beneficial as the actual therapy itself.”

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