A “resounding no” to oxygen therapy for suspected myocardial infarction

Results of the DETO2X-AMI randomised registry trial have found no link between the use of supplemental oxygen therapy in patients with suspected myocardial infarction and fewer deaths in a cohort of 6,629 patients with no hypoxaemia at baseline. The results, which were a key highlight of yesterday’s Hot Line: Late-Breaking Clinical Trial session, offered a “resounding ‘no’ to oxygen therapy,” according to discussant reviewer, Professor David Newby (University of Edinburgh, Edinburgh, UK).

The use of supplemental oxygen therapy in patients with suspected acute myocardial infarction is standard clinical practice, recommended by guidelines around the world—including those of the ESC.

“The rationale behind this recommendation is the belief that increased oxygen delivery to the ischaemic myocardium reduces infarct size, and subsequent complications such as heart failure and arrhythmias,” said first author and presenter, Dr. Robin Hofmann (Karolinska Institute at Sodersjukhuset, Stockholm, Sweden) told the audience.

There is paucity of high-quality scientific data, however, to support the use of supplemental oxygen in these cases. Recent literature, Dr. Hofmann said, has called into question whether the practice is based on evidence or simply tradition. The much smaller randomised AVOID trial, for example, found a larger average infarct size among patients who received oxygen therapy, causing some to question the safety of its use. The DETO2X-AMI results did not indicate any harm associated with oxygen use, but rather demonstrated its potential redundancy.

Concerned by this stark discordance between clinical practice and scientific evidence, the study investigators undertook a large, multicentre, parallel-group, open-label, registry-based, randomised, controlled trial to evaluate “hard clinical endpoints”. Their efforts were lauded as a “fantastic achievement” by Prof. Newby.

The primary endpoint of the study was all-cause mortality, with secondary endpoints including rehospitalisation with myocardial infarction or heart failure and cardiovascular death.

Using the national SWEDHEART registry (Swedish Web System for Enhancement and Development of Evidence-Based Care in Heart Disease Evaluated According to Recommended Therapies), the investigators compared the use of routine supplemental oxygen therapy with ambient air in this patient cohort. Mortality data was obtained from the Swedish National Population Registry, using patients’ national personal identification numbers.

The patient cohort was selected according to inclusion factors such as ≥30 years old, symptoms of myocardial infarction ≤6 hours and elevated cardiac troponin T or I levels on admission. Patients undergoing ongoing oxygen therapy, and those who received ≤20 minutes of oxygen therapy, were excluded. Estimating a one-year total mortality among patients with myocardial infarction in the cohort, the team determined a 20% lower relative risk of all-cause mortality to be clinically relevant.

The trial enrolled 6,629 patients with suspected myocardial infarction across 35 Swedish hospitals. Half of the patients received oxygen through an open face mask, while the other half breathed in ambient air.

Apixaban cuts stroke risk in atrial fibrillation patients undergoing cardioversion

Apixaban lowered the risk of stroke significantly more than heparin followed by vitamin K antagonist (VKA) did in anticoagulation-naïve patients with atrial fibrillation scheduled for elective cardioversion. These findings from the EMANATE trial were presented yesterday in a Hot Line LBCT Session at the ESC Congress. The rates of bleeding observed with the two anticoagulation strategies similar.

In the setting of cardioversion, the goal of anticoagulation is to prevent stroke and systemic embolism without causing bleeding. Patients scheduled for cardioversion of atrial fibrillation usually receive parenteral heparin and/or VKA, which is considered the standard therapy. Apixaban has not been tested prospectively in patients undergoing cardioversion. EMANATE set out to prospectively compare the rates of stroke, systemic embolism, major bleeding, and clinically relevant non-major bleeding in patients randomised to get either apixaban or heparin/VKA in an open label trial with blinded endpoint adjudication. In order to be enrolled, patients needed to have received less than 48hrs anticoagulation and be scheduled for elective cardioversion of mainly new onset, non-valvular, atrial fibrillation. Sixty one per cent of the cohort was not anticoagulated prior to randomisation. Apixaban was administered orally at a dose of 5mg twice a day (or 2.5mg twice a day when two of the following conditions were met: age ≥80 years, weight ≤60kg, or serum creatinine ≥1.5mg/dL). Investigators could prescribe an initial 10mg or 5mg loading dose of apixaban for patients who would undergo immediate cardioversion.

Researchers randomised 1,500 patients. The 753 patients treated with apixaban had fewer strokes and similar bleeding to the 747 patients who received standard therapy. The patients treated with apixaban had no strokes; there were six strokes in the group treated with heparin/VKA (p=0.0164). Two patients died in the apixaban group and one in the other group. There were no systemic embolic events in either group. There were three major bleeds in the apixaban group and six in the standard care group, respectively, while clinically relevant non-major bleeding occurred in 11 and 13 patients in the apixaban group and usual care group, respectively.

In the subset of 342 patients in the apixaban group who received a loading dose, there were no strokes, one major bleed, four clinically relevant non-major bleeds and one death. Like the other prospective cardioversion studies, EMANATE was underpowered. Principal investigator Professor Michael Ezekowitz (Sidney Kimmel Medical College at Thomas Jefferson University, Philadelphia, and attending cardiologist Lankenau Medical Centre, Bryn Mawr Hospital) said: “Imaging identified left atrial appendage thrombi in 61 patients, but all continued with anticoagulation.

There were no outcome events. Among those with repeat imaging (37±11 days after the initial imaging) thrombi resolved in 52% vs. 36% in the apixaban and heparin/VKA groups. “In patients with atrial fibrillation undergoing cardioversion, apixaban with, or without, a loading dose was safe, resulting in few bleeding events and less strokes than conventional anticoagulant therapy. We believe the findings observed in EMANATE support the use of apixaban in this group,” Prof. Ezekowitz concluded.

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A statistical analysis revealed no significant difference between the two groups in terms of primary outcome (one-year all-cause mortality was 5.0% in the oxygen group, and 5.1% in the no-oxygen group). No significant difference was found between the two groups’ secondary endpoint results, including rehospitalisation with myocardial infarction and cardiovascular death.

Statified according to risk factors including old age, smoking status and diabetes, mortality results remained similar between the two groups.

This study marks the first randomised trial of such patients that is large enough to reveal meaningful mortality and morbidity findings. It enrolled six times as many participants as all earlier randomised trials of this therapy combined.

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As part of yesterday’s Hot Line: Late-Breaking Clinical Trials Session, delegates heard about how a triple sampling programme has been improving the overall mortality and quality of life of Danish men.

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Do SPYRAL HTN-OFF MED results signal a renal denervation comeback?

Results from the randomised, sham-controlled SPYRAL HTN-OFF MED trial show a “clinically meaningful” blood pressure reduction in patients treated with renal denervation. The trial, which enrolled mild to moderate hypertensive patients, excluded the use of anti-hypertensive medications and extended ablation to branch vessels with a multi-electrode denervation device. The data were presented by Professor Michael Böhm, Universitätssklinikum des Saarlandes, Homburg/Saar, Germany.

T
e included in SPYRAL HTN-OFF MED, patients had to be off any antihypertensive medication or had to be allowed discontinuation of drug therapy. They had to have office systolic blood pressure (SBP) ≥140mmHg and <180mmHg, office diastolic blood pressure (DBP) ≥90mmHg and <170mmHg, and systolic 24-hour mean ABPM ≥140mmHg and <170mmHg.

After screening for inclusion and exclusion criteria 80 patients were randomised to undergo renal denervation (n=38) or a sham procedure (n=42). There were no difference in baseline characteristics between the two groups: the mean age was 53.8±10.1 years in the renal denervation group and 52.8±11.5 years in the sham control group, baseline office SBP was 162±7.6mmHg in renal denervation patients and 161±4.6 in the control group, and mean 24-hour SBP was 153.4±9mmHg in the renal denervation cohort and 151.6±7.4mmHg in the control group. The differences in rates of medication adherence were not statistically significant between the two groups. In renal denervation patients, the total number of ablations per patient was 43.8±13.1—of these 25.9±12.8 were branch ablations.

The results showed, from baseline to three months, a greater reduction with renal denervation in 24-hour ABPM. The SBP was reduced by -5.5mmHg (p=0.003) with renal denervation and by -0.5mmHg (p=0.76) in the control group (a difference of -5.0mmHg between the two groups, p=0.04); and the DBP was reduced by -4.8mmHg (p<0.001) in renal denervation patients and by -0.4mmHg (p=0.65) in sham procedure patients (a difference of -4.4mmHg between the two groups, p=0.002).

In terms of office BP, from baseline to three months, the renal denervation group also experienced greater reductions in both SBP and DBP. The SBP was reduced by -10mmHg (p=0.001) in renal denervation and by -0.4mmHg (p=0.76) in the sham control group (a difference of -7.7mmHg, p=0.02) and the DBP was reduced by -5mmHg (p=0.001) with renal denervation and by -0.3mmHg (p=0.81) in the sham procedure group (a difference of -4.7mmHg, p=0.008).

There were no adverse events in any of the groups, despite a denervation procedure that extended into arterial branch vessels.

Prof. Böhm noted some limitations to the study. Its design was not prospectively powered to show statistical significance; antihypertensive drugs were recorded in some patients despite the off-medication protocol; there were no practical methods to verify nerve destruction; and the results were not be generalisable to other renal denervation technologies.

Prof. Böhm concluded that the results offer biologic proof of principle for the efficacy of renal denervation. The data show clinically meaningful blood pressure reductions at three months in mild to moderate hypertensive patients treated with renal denervation, in the absence of anti-hypertensive medications compared to sham control. “The results of this feasibility study will inform the design of a larger pivotal trial,” he said.

Worse outcomes with sildenafil than with placebo in residual pulmonary hypertension

The off-label use of sildenafil in the treatment of residual hypertension in patients with valvular heart disease leads to worse clinical outcomes including a doubled risk of hospitalisation compared to placebo, according to results from the SIOVAC trial presented yesterday in a Hot Line: Late-Breaking Clinical Trials session.

Sildenafil is a vasodilator that is typically used to treat erectile dysfunction. Sildenafil is believed to be safe and well tolerated and is frequently prescribed off-label for patients with retrograde pulmonary hypertension. The SIOVAC trial tested the potential of sildenafil to improve long-term outcomes of patients with residual pulmonary hypertension after correction of a valvular lesion. The trial was conducted in 17 public hospitals and coordinated by the Spanish Network Centre for Cardiovascular Research.

A total of 200 patients were randomised to sildenafil (40mg three times a day) or placebo for six months. The primary endpoint was a clinical composite of all-cause death, hospital admission for heart failure, worsening exercise tolerance, and feeling worse than when starting the medication. The study results showed that clinical outcomes were worse in the sildenafil group compared to placebo. At six months, 33 (33%) patients taking sildenafil and 14 (15%) taking placebo had a worse composite clinical score than at the start of the study (odds ratio for improvement, 0.39; 95% confidence interval [CI], 0.22 to 0.71; p=0.003). The overall risk for hospital admission due to heart failure decompensation was double in patients taking the drug. Three patients taking sildenafil and two taking placebo died during the study (p=0.63). Major clinical events—death or readmission due to heart failure—occurred earlier and more frequently in the sildenafil group (hazard ratio, 2.0; 95% CI, 1.0 to 4.0; p=0.04).

Principal investigator Doctor Javier Bermejo, Hospital General Universitario Gregorio Marañón, Madrid, Spain, concluded: “Long-term usage of sildenafil for treating residual hypertension in patients with valvular heart disease should be avoided. The high incidence of events during the trial emphasises the need for further research to prevent and treat this complication in patients with valvular disease.”
Inclisiran lowers LDL cholesterol levels for up to one year

Inclisiran—an investigational drug that “switches off” PCSK9 synthesis in the liver—lowers rates of low-density lipoprotein (LDL) cholesterol for up to one year in patients with high cardiovascular risk and elevated LDL cholesterol, according to late-breaking results from the ORION 1 trial presented yesterday in a Hot Line session.

Principal investigator Professor Kausik K Ray, (Imperial College London and Imperial College NHS Trust, London, UK) presented the results.

The multicentre, placebo-controlled, double-blind, randomised phase II study included 591 patients with atherosclerotic cardiovascular disease (ASCVD) and elevated LDL cholesterol (>70mg/dl) despite maximally tolerated statin therapy and patients without ASCVD but with high cardiovascular risk conditions such as diabetes and familial hypercholesterolaemia in whom LDL cholesterol was >100mg/dl despite maximally tolerated statin therapy.

Patients were randomised into eight treatment groups: a single dose regimen of 200, 300 or 500mg inclisiran, or placebo; or a two-dose regimen of 100, 200 or 300mg inclisiran, or placebo, at days one and 90.

A secondary endpoint—the change in LDL cholesterol at one year with a single dose regimen of 300 or 500mg inclisiran, placebo, or a two-dose regimen of 100, 200 or 300mg inclisiran, or placebo, at days one and 90.

A two-dose regimen of 100, 200 or 300mg inclisiran were included in the current analysis, for whom VVV in mean SBP had been recorded at two, four, eight and 12 months, and then every four months after enrolment. The patients were categorised into four quartiles based on their mean standard deviation in SBP; those who SBP varied by less than 10.09mmHg from visit to visit (first quartile); and those with variations of 10.09–13.85mmHg (second), 13.86–17.33mmHg (third) and ≥17.34mmHg (fourth).

After a mean follow-up of 3.6 years, 149 strokes and 248 major bleeding events had been recorded, with a pattern of increasing risk with each elevation in quartile. Specifically, stroke rate progressively increased from 2.5% to 3% to 3.8% and 6.2% from the first to the fourth quartile (p=0.009 and p<0.001, respectively); the major bleeding rate was directly related to SBP-VVV quartiles (3.9%, 4.3%, 6.8%, 10.8% respectively; p=0.004).

After adjusting for variables, the analysis showed that patients in the third and fourth quartiles were at significantly increased risk of stroke (HR 1.85 and 2.33, p=0.042 and p=0.004, respectively) and major bleeding (HR 1.92 and 2.88, p=0.004 and p<0.001, respectively).

“Our findings suggest that consistency in blood pressure control, beyond the single measurement, is very important, and this appears to be the case across all types of AF patients, irrespective of age, blood pressure history, blood pressure level or clotting risk,” said Dr. Proietti.

“Interventions aimed at reducing blood pressure variability over the long term, such as optimising the medications and improving adherence, are strongly needed,” he added.
Peripheral arterial diseases are “a window into cardiovascular health”

The 2017 ESC peripheral arterial diseases (PADs) sessions will discuss the importance of these conditions in the cardiac context while exploring the importance of collaboration between cardiologists and vascular surgeons—the essence of good management of PADs patients in Europe.

Yesterday, the 2017 ESC Guidelines on the Diagnosis and Treatment of Peripheral Arterial Diseases, in collaboration with the European Society for Vascular Surgery (ESVS), were presented. Professor Victor Aboyans (Department of Cardiology, Dupuytren University Hospital, Limoges, France) and Professor Jean-Baptiste Ricco (University Hospital of Poitiers, France), co-Chairpersons of the guidelines, chaired the session. The Guidelines refer to all forms of disease in the peripheral arteries (i.e. PADs) rather than just in the lower extremities.

Prof. Aboyans, a Member of the ESC Congress Programme Committee, told ESC Congress News: “Cardiologists have to know about PADs because many of the patients that they see for cardiac conditions can simultaneously also have this disease; this is all about the cardiovascular system. It does not make sense to only look at one side of the system and not the other.”

He explains that PADs can be “a window into cardiovascular health”, noting that “if we look for PADs in individuals and we identify it in these individuals, then we also identify people who are at high risk of cardiovascular events. For example, some patients with PADs may also have heart failure. Because they are limited in their walking, they may not complain about shortness of breath because their severe claudication means they cannot actually do enough exercise to reveal the problem. So it is very important when you have a patient with PADs to also address heart conditions and cardiac risk.”

Depending on the country, different specialties take responsibility for the treatment of PADs. Regardless of these varied approaches, vascular surgeons are a key component in the management of these patients. Prof. Aboyans stresses, “If a vascular surgeon takes care of these patients they also have to consider the cardiac risk of these patients; if a cardiologist takes care of these patients, they also have to take care of the limb risk.”

The first and most important thing “is to assess the clinical severity and conduct imaging to see disease presentation, which arteries are involved, and if there is a need for revascularisation,” Prof. Aboyans says. After this, specific surgical strategies (open or endovascular) can be considered. “Many vascular surgeons now do endovascular therapies, and there are also cardiologists and interventional radiologists doing endovascular therapies. The point is not to oppose any specialty but to create patient-centred management. Certainly in that situation, not only is management of a limb important, but so is considering the cardiac risk of these patients, which is the role of the cardiologist.”

The management options considered will depend on the progress of the disease. “For every stage of PAD, what is very important is the medical therapy and secondary prevention measures,” Prof. Aboyans notes. He adds: “This means smoking cessation, control of blood pressure and the use of statins to decrease cholesterol level. These treatments have two objectives. The first is to prevent any progression of the disease for the lower limbs but also, because patients affected by PADs have a high risk of heart attack and stroke, to prevent these secondary issues.”

As for specific risk factors, Prof. Aboyans explains, “The most frequent disease affecting the peripheral arteries is atherosclerosis. Atherosclerosis risk factors are the same in every artery, although some risk factors may have a different importance and carry different weight in the prevalence and incidence of the disease in different arteries. Smoking is considered the first and the most prominent risk factor for PADs. Hypertension and hypercholesterolaemia are also risk factors, along with age and familial history of PADs. Diabetes is of increasing concern because its incidence in the general population is booming. All types of diabetes are problematic, but type 2 diabetes is the most frequent issue.”

For PADs, as for every atherosclerotic disease, there is often a long prelude of silent development of the disease before clinical manifestation. Prof. Aboyans comments: “The clinical manifestation can vary from intermittent claudication to chronic limb thickening ischaemia, where the patient has pain at rest, ulcers, and a high risk of amputation. We do not always have progressive presentation of claudication followed by pain and ulcers. In this spectrum of presentations, we can also include acute limb ischaemia, whereby a patient who was doing well just a minute before suddenly has acute pain of the limb due to a clot blocking the arteries.”
Closure of left atrial appendage during open surgery protects against stroke and TIA

Clos.ing the left atrial appendage (LAA) during open heart surgery appears to offer long-term protection to the brain from new ischaemic events, says research presented in a Hot Line LBCT Session at ESC Congress. The researchers recommend the routine surgical LAA closure because most patients undergoing open heart surgery would benefit from the procedure.

Bag-mask ventilation appears less safe than endotracheal intubation in cardiac arrest

Airway management with bag-mask ventilation (BMV) failed to improve on endotracheal intubation (ETI) in out-of-hospital cardiac arrest patients, and was associated with significantly more failures and complications, according to results from the CAAM trial presented yesterday in a Hot Line LBCT Session.

While airway management with ETI has been the standard of care in resuscitation of out-of-hospital cardiac arrest victims, observational studies have suggested that survival is lower when it is used. BMV is a less complex technique than ETI. Some studies have proposed that bag-mask ventilation is safer and may avoid the adverse effects of ETI during resuscitation.

The CAAM trial was a prospective, randomised, controlled, multicentre trial that compared the impact of airway management with BMV versus ETI on survival with healthy brain function in 2,043 out-of-hospital cardiac arrest patients. Principal investigator Professor Frédéric Adnet (Avicenne Hospital, Bobigny, France) reported that 20 emergency medical services centres in France and Belgium randomised patients when resuscitation was attempted to either receive tracheal intubation (control group) or bag-mask ventilation. The primary outcome was survival to 28 days with good neurological outcome.

The investigators found the same rate of survival with good neurological outcome at day 28 in the two groups (4.2% with BMV vs. 4.3% with ETI). However, the BMV technique failed in 6.3% of patients as compared with ETI, which failed in 2.5% (p<0.0001). There was also much greater incidence of gastric content regurgitation/aspiration with BMV (14.9%) compared to ETI (7.7%; p<0.0001).

Prof. Adnet said: “BMV appears less safe than ETI as a means of ventilation during cardiopulmonary resuscitation in out-of-hospital cardiac arrest. Thus, we cannot recommend BMV as the standard method to ventilate out-of-hospital cardiac arrest patients during cardiopulmonary resuscitation.”
Interest in AF should extend beyond specialty

The cardiovascular complications of atrial fibrillation can occur suddenly and may result in permanent harm. An abnormal heartbeat may lead to a pooling of blood in the atria, which can increase the risk of stroke. The primary aim of treatment is usually the prevention of thromboembolism, together with control of ventricular rate response and restoration and maintenance of sinus rhythm when feasible.

Atrial fibrillation (AF) is the most common sustained arrhythmia, affecting 1–2% of Europeans. Its prevalence increases with age, and its presentation varies in terms of symptoms and severity. “One estimate suggests that there are about 8 million Europeans with AF at present but that this will rise to about 18 million by 2060,” European Heart Rhythm Association President Professor John Camm (St. George’s University, London, UK) told ESC Congress News: “The population is ageing, and it is ageing with a background of cardiovascular disease that might previously have proven fatal but that now has become a chronic condition that needs to be managed.”

Estimating an accurate prevalence of AF is confounded by its sometimes asymptomatic presentation. So-called “silent atrial fibrillation” may occur intermitently and without symptoms. “Calculations based on clinical presentation with the arrhythmia or cross-sectional surveys may seriously underestimate the prevalence of the disease, and it is generally assumed that about 25% to 33% of AF remains unrecognised,” Prof. Camm explains. “This unrecognised arrhythmia may then lead to cardiovascular complications such as stroke, dementia, heart failure and death, sometimes sudden death.”

AF can occur paroxysmally, persistently or permanently. In paroxysmal cases, abnormal electrical signals and heart rate begin suddenly and end without intervention. These symptoms can vary in severity, and may last from a few seconds to several days. Persistent AF involves an abnormal heart rhythm which continues until it is stopped by treatment. In cases of permanent AF, symptoms remain in spite of usual treatment methods. Over time, paroxysmal and persistent AF can both become permanent.

Therapy for AF often involves the use of anticoagulants, which offer an effective and relatively inexpensive method of stroke prevention. In asymptomatic patients, however, there are concerns that stroke may not be such an extensive burden, and no dietary restrictions, fewer drug-drug interactions and no regular testing of anticoagulation status. Importantly, it is usually associated with less life-threatening and intracranial bleeding.”

Prof. Camm told ESC Congress News: AF can also be treated by vitamin K antagonists (VKA), but the net clinical benefit of NOAC therapy is higher. “Although NOAC drugs are more expensive than VKA treatment, the overall strategy of NOAC treatment for stroke prevention in AF is cost-effective in most western countries,” Prof. Camm explains, “therefore, NOAC treatment is regarded as preferable to VKA treatment for stroke prevention in patients with AF and risk factors for stroke.”

In patients for whom anticoagulation therapy is not suitable, treatment by left atrial appendage (LAA) closure may be appropriate to reduce the risk of stroke. “In skilled hands, it is easy and safe to deploy a device, and follow-up is simple and straightforward,” Prof Camm says.

In addition to stroke prevention, a number of therapies exist for the treatment of symptoms associated with AF. For paroxysmal AF patients who present with little underlying heart disease and in whom structural changes have not occurred, catheter ablation may offer an effective treatment for their symptoms. It is usually performed for pulmonary vein isolation from the left atrium, using radiofrequency or cryotherapy.

AF is not always easy to treat. “A fundamental problem that we have with ablation treatment for AF is that we do not know much about the mechanism that sustains AF,” Prof. Camm told ESC Congress News. “This implies that treatments that are provided for persistent and permanent AF may not be directed at the right target.”

Cryoablation is now an established therapy for symptomatic atrial fibrillation, but the merits of therapies delivered by balloon technology, such as radiofrequency, laser, or hot balloon, are still being evaluated. While the ability of ablation to treat more than the symptoms of AF is unknown, studies are underway to evaluate its potential for reducing mortality, heart failure and stroke.

Prof. Camm argues that interest in AF should extend far beyond electrophysiologists. “AF is so highly prevalent that physicians and surgeons of every variety will encounter patients with this condition. Since most of these patients will be taking, or ought to be taking anticoagulants, they must be monitored very carefully to ensure that their treatment remains safe and effective, and that it does not interfere with other therapies the patient may need,” he states.
ESC marks the milestones of cardiac surgery

In the year marking the 40th anniversary of percutaneous coronary intervention (PCI), the ESC seeks to outline and highlight the major developments in cardiac surgery in recent years.

Professor Jean François Obadia (Adult Cardiovascular Surgery and Heart Transplantation, Louis Pradel Hospital, Lyon-Bron Cedex, France) told ESC Congress News about the key changes. “The growth of interventional cardiology has definitely impacted on the type of patients that cardiac surgeons see. We now operate on the sickest patients; those who are older and have more severe disease with poor left ventricular function, multi- and complex valvular lesions. In this challenging context it is important to note that the results of cardiac surgery have constantly improved overtime which probably explain why, despite a growing improvement of all the PCI techniques, the number of patients requiring surgical revascularisation is today relatively stable,” he says.

Simultaneous developments in interventional cardiology and cardiac surgery have led to support for the concept of the heart team to manage individual patients, but particularly those who can be treated by open surgery or percutaneous means, for instance aortic stenosis patients. Prof. Obadia, commenting on the role of the cardiothoracic surgeon in such a multidisciplinary team, notes that it is highly dependent on the institution. “The role can vary from a minor one to one that is very important. It is an important role, according to the recommendations.”

The idea of a heart team has to be strongly supported for the benefit of all, especially our patients,” he notes.

Valvular heart disease
Prof. Obadia explains that patients with aortic stenosis will be increasingly treated with transcatheter aortic valve implantation (TAVI), so that it remains for surgeons to treat the most complex patients; for example, patients with aneurysms or aortic insufficiency where the goal is more to perform valve-sparing surgeries than to proceed through a minimally invasive approach. “To avoid a valvular replacement in a patient with an aortic disease is also a good way to be less invasive, whatever the incision,” he says.

Using a minimally invasive approach has become routine for mitral valve surgeries in an ever-increasing number of centres. Prof. Obadia comments: “Those who are not involved take the risk of being excluded from this field in which the percutaneous techniques are not yet really efficient. The future of percutaneous mitral procedures is tremendous, but it will take more time for them to be fully realised than for those for the aortic valve.” However, he adds, when current challenges have been resolved, “percutaneous techniques will do not only as well as surgery but they will do even better; it is just a question of time”.

According to Prof. Obadia, a centre should have the capacity to offer all the possible techniques from sternotomy to percutaneous techniques and to adapt the decision for every single patient during a heart-team discussion. “It is also a guarantee to avoid a too fast diffusion of uncertain techniques or devices in unexpected hands exposing our patients to uncontrolled risks,” he notes.

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According to Prof. Obadia, a centre should have the capacity to offer all the possible techniques from sternotomy to percutaneous techniques and to adapt the decision for every single patient during a heart-team discussion. “It is also a guarantee to avoid a too fast diffusion of uncertain techniques or devices in unexpected hands exposing our patients to uncontrolled risks,” he notes.

50th anniversary of world’s first human heart transplant
This year marks the 50th anniversary of the world’s first human heart transplant. Prof. Obadia observes: “In the last 50 years, there has been constant improvement in transplantation results in every decade up until recently when we have observed a plateau. Today, only the most severely ill patients have the chance to obtain a transplant organ and this leads to ethical considerations while deciding on the patients who should get preference. The allocation of the donor’s heart will more and more rely on scoring models in order to avoid a part of arbitrary in the decision process. It is has already been the case for renal or hepatic organs for years.”

The shortage of donated hearts continues to be an issue, and there have been technological approaches (left ventricular assist device [LVADs]/artificial hearts) that seek to address it. “The mid-term survival rate of assisted patients is similar to those of transplanted patients; this is encouraging, particularly as these devices are associated with fewer infections and thromboembolic events. Nevertheless, we still need more versatile devices to improve the quality of life of assisted patients before we can use artificial hearts on a larger scale and for longer support. Anyhow, the shortage of donors and the growing number of patients with severe cardiac insufficiency are two major reasons why we can predict that there will be an important development in cardiac assistance,” Prof. Obadia concludes.
SGLT2 inhibitors offer hope for managing heart failure in diabetes

There is a strong connection between heart failure (HF) and diabetes, as 25–44% of patients with HF also have diabetes. A new class of drugs may be the solution to these high-risk patients.

Patients with type 2 diabetes are most likely to develop HF with preserved ejection fraction (HFpEF) rather than valve disease or left ventricular systolic dysfunction. Additionally, compared with HF patients who do not have diabetes, they have an increased risk of cardiovascular (CV) death or HF hospitalisation, are more likely to develop CV disease at a younger age, and may have less success with treatments such as coronary artery bypass grafting (CABG) or percutaneous coronary interventions (PCI).

Professor Issel Komuro (Department of Cardiology, University of Tokyo, Japan) is chairing a session, alongside Professor Francesco Cosenza (Karolinska Institute, Stockholm, Sweden), today on the prevention and management of HF in diabetes.

He says that the key issues to consider when managing these patients are which diabetes drugs to use, and whether glycaemic control should be lenient or strict. He adds: “As type 2 diabetes patients (type 2 diabetic patients, type 2 diabetes patients, type 2 diabetes patients), sodium-glucose co-transporter-2 inhibitors, are a new group of oral medications that work by helping the kidneys to lower blood glucose levels. They have been proposed as a new treatment option for patients with HF and diabetes. The evidence for this drug is based on the results from two trials—EMPA-REG OUTCOME and CANTIS.”

Both studies reviewed the use of an SGLT2 inhibitor in patients with type 2 diabetes at elevated risk of CV events. EMPA-REG OUTCOME showed that patients receiving empagliflozin had a significantly lower risk of death from CV causes, non-fatal myocardial infarction, or non-fatal stroke (the primary outcome) while CANTIS found that canagliflozin significantly lowers the risk of CV events. The trials, both of which were published in the New England Journal of Medicine, also suggested that the gliflozins reduced the risk of HF hospitalisation. However, with CANTIS, the observed lower risk of HF hospitalisation was not statistically significant. Furthermore, canagliflozin was associated with a significantly higher risk of amputation.

Data presented yesterday at the Late-Breaking Science in Heart Failure session have provided further insights into the efficacy of SGLT2 inhibitors in the context of HF and diabetes. Reporting “Insights” from the EMPA-REG OUTCOME, Doctor Javed Butler (Atlanta, USA) said: “Empagliflozin reduced the risk for HF hospitalisation and CV mortality in patients with type 2 diabetes with or without HF. In patients without HF at baseline, empagliflozin reduced HF hospitalisation and CV mortality across a spectrum of risk.”

Also at this session, Doctor Anna Norhannmar (Stockholm, Sweden) said: “In patients with and without diabetes, empagliflozin had a significant impact on outcomes for patients with type 2 diabetes.” The Heart Failure in Diabetes Prevention and Management session today examines treatment with these novel agents in further detail. It will also review exercise and diabetes prevention, the pathophysiological mechanisms of heart failure in diabetes, and the optimal weight for HF patients with and without diabetes.

Professor Komuro says: “With increasing numbers of patients and death from heart failure all over the world, heart failure is becoming more and more important for cardiologists to identify and treat. Additionally, all of the most important risk factors for heart failure, making this a crucial session to attend.”

Abstract of the day: Balloon pulmonary angioplasty has long lasting impact without significant complications

Today, Doctor Tatsuo Aoki (Department of Cardiovascular Medicine, Tohoku University Graduate School of Medicine, Sendai, Japan) and others will report that, in the long term, balloon pulmonary angioplasty (BPA) improves haemodynamics and exercise capacity in patients with inoperable chronic thromboembolic pulmonary hypertension (CTEPH).

According to Dr. Aoki et al, BPA improves haemodynamics and short-term prognosis in patients with inoperable CTEPH. However, the long-term effects of the procedure in this population are not yet fully understood. Therefore, the investigators sought to further evaluate the risks and benefits of BPA in this setting.

Between July 2009 and October 2016, they performed 424 BPA sessions in 84 consecutive patients with inoperable CTEPH. All had been treated with appropriate combination therapy before starting BPA treatment. In patients (77, 92%) who completed treatment, Aoki et al examined haemodynamic parameters, exercise capacity, and degree of pulmonary hypertension (PHT) at baseline, after the initiation of appropriate combination therapy and at six months after the last BPA session. Additionally, in 43 patients, they reviewed these parameters during an extended follow-up period (>12 months) after the last session. The authors found that while medical treatment alone improved haemodynamics and exercise capacity, the BPA sessions additionally improved mean pulmonary arterial pressure, pulmonary vascular resistance, and six-minute walking distance. These improvements persisted throughout the follow-up period.

“Many studies suggested that BPA improves haemodynamics and exercise capacity in inoperable CTEPH patients with acceptable complication rates and that the beneficial effects of BPA persist for years with resultant good long-term prognosis,” Dr. Aoki et al conclude.

Dr. Aoki will be presenting this study at today’s Interventions in the pulmonary circulation session (16:30–18:00; Kabat - Village 7).

eHealth is revolutionising cardiovascular medicine

The means by which individuals access information in healthcare has transformed in recent years, particularly for the younger generation. Care delivery must adapt to meet these needs and, in response, the ESC has opened up a discussion about eHealth.

Professor Martin Cowie (Imperial College, London, UK) says that there has been a greater interest in eHealth and demands from the cardiology community to ensure the interests of cardiovascular healthcare professionals and their patients are represented. Find out more at www.escardio.org/eHealth
Tackling CVD on a global basis can reduce morbidity and mortality

The World Heart Federation (WHF) is targeting its resources at reducing cardiovascular disease (CVD) in low- and middle-income countries. ESC Congress News spoke to the President of the WHF, Professor David Wood (Imperial College, London, UK), about this strategy.

The global burden of CVD is increasing, accounting for one in three deaths worldwide, and one in 10 of those aged 30 to 70 years. Prof. Wood outlines some important figures: ‘Between 1990 and 2010, the proportion of deaths attributed to non-communicable diseases increased from 55% to 65%, with 17 million of 46.5 million deaths in 2010 due to CVD, particularly coronary artery disease and stroke. The number of premature deaths attributed to CVD is predicted to be 7.8 million in 2025, an increase from 5.9 million in 2013.’ The largest proportions of these deaths are in middle- and low-income countries, and that is where prevention and control is most needed.” One of the biggest challenges faced by the WHF is the absence of universal health coverage in many of these nations, denying many people access to basic healthcare following a heart attack or stroke. For those that are admitted to hospital, modern drugs and treatments such as interventional cardiology are usually not available, and other procedures and drug treatments may also be lacking.

“This survey is a valuable first step to identify problems in the global heart landscape, and we hope that the results will be published next year.”

One initiative from the WHF is its Roadmaps to reach the right heart cavities (arrow, left). The structure visualized by echocardiography (arrow, right) is the coronary fistula seen at the right atrio-ventricular groove level.

One possible solution is the polypill. There are a number of different formulations that are a combination of antplatelet therapy—for example, aspirin—a beta-blocker, an angiotensin converting enzyme (ACE) inhibitor, a statin, or a diuretic. He believes the polypill could make a ‘huge contribution’, because it could bring about higher levels of adherence with three or four cardioprotective medications than that which can be achieved in prescribing these drugs individually. “The World Health Organization (WHO) needs to recognise that the polypill is an essential medicine; it should be available for prescription in every country around the world. There is very good randomised control trial evidence, both in relation to its effect on blood pressure and cholesterol lowering, and also on adherence. What we now need to see is whether these short-term changes in blood pressure and cholesterol, which have been modelled to show their impact on potential prevention of cardiac events and death, are seen in large scale Phase III randomised trials.”

One initiative from the WHF is its Roadmaps to reach the right heart cavities (arrow, left). The structure visualized by echocardiography (arrow, right) is the coronary fistula seen at the right atrio-ventricular groove level.

Burnout among cardiologists

Feeling stressed and overworked in your hospital or university? You’re not alone. A recent C-Change (for culture change) survey of ESC members across 17 countries found that at least a third of respondents reported burnout. The findings also reveal important differences based on gender and geography.

Of the nearly 4,000 cardiovascular professionals who responded, the poll found that in Eastern Europe, 35% of men feel mentally or physically exhausted. The number jumps to 45% among women. In Southern Europe, the ratio is 31% male versus 41% female, while in Northern Europe the gender gap on the issue virtually disappears: 32% male; 34% female.

“This survey is a valuable first step to identify problems in the workplace,” says ESC President-Elect, Professor Barbara Casadei, FESC. “It will help the ESC provide appropriate support to cardiologists and cardiovascular scientists and enable the Society to be a more effective advocate for its members,” she adds. The C-Change questionnaire is designed to probe the culture of medicine, particularly academic medicine, and was developed by Brandeis University in the USA. The ESC partnered with Brandeis to administer the poll in Europe. Of the respondents, 59% were men, 41% were women, and the majority (69%) were clinicians.

The results, released at the ESC Congress, reveal that women are just as ambitious as men and that both:

• Find it difficult to succeed without sacrificing personal and/ or family commitments;
• Seek better training opportunities, better standards and more focus on quality of care delivered (versus quantity); and
• Want improved leadership and vision, as well as more opportunities for research and international connections.

While 80% of the men and women polled want to be influential in making change happen within their department or institution, only about half say they feel encouraged to pursue leadership positions in cardiology or become involved in decision making. Perhaps even more troubling, 20% of men and 28% of women say they have often felt intimidated, coerced or belittled by superiors or colleagues.

“The ESC already supports training in leadership,” says Prof. Casadei, “and there are plans to introduce new training opportunities in negotiation skills and people management to help ESC members better address some of these needs.”

For more information about what the ESC is doing to support women, see: www.escardio.org/The-ESC/What-we-do/Initiatives/Women-in-ESC

Imaging quiz solution: Coronary artery fistula

Coronary angiography showed a single coronary artery originating from the left coronary sinus, with a fistula into the right heart cavities (arrow, right). The structure visualized by echocardiography (arrow, left) is the coronary fistula seen at the right atrio-ventricular groove level.

Prof. David Wood

Prof. Barbara Casadei

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ESC and Japanese Circulation Society – a unique partnership

The ESC and the Japanese Circulation Society (JCS) have developed and cemented a unique, collaborative partnership. It is based on mutual respect and knowledge sharing to advance cardiovascular science. Over the last 80 years, the JCS has played a leading role in the study and diagnosis of circulatory diseases in Japan. It has more than 26,000 regular members and nearly 500 associate members, and is recognised as one of the major medical associations in Japan.

ESC President Professor Jeroen Bax of Leiden University Medical Center in The Netherlands said that European cardiologists have the highest regard for their Japanese colleagues. “Japanese Cardiology and European Cardiology have long shared strong links,” he says. “Japanese researchers are highly prolific and respected researchers in the field of cardiology and we have an enormous amount of respect for their work.”

In 2017, the ESC had the privilege of receiving Japanese delegates and two symposia that will be held jointly with the JCS. “Japanese Cardiology and European Cardiology – a unique partnership. It is based on our respect for each other and the common interest of providing the best possible care for our patients,” says Professor Bax. “We have established a comprehensive scientific collaboration and are proud of this relationship. And with the recent creation of ESC Professional Membership, cardiologists outside of Europe and the Mediterranean Basin can now play an active role within the ESC family.”

“The ESC is committed to expanding the true partnership we have with the JCS,” notes Prof. Bax. “We have established a comprehensive partnership, cardiologists outside of Europe and the Mediterranean Basin can now play an active role within the ESC family.”

“This is an exciting time,” comments Prof. Bax, “and we’re honoured that so many of our JCS friends and colleagues have chosen to become ESC Professional Members, allowing our two societies to work even more effectively to reduce the burden of cardiovascular disease.”

Today, there will be a networking event for all Japanese delegates and two symposia that will be held jointly with the JCS.

ESC invests in its future by helping young cardiologists

One of the most important efforts the ESC has launched is the Cardiologists of Tomorrow programme. Its mission is to provide peer-to-peer support, with a nucleus of nine members leading the initiative from different ESC National Cardiac Societies.

The ESC supports these young cardiologists in a variety of ways, including significant discounts on ESC Professional Membership. “The ESC Professional Membership is a great resource for me during the early stages of my career. Doctor Markus Wallner, a CoT nucleus member from Austria, says. “The online access to the European Heart Journal and Cardiovascular Research has been an awesome way to stay up-to-date on the latest developments in the field. I also really value the opportunities to connect with my colleagues at various events and via the ESC Professional Member Directory to help build my network. Having access to the ESC eLearning platform is another amazing opportunity available to professional members.”

ESC Professional Members are eligible to receive a free ESC Congress registration through a dedicated CoT programme. Through this initiative, the ESC offers 25 free registrations to each of its 56 National Cardiac Societies and 43 Affiliated Cardiac Societies, and each society nominates its young members. Some 800 cardiologists under the age of 36 are attending ESC Congress 2017 through this programme which also provides a free ESC Professional Membership.

Doctor Elene Khurtsidze from Georgia, who received a free registration this year, says: “As a young physician this opportunity from the ESC provides access to the latest knowledge and the ability to communicate with leading professionals from around the world.”

Young cardiologists not only have an opportunity to attend the ESC Congress, they can also help prepare dedicated sessions for their young colleagues. Here in Barcelona, nine CoT sessions are being held, including three today (see box below for details). The ESC also supports young cardiologists with reduced registration fees for delegates aged younger than 35 and for abstract presenters under 35. Additionally, the Society supports younger members of the community with Young Investigator Awards, and by providing grants for medical graduates to train outside of their own country. Last year, five training grants and one nursing grant of €25,000 each were awarded.

ESC President Professor Jeroen Bax says: “Our goal is to support young cardiologists the best way we can. By encouraging and supporting their careers, they will become highly skilled and experienced cardiologists, enabling them to deliver the best possible care for their patients.”
Enrich your experience of Barcelona through books and films

Barcelona is well-known for its cultural contributions. Home to some of the world’s most fascinating architecture, the city is also famous for its artistic, musical and literary heritage. You can enhance your experience of the city by spending a few hours enjoying the many books and films set here.

The city was the spiritual home of revolutionary forces in the Spanish Civil War, and this period is the setting for many of the city’s greatest books and films. Perhaps most recognisable to foreign audiences, George Orwell’s 1938 classic novel, Homage to Catalonia, details the brutal realities of revolutionary warfare. For readers interested in this period of history, The Man Who Loved Dogs by Cuban author Leonardo Padura offers a fascinating glimpse into the 1940s assassination of Leon Trotsky by Barcelona-born communist Ramon Mercader del Rio. Contemporary author José Luis García’s 2001 En Construcción (Under Construction, or, Work in Progress) documents the 1998 renovation of El Raval, formally known as Barrio Chino, or Chinatown. At the time an impoverished area, the film catalogues the neighbourhood’s rapid gentrification.

A more familiar view of Barcelona comes from Woody Allen’s 2001 Vicky Cristina Barcelona. While local residents may be disappointed by the grand homes and lavish gardens used to house one of the characters (played by Javier Bardem), the film offers comprehensive footage of the city’s tourist hotspots. Look out for stunning views of La Sagrada Familia and Parc Güell, intimate shots of Las Ramblas and an incredible view of Barcelona from Tibidabo Mountain.

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A truer-to-life vision of the small, intimate apartments familiar to locals can be seen in 2003’s En la Ciudad (In the City). This film takes place almost entirely inside Barcelona homes, bars and studios, offering a glimpse into the world of the city’s residents. Alejandro González Iñárritu’s 2010 film, Biutiful, takes the viewer on a stark journey from the plastic trinkets sold on Las Ramblas to the underbelly of suburban Badalona’s black market. The film, which also features Javier Bardem, was nominated for two Academy Awards.

While you are enjoying Barcelona, you can enrich your experience of the city by picking up a copy of one of these books or films. They may show you a side to the city you haven’t seen, or offer a deeper insight into the plazas and passiegs you have visited.

What are your tips for networking at the ESC Congress?

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ou have to make sure you are open. There are so many delegates here, and that means a lot of people to make friends with. Every institution is pushing for advances and I think we can all learn from each other and benefit from each other’s advances. This allows us to have the way for increased collaboration, then we can push science even further.

It is important to choose the right sessions—those related to your favourite topics and fields of interest. Then you can find other like-minded people that share the same interests as you, and discuss these topics with them. It is also important to use your time between the sessions in the lounges and communal spaces where you can spend time with other people to network and build new relationships.

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