

What's new in the 2016 ESC Guidelines on atrial fibrillation?

On 27 August 2016, the European Society of Cardiology (ESC) Guidelines for the management of atrial fibrillation (AF) were presented and published in the current issue of the European Heart Journal. Extensive new evidence underpinning the major components of AF management required a complete re-write of the existing guidelines, including concomitant cardiovascular conditions, anticoagulation, rate control, and rhythm control (Figure 1). Written in collaboration with the European Association for Cardio-Thoracic Surgery (EACTS), and endorsed by the European Stroke Organisation (ESO), here we highlight some of the new aspects of the 2016 guidelines.

These new guidelines reflect the increasing need to integrate and coordinate care of AF patients, reflected by the multidisciplinary input into the task force that included expert cardiologists and electrophysiologists, stroke neurologists, AF nurses, and cardiac surgeons. Integration ranges from screening and initial management, which can be done in many different healthcare settings, to complex decisions in patients needing advanced anticoagulation or rhythm control therapy.

Knowledge about the epidemiology of AF has progressed substantially, and the enormous impact of this rapidly growing group of patients (over 2% of typical European populations) highlights the need for both opportunistic and targeted intensive ECG screening for AF (for example, in patients over the age of 65 or those with

stroke or transient ischemic attack; I B recommendations). Although classification into first diagnosed AF, paroxysmal, persistent, long-standing persistent and permanent AF has not changed, advances in our understanding of the pathophysiology of this condition mean that in the future, mechanistic and treatment-specific types of AF may supersede the current classification to enable personalized cardiovascular medicine for AF patients.

Diagnosis of AF continues to require formal ECG documentation (I B), and in addition to clinical evaluation, this Task Force now recommends the use of transthoracic echocardiography in all AF patients to guide management (I C), assessing concomitant cardiovascular diseases (such as hypertension, valvular disease, and heart failure), but also to guide the use of anticoagulants, the choice of rate controlling agent, and rhythm control therapy. This recommendation also reflects the common co-existence of heart failure and AF.

Oral anticoagulation remains a major treatment component in AF patients, and apart from patients at the lowest risk of stroke (women and men without any clinical risk factors), most others will receive a net clinical benefit from anticoagulation (I A). The issue of anticoagulation in patients with a single risk factor (CHA₂DS₂-VASc score of 2 for women and 1 for men) is less well supported by data, but again many patients are likely to benefit, considering individual characteristics and patient preferences (IIa B). Importantly, stroke prevention should be considered irrespective of current heart rhythm; in

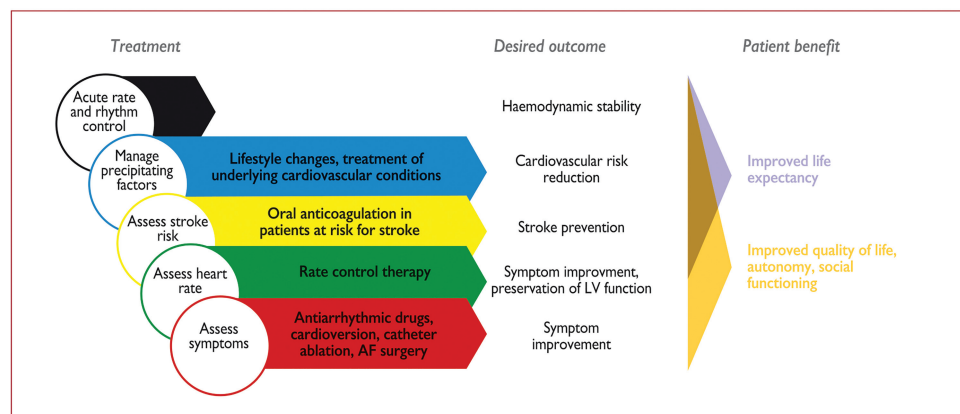


Figure 1 Acute and chronic management of atrial fibrillation patients. AF = atrial fibrillation; LV = left ventricular.

patients with apparently successful rhythm control, anticoagulation should be continued depending on individual stroke risk factors (I B).

Compared to warfarin, non-vitamin-K oral anticoagulants (NOACs) are associated with a halving of intracranial bleeding events, while preventing strokes as effectively (or even slightly better). Therefore, NOACs are now recommended as the first-line anticoagulant in eligible patients (I A). Patients who are ineligible for NOAC therapy, such as those with moderate-severe mitral stenosis, mechanical heart valves, and severe chronic kidney disease, should be treated with vitamin-K antagonists, maintaining a high time in therapeutic range (I B). Aspirin and other antiplatelets have no role in stroke prevention (III A). The combination of anticoagulation with antiplatelets increases bleeding risk and is only justified in selected patients for a short period of time; for example, in patients with an acute coronary syndrome or stent, balancing the risk of bleeding, stroke and myocardial ischaemia (IIa B/C).

Premature termination of anticoagulation is a major concern in the management of AF patients. To reduce the risk of bleeding on anticoagulation, the guidelines provide a list of modifiable bleeding risk factors that clinicians should address when considering anticoagulation. Importantly, bleeding and stroke risk factors overlap and patients at high risk of bleeding are likely to benefit from anticoagulation (IIa B). We have also included recommendations for the initiation and/or resumption of anticoagulation 3–12 days after ischaemic stroke (IIa C), and 4–8 weeks after intracranial haemorrhage (IIb B). The permanent discontinuation of anticoagulation should be based on multidisciplinary team decisions.

A number of recent studies have suggested a state of equipoise for current rate control treatments, such as the lack of mortality benefit from beta-blockers in AF patients with heart failure and reduced ejection fraction, and the observation that diltiazem and verapamil may improve symptoms more than beta-blockers in patients with preserved ejection fraction. Digoxin has not been studied in trials in AF patients, but in sinus rhythm has a neutral effect on mortality, with a small reduction in hospital admissions. The choice of rate controlling agent is therefore largely influenced by ejection fraction (where beta-blockers and digoxin are preferred when <40%), achieving an initial heart rate <110 beats/min (IIa B), and considering the use of combination therapy where required for symptom and heart rate control (IIa C).

Rhythm control therapy remains a treatment designed to improve AF-related symptoms. Antiarrhythmic drugs, supplemented with cardioversion are recommended treatment options (I A/I B). The choice of antiarrhythmic drugs is informed by safety considerations, and the new guidelines highlight the use of ECGs to detect patients at risk of complications. Catheter ablation is now reaching the mainstream of AF management and data underpinning its use have expanded in

number and quality. Catheter ablation is the rhythm control therapy of choice in patients with symptomatic recurrences of AF on antiarrhythmic drug therapy (I A paroxysmal; IIa C persistent), and emerges as a valid first-line alternative to antiarrhythmic drugs in selected patients with symptomatic paroxysmal AF (IIa B). Several randomized trials highlight the importance of complete isolation of the pulmonary veins in patients undergoing AF ablation, using either radiofrequency or cryotherapy ablation (IIa B). Hybrid therapy using combinations of antiarrhythmic drugs and catheter ablation seems a reasonable option for patients in need of more intensive rhythm control therapy.

Finally, the new guidelines make a concerted approach to integrate the management of AF by educating patients, and adopting a self-management and shared decision-making model of care (I C and IIa C). We propose the creation of local 'AF Heart Teams' to discuss and take difficult decisions especially regarding stroke prevention and rhythm control therapy, to provide optimal, multidisciplinary advice, and improve AF outcomes. This includes patients in need of advanced rhythm control interventions, including antiarrhythmic drugs, repeat catheter ablation, thoracoscopic ablation, and AF surgery.

The ESC provides new smartphone applications providing an integrated approach to AF care, both for AF patients and their healthcare professionals. These aim to encourage patient involvement in management, improve patient to doctor communication, and provide an interactive management tool incorporating the new ESC guidelines. Their creation is supported by the CATCH-ME Consortium (EU Horizon 2020 Grant 633196). Both apps are available for download on iOS and Android devices, in addition to the printed pocket guidelines and tools for continued professional development.

Progress in the management of AF continues to accelerate as we see more and more patients with AF across all forms of healthcare. The 2016 ESC guidelines for the management of AF provide the most current and integrated approach for clinicians to treat AF patients effectively and prevent adverse outcomes.



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‘Ten Commandments’ of 2016 ESC Guidelines for the management of atrial fibrillation

From the 2016 European Society of Cardiology (ESC) Guidelines for the management of atrial fibrillation, developed in collaboration with European Association for Cardio-Thoracic Surgery (EACTS)

(1) Use actively ECG screening and monitoring whenever atrial fibrillation (AF) might be suspected, including in patients with unspecific complaints, in elderly patients, and in survivors of an ischemic stroke.

(2) Therapeutic strategies in AF often comprise a variety of options representing reasonable alternatives. Integrated AF care including patient involvement and empowerment, educational guidance as well as shared decision making are key features of a successful physician–patient relationship in AF.

(3) Initiate anticoagulation in all patients with documented AF/atrial flutter who have an increased risk of stroke.

(4) Stroke risk evaluation is based on the CHADS-VASc score. With a score ≥ 2 in male and ≥ 3 in female patients, anticoagulation for stroke prevention is clearly recommended, while in a score of 1 in males and 2 in females, anticoagulation should be considered. No antithrombotic therapy of any kind should be prescribed in patients with a CHADS-VASc score of 0 (males) or 1 (females).

(5) Bleeding risks during anticoagulation therapy should be minimized by identifying modifiable bleeding risk factors: Hypertension should be well-controlled, concomitant antiplatelet or NSAID therapy should be as short in duration as possible, alcohol use moderated, and anaemia treated and normalized.

(6) Ventricular rate in patients with AF should be initially reduced according to a lenient target heart rate (< 110 beats/min at rest). When symptoms persist, a lower heart rate might be attempted but at the same time bradycardia avoided.

(7) Rhythm control therapy is indicated for symptom improvement in patients with AF. This entails electrical or pharmacological cardioversion of AF in symptomatic patients with persistent or longstanding-persistent AF, long-term antiarrhythmic drug therapy, catheter ablation, AF surgery, ablation, and pacing, generally in this order.

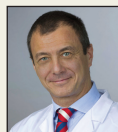
(8) Before cardioversion of AF, verify effective anticoagulation with a NOAC or VKA for a minimum of 3 weeks. After cardioversion, a minimum of 4 weeks of anticoagulation is required. As an alternative to pre-procedural anticoagulation, transoesophageal echocardiography can be utilized to exclude cardiac thrombus.

(9) For long-term antiarrhythmic drug therapy with the aim of maintaining sinus rhythm the following drugs are recommended: dronedarone, flecainide, propafenone, sotalol, or amiodarone. Catheter ablation is a reasonable alternative. Each of these drugs has its particular indications/contraindications and safety warnings, and their selection in an individual patient should be guided by safety.

(10) Perioperative AF is a common complication after cardiac surgery. Use peri-operative oral beta-blockers for the prevention of postoperative AF, and restore sinus rhythm by cardioversion in postoperative AF.



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AF patients with no schooling benefit least from anticoagulants

Atrial fibrillation (AF) patients with low education miss treatment targets more often

Patients with no schooling benefit least from oral anticoagulants, revealed a European Heart Rhythm Association (EHRA)/European Society of Cardiology (ESC) survey published in *Europace*.¹ The poll of more than 1100 patients with AF found those with no schooling missed treatment targets more often, were less aware of bleeding risks, and did not know they could continue normal daily activities.

80% of university educated patients knew they could drive, play sports and travel by plane compared to 52% without schooling.

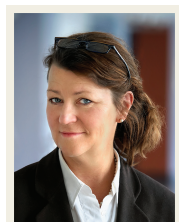


EHRA President Prof Gerhard Hindricks said: 'We asked patients what they knew about their drugs and analysed whether this differed by gender, age, education level, and country of residence.'

A total of 1147 patients with atrial fibrillation and taking oral anticoagulation completed 40 questions online. Oral anticoagulation included the vitamin K antagonists and the non-vitamin K oral anticoagulants (NOACs). Responses were collected over 3 months. Patients were 66 years old on average and 46% were women. Patients were from eight countries: France (33.6%), Denmark (26.6%), Sweden (20.9%), Spain (7.7%), Norway (4.5%), Germany (3.7%), the UK (2.2%), and Italy (0.8%).

The responses reveal disparities between patients with differing levels of education in terms of the benefits of anticoagulation and knowledge about the medication. Patients with no schooling were more likely to exceed the upper limit several times a month than those with college or university education (5.1% vs. 2.8%, $P < 0.05$).

Awareness of the bleeding risks associated with anticoagulant drugs was lowest in patients without schooling (38.5%) and highest in those with college and university education (57.0%) ($P < 0.05$). Nearly one in four (23%) patients without schooling reported having bleeding events associated with their medication compared to 18.7% with college and university education. Patients without schooling also had a higher rate of previous stroke (2.6%) than those with college and university education (0.71%) ($P < 0.05$).



Prof Carina Blomström-Lundqvist, who led the survey and is final author of the paper, said: 'The survey shows that differences in patient education level may compromise the safety and efficacy of anticoagulants. Patients unaware of the importance of being compliant have a higher risk for both bleeding events and stroke. The findings underline the importance of providing

user-friendly education about risk factors for stroke and adequate use of anticoagulants, and the importance of tailoring the educational message to the target population so that it is understood irrespective of the patient's level of schooling.'

The impact of anticoagulation on quality of life differed by education level. The majority (80.2%) of patients with university education knew that they could continue their normal daily activities such as travelling by plane, sports, driving a car, or having a job, compared to just 51.8% of patients without schooling ($P < 0.05$). 'Patients may be missing out on daily life because they don't realise they are safe to do sports, travel and other activities, which may explain the lower quality of life observed in many patients with AF,' said Prof Blomström-Lundqvist. 'More awareness and education about these issues are needed.'

Taking the patient group as a whole, when asked about the purpose of their anticoagulation medication, the majority (91–94%) correctly understood that it was to 'thin the blood' but 6–9% incorrectly said it was to control the arrhythmia. Prof Blomström-Lundqvist said: 'The survey demonstrated that a significant percentage of patients (around 8%) did not even understand the purpose of anticoagulation correctly and surprisingly, the number of patients who were aware of NOACs was still quite small.'

She added: 'This survey has important implications as it shows not only the need for more education in general about the indication and use of anticoagulants in patients with AF, but also importantly, that differences in educational level among patient populations may significantly compromise the safety and efficacy of anticoagulants.'

Professor Blomström-Lundqvist concluded: 'We believe that associations and societies like EHRA and the ESC have an important task to provide more user-friendly educational tools to improve knowledge about anticoagulation use – when and how to take it and the importance of taking it - for both AF patients and their physicians. We also need to increase the awareness of NOACs, so that all patients, independent of their educational level, can have access to the most optimal therapy.'²

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References are available as supplementary material at *European Heart Journal* online.

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Yoga and atrial fibrillation

Yoga improved quality of life in patients with paroxysmal atrial fibrillation according to research in the *European Journal of Cardiovascular Nursing*¹

Heart rate and blood pressure also decreased in patients who practiced yoga.

'Many patients with paroxysmal atrial fibrillation (AF) can't live their lives as they want to – they refuse dinners with friends, concerts, and travelling – because they are afraid of an AF episode occurring,' said Maria Wahlström, a nurse and PhD candidate at Sophiahemmet University and the Karolinska Institute in Stockholm, Sweden.

'Most patients are still working and have to take sick leave to visit the hospital. Because many patients with AF use complementary therapies it is necessary to find out if they actually help.'

The current study included 80 patients with paroxysmal AF who were randomised to yoga or a control group that did not practice yoga. Both groups received standard treatment with medication, cardioversion, and catheter ablation as needed. Yoga was performed for 1 h, once a week, for 12 weeks in the hospital with an experienced instructor. The yoga programme included light movements, deep breathing, and meditation.

Quality of life, heart rate and blood pressure were measured in all patients at the start and end of the study. Quality of life (physical and mental health) was assessed using two validated questionnaires, the Short-Form Health Survey (SF-36) and the EuroQoL-5D (EQ-5D) Visual Analogue Scale (VAS).

After 12 weeks, the yoga group had higher SF-36 mental health scores, lower heart rate, and lower systolic and diastolic blood pressure than the control group.



Ms Wahlström said: 'We found that patients who did yoga had a better quality of life, lower heart rate, and lower blood pressure than patients who did not do yoga. It could be that the deep breathing balances the parasympathetic and sympathetic nervous system, leading to less variation in heart rate. The breathing and movement may have beneficial effects on blood pressure.'

Within the yoga group, both the EQ-5D VAS scores and SF-36 mental health scores improved during the study, while there was no change in the control group between the initial and final measurements.

'Yoga may improve quality of life in patients with paroxysmal AF because it gives them a method to gain some self-control over their symptoms instead of feeling helpless,' said Ms Wahlström. 'Patients in the yoga group said it felt good to let go of their thoughts and just be inside themselves for a while.'

The researchers have started a larger study in 140 patients with symptomatic paroxysmal AF who will be randomised to yoga, music relaxation, or a control group. This will clarify whether the movement and deep breathing in yoga are beneficial or only the relaxation. It will also address the potential for group therapy itself to be beneficial, since patients may feel safe and secure when they meet others with the same illness.

Ms Wahlström concluded: 'A lot of the patients I meet who have paroxysmal AF are very stressed. Yoga should be offered as a complementary therapy to help them relax. It may also reduce their visits to hospital by lowering their anxiety until an AF episode stops.'

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Conflict of interest: none declared.

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New code of conduct underlines ethical integrity for patient benefit BioMed Alliance

A new Code of Conduct for healthcare professionals and scientific organisations was recently announced by the Alliance for Biomedical Research in Europe (BioMed Alliance). The BioMed Alliance is an umbrella organisation comprising 20 leading biomedical societies in different disciplines representing physicians and researchers from across Europe.

The Code of Conduct is the result of the BioMed Alliance's commitment to promoting objectivity and transparency amongst its 400 000

members of researchers and health professionals. It aims to reinforce the core principles of integrity, quality, independence, accountability, and transparency and ensures that interactions and collaborations with the health care sector will be for the benefit of the patient and the improvement of scientific standards and medical care.

The European Society of Cardiology (ESC) is a founding member of the BioMed Alliance and was instrumental in developing the Code of Conduct.



ESC President, Fausto Pinto, FESC, has welcomed the new Code of Conduct. 'In the current environment we understand how important it is for people to have confidence in the health care sector and to know that the priority for all those involved in their care is the best possible outcome. As the ESC is a not-for-profit learned society that works with volunteers for the improvement of public health, our ethical integrity must be beyond question and the interactions we have must always be for the benefit of the patient and public health.'

Having adopted the code, the ESC is planning to go further to reinforce its goals by establishing an ethics committee and creating a declaration of interest (DOI) policy. Prof Pinto added: 'I would commend the code as a real indication of the ESC's adherence to correct ethical procedures in dealings with the healthcare sector.'

The Code of Conduct requires all partners in the BioMed Alliance to act transparently and be proactive in stating their ethical principles. Members will commit to collaborating with all health care partners to ensure funding is available for the dissemination of science, education, and a range of programmes to further knowledge, education, and expertise in any particular speciality—all of which are essential to ensuring health care professionals are constantly updated.



Karin Sipido, FESC, a member of the ESC European Affairs Committee and Past President of the BioMed Alliance says: 'The BioMed Alliance is a powerful federation of the most influential research societies across Europe from a whole range of disciplines. The Code of Conduct is unprecedented. We have gathered the member organisations together to unite behind the same values;

expressing them collectively and with a common goal. This is an important milestone and sends a clear and unified message that patient care will always come first.'

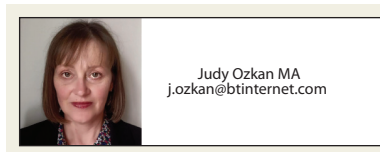


Axel Pries, FESC, ESC representative at the BioMed Alliance underlines that the ESC's role in the development of the Code of Conduct demonstrates the value of collaboration between cross-disciplinary health and research groups. 'The BioMed Alliance Code of Conduct is the outcome of tremendous effort of the Alliance's members in collaboration with stakeholders in order to ensure that the biomedical research community's voice is heard and understood.'

Since its foundation in 2010 the BioMed Alliance has been working with its member organisations to garner authority and in-depth knowledge in order to address shared issues and common areas of interest in biomedical and health research. The Code of Conduct will now formalise and ensure that all activities, interaction, and collaboration with the healthcare sector continue to take place within an accepted and approved framework. The Code of Conduct will ultimately help the BioMed Alliance move forward with its aims to strengthen and advance biomedical research by promoting the best interests and values of research across all medical disciplines in Europe.

The Code of Conduct is available at <http://www.biomedeuropa.org> and www.escardio.org.

Conflict of interest: none declared.



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Racing against time in acute ischaemic stroke treatment

Dr Peter Lanzer discusses a new target area for interventional cardiologists

The 25th European Stroke Conference convened 13–15 April 2016 in Venice. Almost 2000 participants attended some 300 lectures and about an equal number of abstracts on a wide range of topics about 'stroke medicine' ranging from basic neuro-science stroke to clinical stroke management.

Interestingly, although advertised as a European venture at a European venue the majority of participants arrived from overseas including North and South America and a number of Asian countries; overall, about 80 countries were represented. The vast majority of participants were neurologists along with a large group of neuro-radiologists, clinical

investigators, and a cheerful group of refreshingly young basic scientists. The five participating cardiologists organized and chaired three major symposia.

Without a doubt cardiologists have played an important role in stroke medicine for a number of years. Atrial fibrillation has gradually emerged and been recognized as the most frequent single cause of stroke. It has been widely described by the cardiology community. Stroke belongs to a cardiovascular continuum and it is besides acute coronary syndromes (ACSs), the most important manifestation of monovascular and pan vascular human disease, a fact also well-known and described by cardiologists.

Stroke prevention has been a concern of cardiologists for decades. So what is new?

Since 2015 five major studies have clearly documented the superiority of mechanical thrombectomy (MT) with systemic thrombolysis over systemic thrombolysis alone.¹ Consequently, MT has been suggested a first-line treatment in carefully selected patients with acute ischaemic stroke (AIS) originating in a large vessel of the anterior cerebral circulation and presenting within 6 h of the first symptoms.² To date the majority of MT procedures have been performed by neuro-radiologists dedicated to intracranial endovascular interventions. However, to develop functioning networks serving the needs of large numbers of patients suffering from ischaemic strokes, similar to ACS networks, many expert interventionists specifically trained in MT will be needed in the future.

Should cardiologists be involved and become partners in this emerging new field of catheter-based stroke management?

Currently, some 5000 carotid artery stenting (CAS) procedures are performed annually in Germany (2014, Statistisches Bundesamt, Wiesbaden), the vast majority performed by cardiologists. Similarly, in Italy more the 3000 CAS interventions have been performed by cardiologists in 2014 (personal communication, Dr Alberto Cremonesi). When the cardiologist Dr Gary Roubin, joined forces with neuroradiologist Dr Jiri Vittek, at the University of Alabama in 1988 to start a programme in CAS, the majority of us other faculty members considered this pioneering interdisciplinary effort quite daring, some even outlandish. Today, CAS has been firmly established as an equivalent means of treatment for carotid artery disease with outcomes comparable to carotid endarterectomy.

Similar to CAS in the late 1980's, MT has opened a new window of opportunity. The challenge is now to develop networks providing highly efficient treatment to a large and steadily growing population of stroke patients in Europe.

Today, cardiologists represent the most experienced interventional community that exists. While MT is more complex it is nevertheless quite similar to CAS. To perform MT safely and efficiently even highly experienced operators would need additional appropriate training. The development of training programs in MT for those interested and willing operators belongs to an immediate agenda.

Cardiologists should be encouraged to enter the emerging interdisciplinary dialogues on stroke and to actively participate in the new dynamic and exciting field of AIS management. Establishment of the European Society of Cardiology Stroke Council in January 2016 has been an important step in the right direction.

Participation of cardiologists in the 25th European Stroke Conference in Venice has proven that interactions with neurologists are rewarding, providing important opportunities for the highly needed interdisciplinary exchange and future collaborations.



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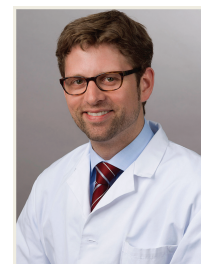
People's corner

Stephan H. Winnik MD PhD

In July 2016 the *European Heart Journal* appointed Stephan H. Winnik, MD, PhD, as new Local Associate Editor.

Stephan works in the Department of Cardiology at the University Heart Center in Zurich, Switzerland. His clinical interest lies in heart failure and transplantation as well as device therapy.

Stephan attained his MD degree at the University of Freiburg, Germany. During his studies he trained at the University of North Carolina in Chapel Hill, NC, USA, McGill University in Montréal, Canada, the University of Freiburg in Freiburg, Germany, and the University of Zurich in Zurich, Switzerland. Stephan engaged early into basic cardiovascular sciences, and had the privilege to gain profound insight into molecular biology at the McAllister Heart Institute in Chapel Hill, NC, USA.



He earned his PhD degree in Sciences in Medical Biology at the University of Zurich and the Federal Institute of Technology in Zurich, Switzerland. Stephan is a member of the board of the Cardiovascular Biology Group of the Swiss Society of Cardiology. His research goals are, on the one hand, the translation of basic principles of vascular biology and myocardial energy metabolism to clinical applicability, and, on the other hand, the refinement of patient selection for device therapy in advanced heart failure.

Stephan lives on the outskirts of the city of Zurich, he is a passionate road cyclist and an enthusiastic sailor and is looking forward to actively contributing to the editorial process of *European Heart Journal*.

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