

ESC 2023



Review of the European Society of Cardiology (ESC) Congress 2023

Location:	Amsterdam, the Netherlands
Date:	25 th –28 th August 2023
Citation:	EMJ Cardiol. 2023;11[1]:10-19. DOI/10.33590/emjcardiol/10309813. https://doi.org/10.33590/emjcardiol/10309813 .

The European Society of Cardiology (ESC) inaugural session unfolded against the backdrop of Amsterdam, the Netherlands, between 25th–28th August 2023. The President of the ESC, Franz Weidinger, Vienna Medical University, Austria, declared that the mission of this year's congress is to join forces to protect the heart. They highlighted the remarkable strides taken by cardiovascular medicine over the past few decades, which have enhanced and extended lives through pioneering achievements. From managing myocardial infarctions and controlling risk factors to treating valvular heart conditions and quelling life-threatening arrhythmias, the journey has been inspiring.

Extending a warm welcome to all attendees of the ESC Congress 2023, Weidinger emphasised to the audience that, as the collective consolidate their strengths, embrace learning, and engage in fruitful exchanges, the congress is dedicated to nurturing and cultivating the fundamental unity intrinsic to the cardiovascular community.

Thanks to an exceptional programme crafted by a dedicated team of experts, the ESC Congress 2023 featured a multitude of remarkable sessions. The Chair of the Congress Programme Committee, John McMurray, University of Glasgow, UK, was invited to share their reflections and personal highlights from the ESC Congress 2023. McMurray extended a warm welcome to the 30,000 participants, and expressed gratitude to the over 60 members of the ESC Congress Programme Committee, as well as the ESC staff, who have diligently worked throughout the past year to curate an outstanding

programme. They also expressed appreciation to the individuals who submitted their original research, including over 3,000 presenters from 86 countries, showcasing more than 3,700 abstracts and clinical cases.

This year's congress takes centre stage, with a spotlight on heart failure, a theme that weaves through the intricate challenges managed and experienced by all cardiologists. This theme courses through the programme, notably echoed by a dedicated update on the 2021 heart failure guidelines introduced at the congress. Echoing the heartbeat of progress, the congress presented four new ESC guidelines, one for every day of the event, encompassing acute coronary syndromes, endocarditis, cardiomyopathies, and cardiovascular disease in diabetes. Spanning 16 sessions, attendees actively engaged with guideline task forces, posing questions and forging valuable insights.

Another congress highlight included the riveting hot line sessions, which included nine in total, along with an additional 17 sessions unveiling late-breaking science. This platform showcased a staggering 115 clinical trials, trial updates, and registries, offering a robust exploration of topics such as acute coronary syndromes, coronary interventions, acute and chronic heart failure, and atrial fibrillation. The digital health hub stood out as a noteworthy component of the congress, featuring an assembly of 37 sessions delving into the profound implications of this vital technology across various subspecialties.



McMurray enthusiastically affirmed that the programme is both exciting and comprehensive, delivering the latest updates spanning the entire spectrum of cardiology.

Weidinger took the honour of introducing 603 new fellows from 74 countries to the ESC community. This marked a profoundly significant milestone in their careers, signifying recognition of their exceptional dedication, expertise, and notable contributions to the field of cardiovascular science. This year's recipients of the ESC President Awards were Gunnar Olson, Vastra Frolunda, Sweden; Chris Plummer, Newcastle Upon Tyne Hospitals, UK; and Maria Ximeris, Greece.

The board bestows Gold Medals in recognition of an individual's lifelong scientific contributions. This year, three distinguished individuals were honoured with the Gold Medal: Bertram Pitt, University of Michigan, Ann Arbor, USA; Silvia Priori, IRCCS Fondazione Salvatore Maugeri, Pavia, Italy; and Arthur Wilde, Amsterdam University Medical Centres (UMC), the Netherlands.

"The board bestows Gold Medals in recognition of an individual's lifelong scientific contributions."

A special ESC Gold Medal Award was presented to Isabel Bardinnet, Sophia-Antipolis, France, in recognition of their unwavering commitment to the ESC, valuable guidance, advice, and boundless energy that have benefited numerous individuals. This award served as a tribute to their exceptional 14-year tenure as Chief Executive Officer of the ESC.

The ESC has developed its strategic plan for the period of 2023–2028, yielding a remarkable asset that will dynamically guide their ongoing journey within an ever-evolving landscape. This collective effort aimed to identify future trends that will impact cardiovascular science, healthcare provisioning, the society at large, and the operating environment of the ESC. From these identified trends, they embarked on a democratic selection process to formulate future scenarios that depict the major challenges the ESC will

confront, as well as the opportunities and actions that will empower us to address them effectively.

These six scenarios encompass: the ageing population and multimorbidity, including the challenges posed by demographic changes; the future of cardiology, including the role of precision medicine through progressively refined diagnostic and therapeutic options; cardiologists of the future, including the subspecialisation that shapes the profiles of future cardiologists; digital health, including the significant role of digital tools, artificial intelligence, and big data analytics in shaping medicine and research; patient-centred healthcare; and societal changes, exploring topics such as climate change and environmental sustainability, inclusivity and diversity, and freedom from bias and undue influence. These scenarios act as strategic guides to enable the ESC to navigate a dynamic future while prioritising excellence, inclusivity, and innovative approaches.

As the scientific programme unfolded, the envisioned future scenarios truly came to life. Sessions explored captivating topics such as artificial intelligence, machine learning, advanced digital diagnostics, innovative approaches to public health and health economics, genetic testing, remote patient care, and much more.

"These scenarios act as strategic guides to enable the ESC to navigate a dynamic future."

EMJ had the pleasure of participating in this congress and is eagerly anticipating the next edition, scheduled to be held from 30th August–2nd September 2024, in London, UK. The current issue of *EMJ Cardiology* offers succinct summaries of pertinent press releases and abstracts presented at the ESC Congress 2023, accompanied by informative features that delve into the latest ESC guidelines and the role of artificial intelligence in heart failure. This issue also includes engaging interviews with experts in the field. We invite you to continue reading for more in-depth insights from this year's congress. ●

Awareness of Heart Attack Symptoms Reduces Chance of Death

HEART attack symptoms can include dizziness, cold sweats, loss of consciousness, nausea, and chest pain radiating to the arms, jaw, and neck. Fast treatment is crucial to a full recovery. Research presented at the ESC Congress 2023 investigated the association between symptom recognition, time to treatment, and clinical outcomes.

Data from the Korean Registry of Acute Myocardial Infarction for Regional Cardiocerebrovascular Centers (KRAMI-RCC), a registry of patients having experienced myocardial infarction in South Korea, were analysed. Nurses asked survivors of myocardial infarction whether they were aware of symptoms such as chest pain; shortness of breath; cold sweats; radiating pain to the jaw, shoulder, or arm; dizziness, vertigo, light-headedness, or loss of consciousness; and stomach ache. Patients who could identify at least one symptom were classified as 'recognised symptoms'; otherwise they were classified as 'did not recognise symptoms'. The researchers then compared patient characteristics, time to life-saving treatment, and survival between the two groups.

Overall, 11,894 patients who had experienced myocardial infarction were included, of whom 10,623 (90.4%) had a first-time event and 1,136 (9.6%) had a repeat event. In total, 52.3% of patients recognised the symptoms of myocardial infarction. Considering each symptom separately,

92.9% could identify chest pain as a symptom of myocardial infarction, 32.1% recognised shortness of breath, and 31.4% recognised cold sweats. Furthermore, just over one in four recognised radiating pain (27.4%), while only 7.5% identified vertigo/light-headedness/loss of consciousness, and 1.3% recognised stomach ache. Regarding demographic data, males were more likely to recognise symptoms than females. Younger patients with a higher education level, and living with a spouse, were also more likely to identify symptoms. Finally, patients who recognised symptoms had a lower in-hospital mortality rate (1.5%) compared with those who did not (6.7%).

"92.9% could identify chest pain as a symptom of myocardial infarction."

Kyehwan Kim, Gyeongsang National University Hospital, Jinju, South Korea, summarised: "The findings indicate that education is needed for the general public and heart attack survivors on the symptoms that should trigger calling an ambulance. In our study, patients who knew the symptoms of a heart attack were more likely to receive treatment quickly and subsequently survive. Women, older patients, those with a low level of education, and people living alone may particularly benefit from learning the symptoms to look out for." ●





Exercise Capacity Inversely Correlated with Atrial Fibrillation Incidence

EXAMINING the relationship between exercise performance and risk of atrial fibrillation (AF), as well as any subsequent comorbidities, regular physical activity has been found to help reduce inflammation and improve heart function. This research was presented at the ESC Congress 2023. AF is the most common heart rhythm disorder, affecting more than 40 million people worldwide. It is estimated that one in three Europeans will develop AF during their lifetime.

"It is estimated that one in three Europeans will develop AF during their lifetime."

This retrospective study involved 19,680 patients between 2003–2012, without previous diagnosis of AF, who were referred to exercise treadmill testing. Baseline characteristics and exercise parameters during testing were available in all enrolled subjects. Multivariable Cox proportional hazard models were used to identify independent associations between exercise performance and risk of new-onset AF, risk of ischaemic stroke, and major adverse cardiovascular events (MACE). Cubic spline regression models assessed the risk of new-onset AF across fitness levels. This analysis included 15,450 of the individuals, with average age of 55 years and 59% male. Fitness was assessed using Bruce protocol, asking participants to walk faster and at

a steeper grade in successive 3-minute stages. Fitness was calculated according to the rate of energy expenditure achieved, expressed in metabolic equivalents (MET).

At a median follow-up duration of 137 months, 515 new-onset AF cases were discovered in this dataset. There was an 8% lower risk of AF incidence (hazard ratio [HR]: 0.92; 95% confidence interval [CI]: 0.88–0.97), a 12% lower risk of ischaemic stroke incidence (HR: 0.88; 95% CI: 0.83–0.94), and a 14% lower risk of MACE (HR: 0.86; 95% CI: 0.84–0.88) for every one peak achieved METs increase in the exercise treadmill testing after adjusting confounding factors. In further analysis, the peak achieved METs during exercise were significantly associated with risk of new-onset AF across various subgroups, including age, sex, BMI, and underlying diseases. The researchers found significant interactions in age ($p=0.0047$) and presence of chronotropic incompetence ($p=0.0212$) subgroups.

The researchers were therefore able to conclude that exercise capacity is inversely correlated with AF incidence across fitness level, and a better exercise performance indicates a lower AF incidence, ischaemic stroke incidence, and MACE. Regular physical activity may help to reduce inflammation and improve heart function, preventing development of AF. This study reinforces the attitudes of clinicians in their recommendations and behaviour when diagnosing or treating patients for AF. ●

Aspirin Reduces Recurrent Myocardial Infarction, Stroke, and Death Risk

FOLLOWING diagnosis of a first myocardial infarction (MI), patients not concordant with long-term aspirin therapy for secondary prevention were found to have an increased risk of recurrent MI, stroke, and death, compared with patients concordant with treatment, according to research presented at the ESC Congress 2023.

A research team, led by Anna Meta Kristensen, Department of Cardiology, Copenhagen University Hospital – Bispebjerg, Denmark, and Frederiksberg, Denmark, analysed data from Dutch nationwide registries to evaluate the risks associated with discontinuing long-term aspirin following a first MI diagnosis compared with continued aspirin use.

The study enrolled 40,114 patients aged ≥ 40 years who were diagnosed with their first MI, treated with coronary stenting between 2004–2017, and were concordant with aspirin therapy during the first year following diagnosis. Patients were excluded if they had a stroke or recurrent MI within the first year or were taking anticoagulants.

The authors looked at concordance, measured as the proportion of days individuals had their medication in the preceding 2 years, with aspirin treatment at 2, 4, 6, and 8 years post-initial MI diagnosis. Those who took aspirin as prescribed $>80\%$ of the time were classified as adherent and those who took their aspirin $\leq 80\%$ of the time were deemed non-adherent. Patients were excluded at each 2-year time point if they experienced recurrent MI, stroke, death, or had commenced P2Y₁₂ inhibitors or anticoagulants.

Aspirin concordance was found to decrease over time, with 90% concordance at 2 years, 84% at 4 years, 82% at 6 years, and 81% at 8 years. To determine the absolute and relative risks of recurrent MI, stroke, or death at each of the 2-year time points, multivariable logistic regression was performed to account for age, sex, diabetes, hypertension, hypercholesterolaemia, cancer, chronic kidney disease, chronic obstructive pulmonary disease, peptic ulcer, and former bleeding.

This revealed that at 2, 4, 6, and 8 years, those non-adherent with aspirin were, respectively, 29%, 40%, 31%, and 20% more likely to experience recurrent MI, stroke, or death than their adherent counterparts.

The study focused on patients with a first MI treated with coronary stenting, not taking any other anti-thrombotic medication; therefore, the authors reported that their findings cannot be generalised to all patients with an MI. They also highlighted that given their use of registry data, information regarding the reasons for non-adherence were not available, and further suggested that the results represent an association, not causality.

In conclusion, Kristensen stated: “We recommend that all patients who have had a heart attack stay adherent to their aspirin, in accordance with guidelines until randomised controlled trials have proven otherwise, and clinical guidelines have been changed.” ●

"Patients were excluded if they had a stroke or recurrent MI within the first year or were taking anticoagulants."





Ablation of Atrial Fibrillation Enhances Results in End-Stage Heart Failure

LATE-BREAKING research presented at the ESC Congress 2023 indicated that atrial fibrillation (AF) ablation is associated with reduced occurrences of death, urgent heart transplantation, or left ventricular assist device (LVAD) implantation, when compared with medical therapy in patients with end-stage heart failure.

Patients with end-stage heart failure eligible for heart transplantation have often been overlooked in significant clinical trials. Hence, they are left without specific recommendations or concrete evidence regarding the best approach to managing AF alongside advanced heart failure. This situation has led to uncertainty in applying existing guidelines to this group, and numerous novel advances in heart failure therapy are withheld in clinical practice for these individuals.

In the CASTLE-HTx trial, the objective was to assess whether AF ablation outperforms medical therapy in terms of reducing mortality and the necessity for immediate heart transplantation or LVAD implantation.

The trial included individuals experiencing symptomatic AF along with end-stage heart failure, who were eligible for heart transplantation as per the guidelines from the ESC and the International Society for Heart and Lung Transplantation (ISHLT).

"The trial included individuals experiencing symptomatic AF along with end-stage heart failure."

Patients were assigned randomly in a 1:1 ratio to either undergo initial catheter ablation or receive medical therapy for the management of AF (either rate control or rhythm control). In both groups, patients were administered heart failure therapy following established guidelines. The primary outcome measure encompassed a combination of all-cause mortality, aggravation of heart failure necessitating urgent heart transplantation, or the insertion of an LVAD.

The study involved 194 participants, with an average age of 64 years, and females constituting 19% of the group. The study was halted for efficacy by the Data Safety Monitoring Board 1 year after the randomisation process was concluded. Regarding the primary outcome, it was observed in eight (8.2%) patients in the ablation group and 29 (29.9%) patients in the medical therapy group, resulting in a hazard ratio of 0.24 (95% confidence interval: 0.11–0.52; $p < 0.001$).

The authors emphasised that between AF ablation and medical therapy for patients with end-stage heart failure, ablation demonstrated lower occurrences of death, the need for urgent heart transplantation, or LVAD implantation. Additionally, it led to a decrease in AF burden and an improvement in left ventricular ejection fraction. Notably, listing for transplantation should not be delayed due to extended waiting times and the elevated mortality rate among those on the transplant waiting list. ●

Bystander Defibrillation's Crucial Role in Cardiac Arrest Survival

ALTHOUGH previous studies have investigated the best location for automated external defibrillators, there is limited evidence regarding the potential impact of ambulance response times on their placement. Hence, Mathias Hindborg, Nordsjællands Hospital, Hillerød, Denmark, and colleagues investigated the relationship between automated external defibrillator use and survival rates in relation to ambulance response times.

Data from the Danish Cardiac Arrest Registry were utilised to examine out-of-hospital cardiac arrests that occurred from 2016–2020. Information on age, sex, location, bystander defibrillation and cardiopulmonary resuscitation (CPR), ambulance response time, and survival at 30 days after the cardiac arrest was collected. The study specifically focused on adults who experienced a witnessed cardiac arrest, received CPR from a bystander, and had an ambulance arrive within 25 minutes or less.

The research team conducted a comparative analysis of the likelihood of survival in patients who underwent defibrillation from a bystander before the arrival of an ambulance as opposed to those who did not. The variance was assessed over the course of eight distinct intervals of ambulance response time. The statistical analyses were controlled for numerous factors that could potentially impact the association, including age, sex, site of arrest (public or private), and other medical conditions, namely a history of heart attack or stroke.

The study included a cohort of 7,471 mature individuals who underwent a cardiac arrest outside of a hospital, where a bystander was present and performed CPR before the arrival of the ambulance. Among them, 14.7% (1,098 out of 7,471) were given bystander defibrillation before the ambulance's arrival, while 85.3% (6,373 out of 7,471) were not. The results indicated that 44.5% (489 out of 1,098) of those who received bystander defibrillation survived for 30 days, whereas only 18.8% (1,200 out of 6,373) did so in the absence of bystander defibrillation.

Patients who received bystander defibrillation demonstrated higher survival rates than those who did not, for all ambulance arrival time intervals except for 0–2 minutes, where the increase in survival did not reach statistical significance. Bystander defibrillation was found to increase the likelihood of survival by 37% when ambulance arrival time was between 2–4 minutes, 55% for arrival in 4–6 minutes, and nearly two-fold for the remaining intervals studied, with relative risks of 2.23 for 6–8 minutes, 1.99 for 8–10 minutes, 1.89 for 10–12 minutes, 1.86 for 12–15 minutes, and 1.98 for 15–25 minutes, compared with no defibrillation.

The results showcase the added benefit of bystander defibrillation on survival; therefore, the authors recommend that when resources are limited, defibrillators should be located in areas where ambulance response times are likely to be more than 6 minutes. ●

"Data from the Danish Cardiac Arrest Registry were utilised to examine out-of-hospital cardiac arrests."





Neighbourhood Impact on Heart Health and Longevity

RECENT research highlights the importance of an individual's surroundings and its impact on heart health and longevity. The research team utilised data from the PURE-China study to investigate the association between neighbourhood characteristics, cardiovascular disease (CVD), and death. A total of 35,730 adults aged 35–70 years from 115 communities (70 urban and 45 rural) in 12 provinces of China between 2005–2009 were included.

Trained researchers conducted in-person interviews to gather baseline information concerning the neighbourhood environment using the Neighbourhood Environment Walkability Scale (NEWS). The questionnaire contained eight subscales, and the scores for each subscale were tallied to obtain a total NEWS score. High scores corresponded to positive perceptions about the community.

The participants were followed up for all-cause death, death due to CVD, major CVD events, myocardial infarction, stroke, and heart failure. The primary objective was to determine the combined incidence of major cardiovascular disease events and all-cause mortality.

Mengya Li, National Centre for Cardiovascular Diseases, Beijing, China, and colleagues examined the correlations between every subscale and the overall score, along with the health results, by adjusting for factors that could influence the relationships, including age, sex, BMI, education, household income, and marital status, among other aspects.

During a median follow-up of 11.7 years, there were a total of 2,034 deaths related to all causes.

Out of these, 765 were attributed to CVD, whereas 3,042 were deemed major CVD events. An elevated score in the neighbourhood environment was associated with a 6% decrease in the possibility of experiencing the primary outcome of major CVD events and all-cause mortality, a 12% lower chance of succumbing to death during the follow-up period, and a 10% reduction in the risk of fatality due to CVD.

The safety from crime subscale exhibited the strongest correlation with health outcomes. An increase in the score for neighbourhood safety was linked with a decrease of 9% in the risk of death during follow-up, a 10% reduction in the risk of CVD-related death, a 3% decrease in the possibility of major CVDs, a 6% decrease in the risk of myocardial infarction, and a 10% decrease in the likelihood of heart failure.

"The safety from crime subscale exhibited the strongest correlation with health outcomes."

A high score on all subscales was associated with a decrease in the risk of all-cause death during follow-up, with the risk ranging from 2–9% lower. Furthermore, a high score on the subscale for walking time to amenities was also linked with a 1% reduction in the risk of CVD-related death, major CVDs, and heart attack.

The authors stated that the findings may be implemented by policymakers to address and alleviate the detrimental impact of unfavourable community conditions on overall health. ●

Maintaining Dual Antiplatelet Therapy as Standard Following Stent Implantation

RECENT research presented at the ESC Congress 2023 revealed that prasugrel monotherapy following percutaneous coronary intervention (PCI) with drug-eluting stents is not superior to dual-antiplatelet therapy (DAPT) in terms of major bleeding. However, it is deemed non-inferior for cardiovascular events in patients with acute coronary syndrome (ACS) or high bleeding risk (HBR).

The ESC guidelines recommend 6 months of DAPT for HBR patients with ACS, and 12 months of DAPT for patients with ACS who are not at HBR following PCI. For patients without ACS, a shorter duration of 1–3 months of DAPT is advised for those with HBR after PCI.

The STOPDAPT-3 trial investigated the effectiveness and safety of using aspirin-free prasugrel monotherapy in comparison to a 1-month DAPT involving aspirin and prasugrel for patients with ACS or HBR who underwent PCI with cobalt-chromium everolimus-eluting stents. Between January 2021–April 2023, the study enrolled 6,002 patients with ACS or HBR from 72 medical centres in Japan.

At the 1-month mark, the no-aspirin approach did not show superiority over DAPT concerning the primary bleeding endpoint (4.47% versus 4.71%; hazard ratio: 0.95; 95% confidence interval: 0.75–1.20; p for superiority=0.66). However, the no-aspirin strategy demonstrated non-inferiority to DAPT with a relative 50% margin concerning the primary cardiovascular endpoint (4.12% versus 3.69%; hazard ratio: 1.12; 95% confidence interval: 0.87–1.45; p for non-inferiority=0.01).

There were no notable differences in the incidence of all-cause death (2.28% versus 2.11% in the no-aspirin and DAPT groups, respectively). The major secondary endpoint occurred in 7.14% of patients in the no-aspirin group and 7.38% of patients in the DAPT group, with no significant difference, indicating a similar effect on overall clinical benefit for both groups.

The no-aspirin group exhibited a higher rate of any coronary revascularisation (1.15% versus 0.57%) and definite or probable stent thrombosis (0.71% versus 0.44%), compared with the DAPT group. However, there was no difference in definite stent thrombosis between the two groups (0.47% versus 0.37%). In a subgroup analysis categorised by ACS and non-ACS, the increased risk of cardiovascular events in the no-aspirin group compared with the DAPT group was observed in patients with ACS but not in those without ACS.

The authors concluded that while the aspirin-free strategy, when compared with the DAPT strategy, did not lead to a reduction in major bleeding within the first month following PCI, it was non-inferior concerning the co-primary cardiovascular endpoint, with a relative margin of 50%. This suggests that using aspirin for a limited period of 1 month after PCI as part of DAPT might have offered protection to vulnerable coronary lesions, especially in patients with ACS, without a significant increase in major bleeding. Therefore, they stated the standard strategy for PCI should continue to be DAPT, even in the era of new-generation drug-eluting stents. ●

"The STOPDAPT-3 trial investigated the effectiveness and safety of using aspirin-free prasugrel monotherapy."

