

Cardiology Practice Review™

Making Education Easy

Issue 30 - 2023

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Abbreviations used in this issue:

ACC = American College of Cardiology;
ACRA = Australian Cardiovascular Health and Rehabilitation Association;
AHA = American Heart Association; CAT = cancer-associated thrombosis;
CI = confidence interval; CMR = cardiovascular magnetic resonance;
CPD = continuing professional development;
CSANZ = Cardiac Society of Australia and New Zealand;
CT = computer tomography; CVD = cardiovascular disease;
DOAC = direct oral anticoagulants; ECIG = electronic cigarette;
ESC = European Society of Cardiology; GLP-1 = glucagon-like peptide 1;
GP = general practitioner; HF = heart failure;
LMWH = low-molecular-weight heparin; LVEF = left ventricular ejection fraction;
MBS = Medicare Benefits Schedule; MI = myocardial infarction; OR = odds ratio;
PSVT = paroxysmal supraventricular tachycardia;
SCAD = spontaneous coronary artery dissection;
SGLT2 = sodium-glucose cotransporter-2;
TBI = traumatic brain injury; VTE = venous thromboembolism.

Welcome to the 30th issue of Cardiology Practice Review.

This Review covers news and issues relevant to clinical practice in cardiology. It will bring you the latest updates, both locally and from around the globe, in relation to topics such as new and updated treatment guidelines, changes to medicines reimbursement and licensing, educational, professional body news and more. Finally, on the back cover you will find our COVID-19 resources for Cardiologists and a summary of upcoming local and international educational opportunities including workshops, webinars, and conferences.

We hope you enjoy this Research Review publication and look forward to hearing your comments and feedback.

Kind Regards,

Dr Janette Tenne
Editor

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Clinical Practice

New Australian guideline and calculator for assessing and managing cardiovascular disease risk

A significant update to the cardiovascular disease (CVD) prevention guidelines was recently launched, marking the first major revision in over a decade. This move is expected to impact the care of approximately eight million Australians. Despite considerable progress, CVD remains the leading cause of death in the nation, accounting for one in four Australian fatalities and placing a substantial burden on patients, families, and the healthcare system, with an annual cost of over \$12.7 billion.

The updated guidelines aim to equip clinicians with the latest evidence regarding the early detection, assessment, and management of CVD risk. One of the highlights of the new Guideline is the new Australian CVD Risk Calculator, which employs a risk equation that has been specifically adapted and recalibrated for the Australian population, using contemporary cohort data, and also includes risk modifiers such as coronary calcium score. This calculator will enable general practitioners (GPs) to better estimate their patients' risk of developing CVD and more effectively identify high-risk individuals who may require targeted treatment.

The collaboration between the Australian Government and the National Heart Foundation of Australia, on behalf of the Australian Chronic Disease Prevention Alliance, ensures that the guidelines are aligned with National Health and Medical Research Council standards and have received endorsement from the Royal Australian College of General Practitioners.

To support the implementation of these updated guidelines, the Australian government has allocated \$1 million in the 2023-24 fiscal year for the integration of the calculator into GP software and to begin the implementation process. Furthermore, additional measures to alleviate the burden of CVD, including extending temporary MBS Heart Health Assessment items and implementing 60-day prescriptions for various ongoing health conditions like hypertension, high cholesterol, and other heart-related ailments, have been implemented. The 60-day prescriptions offer patients the benefit of receiving twice the medication for the cost of a single prescription, ensuring greater accessibility to essential treatments.

<https://tinyurl.com/yb72zh8d>

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Updated guidelines for the management of chronic coronary disease

The 2023 Guideline for the Management of Patients with Chronic Coronary Disease, jointly issued by the AHA and the ACC, updates and revises recommendations from previously published guidelines based on the latest evidence. The guideline was meticulously developed in collaboration with and/or endorsed by the American College of Clinical Pharmacy, American Society for Preventive Cardiology, National Lipid Association, Preventive Cardiovascular Nurses Association, and the Society for Cardiovascular Angiography and Interventions

It offers a comprehensive approach to treating chronic coronary disease with a strong focus on team-based care, patient education, and shared decision-making. The guideline covers a wide range of topics, including general treatment approaches, guideline-directed management, and therapy to alleviate symptoms and prevent future cardiovascular events, decision-making regarding revascularisation, recommendations for managing special populations, patient follow-up, monitoring, evidence gaps, and areas that require further research. Additionally, cost-value recommendations for clinicians are provided wherever cost-effectiveness data are available.

With a focus on improving symptoms and future cardiovascular risk, some key recommendations from this guideline are as follows:

- Health lifestyle recommendations should be followed.
- β -blockers are no longer recommended to be used for > 1 year in patients who have not had myocardial infarction (MI) within the past year or in those with left ventricular ejection fraction (LVEF) of $\geq 50\%$. β -blockers or calcium channel blockers are recommended as first-line antianginal therapy.
- SGLT2 inhibitors and GLP-1 receptor agonists are recommended for select patients with chronic coronary disease. SGLT2 inhibitors are recommended in patients with diabetes and in those with heart failure (HF) and LVEF of $\leq 40\%$ and may be considered in patients with HF and LVEF of $\geq 40\%$. GLP-1 receptor agonists are recommended in patients with diabetes.
- Statin therapy remains a first-line therapy for lipid lowering in chronic coronary disease and certain adjunctive therapies may be used in select patients; however, outcomes data are unavailable for some novel agents such as inclisiran.
- Under many circumstances, shorter-duration dual antiplatelet therapy after PCI is safe and effective.

<https://tinyurl.com/2z2hkfuh>

Comparative effectiveness of anticoagulants in patients with cancer-associated thrombosis

A recent study aimed to provide a comprehensive analysis of anticoagulant utilisation patterns and their comparative effectiveness in patients with cancer-associated thrombosis (CAT) within a clinical setting. The researchers gathered deidentified OptumLabs electronic health record claims data from January 2012 to September 2019 and included adult patients (≥ 18 years) with a primary cancer diagnosis, excluding skin cancer, who had at least one inpatient or two outpatient visits within six months before the venous thromboembolism (VTE) date.

The mean age of the 5,100 patients included in the study was 66.3 years; 2,670 patients (52.4%) were women. The study analysed the anticoagulant prescriptions given to these patients, categorising them into three groups: direct oral anticoagulants (DOACs), low-molecular-weight heparin (LMWH), and warfarin.

DOACs were the most frequently prescribed anticoagulants (49.3%), followed by LMWH (29.2%) and warfarin (28.6%). The median treatment duration varied, with DOACs being taken for 3.2 months, warfarin for 3.1 months, and LMWH for 1.8 months. The choice of anticoagulant appeared to be influenced by cancer type, with patients with lung (OR, 2.07; 95% CI, 1.12–3.65), urological (OR, 1.94; 95% CI, 1.08–3.49), gynaecological (OR, 4.25; 95% CI, 2.31–7.82), and colorectal cancer (OR, 2.26; 95% CI, 1.20–4.32) more likely to be prescribed LMWH over DOACs.

In terms of comparative effectiveness, DOACs emerged as the favourable option. They were associated with a 50% risk reduction in VTE recurrence compared with both LMWH and warfarin. Moreover, DOACs demonstrated a 60% risk reduction in all-cause mortality compared with LMWH. Importantly, DOACs were also associated with a lower risk of major bleeding and gastrointestinal tract bleeding when compared with LMWH.

Conversely, both LMWH and warfarin were linked to increased risks of VTE recurrence compared with DOACs. LMWH was associated with a higher risk of major bleeding and all-cause mortality compared with DOACs. Warfarin, while showing some efficacy, may still be considered for patients with contraindications to DOACs or those with poor persistence on LMWH.

The study provides valuable insights into anticoagulant utilisation patterns in CAT management, DOACs being associated with lower risk of VTE recurrence, major bleeding, and mortality. The findings underline the importance of tailoring anticoagulant therapy to the individual patient and their type of cancer. Further research and clinical trials are warranted to explore the long-term benefits and risks of DOACs in this patient population and to better inform treatment decisions in clinical practice.

<https://tinyurl.com/bdhr96m2>

Self-administered etripamil nasal spray offers resolution of common arrhythmia

Etripamil is a fast-acting calcium-channel blocker delivered through intranasal administration, developed for on-demand therapy of paroxysmal supraventricular tachycardia (PSVT) outside of a health care facility. RAPID, a recent multicentre, randomised, placebo-controlled study, aimed to assess the efficacy and safety of etripamil 70 mg nasal spray in converting PSVT to normal sinus rhythm within 30 minutes. The study was conducted at 160 sites in North America and Europe.

Patients eligible for the trial were at least 18 years old and had a history of PSVT with sustained, symptomatic episodes. They were administered two test doses of intranasal etripamil during sinus rhythm and then randomly assigned to receive either etripamil or placebo. Patients were instructed to self-administer a 70 mg intranasal dose of etripamil or placebo when experiencing symptoms of PSVT. If symptoms persisted beyond 10 minutes, they were allowed to take a repeat dose. The primary endpoint was the time to conversion of PSVT to sinus rhythm for at least 30 seconds within 30 minutes after the first dose.

Between October 2020 and July 2022, 184 patients (etripamil group, $n=99$; placebo group, $n=85$) self-administered the study drug for PSVT. The conversion rate within 30 minutes was 64% with etripamil and 31% with placebo, indicating that etripamil was significantly more effective (hazard ratio 2.62; 95% CI 1.66–4.15; $p<0.0001$). The median time to conversion was 17.2 minutes with etripamil (95% CI 13.4–26.5) and 53.5 minutes with placebo (95% CI 38.7–87.3).

Overall, the treatment was well-tolerated, and adverse events were mostly mild or moderate, resolving without intervention. The most common adverse events associated with etripamil were nasal discomfort (23%), nasal congestion (13%), and rhinorrhoea (9%).

The study suggests that using a symptom-prompted, self-administered regimen of intranasal etripamil is a safe and effective approach to rapidly converting PSVT to normal sinus rhythm. This method empowers patients to manage their PSVT outside of a health care setting, potentially reducing the need for medical interventions like intravenous medications in an acute-care setting.

<https://tinyurl.com/2my5kb97>

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Safety¹: Very common (≥10%) solicited local adverse reactions and solicited general adverse events were pain, redness, and swelling at the injection site; and myalgia, fatigue, headache, shivering, fever, and gastrointestinal symptoms, respectively.

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Recombinant Varicella Zoster Virus glycoprotein E antigen
(AS01_B adjuvanted vaccine)

Cardiopulmonary impact of electronic cigarettes and vaping products

Over the past decade, there has been a significant increase in the use of vaping and electronic cigarettes (e-cigarettes), especially among young people. E-cigarettes are often promoted as a safer alternative to traditional cigarettes due to their limited ingredients and lack of combustion. However, recent incidents like the outbreak of vaping-associated lung injury, which led to >1,800 hospitalisations in the US, have raised concerns about their safety. The objectives of a scientific statement, which was recently released by the AHA, were to:

- Explore patterns of e-cigarette use among youth and adults.
- Identify harmful constituents in vaping aerosols.
- Assess the cardiovascular and pulmonary risks associated with e-cigarette use based on available evidence.
- Examine their potential as tobacco-cessation products.
- Review current public health and regulatory efforts.

There is a high prevalence of e-cigarette and vape product use in youth. In the US, use more than doubled from 2017 to 2019 among middle and high school students, with 27.5% of high school students (4.1 million) reporting current e-cigarette use in 2019 (compared with 5.8% who reported using combustible cigarettes). The use in young adults aged 18–24 years has also increased, with large increases among never-smokers (1.5% to 4.6%) and former smokers (10.4% to 36.5%) from 2014 to 2018.

Early evidence suggests that these products, especially those containing nicotine, have acute physiological effects, but more research is needed to fully understand the long-term implications on cardiopulmonary health. Currently, e-cigarettes and vape products are regulated as tobacco products, lacking the premarket safety studies required for drug products or medical devices. Thus, critical questions remain unanswered about the short-term and long-term health effects of e-cigarettes and vape products.

Effective public health efforts and regulations are necessary to address the increasing use of these products, particularly among young individuals, and to protect cardiovascular and pulmonary health in the population. Further studies are required to build a comprehensive understanding of the impact of these products on health as their use continues to grow.

<https://tinyurl.com/433xaf3y>

Identifying subtypes of heart failure with machine learning

A recent study employed machine learning to identify and validate HF subtypes across large population-based datasets, covering a broad spectrum of causes and presentations. Data from individuals aged ≥ 30 years with incident HF from two UK-based population databases between 1998 and 2018 were analysed. Pre-HF and post-HF factors were considered, including demographic information, medical history, examination results, laboratory values, and medications.

Four unsupervised machine learning methods were employed to identify subtypes, resulting in five distinct clusters labelled as (1) early onset, (2) late onset, (3) atrial fibrillation-related, (4) metabolic, and (5) cardiometabolic. The validity of these subtypes was evaluated based on external factors, prognostic accuracy (1-year mortality prediction), and genetic associations using data from UK Biobank.

Results demonstrated consistent subtypes across the different datasets, indicating strong external validity. Prognostic validity analysis revealed variations in 1-year all-cause mortality, non-fatal CVD risk, and all-cause hospitalisation across the identified subtypes. Genetic analysis further demonstrated strong associations between late onset and cardiometabolic subtypes and polygenic risk scores for HF-related traits such as hypertension, MI, and obesity ($p < 0.0009$).

The findings provide valuable insights that can potentially inform aetiological research, enhance clinical risk prediction, and guide the design of HF trials. However, further research and validation are necessary to fully implement these findings in clinical practice.

<https://tinyurl.com/3ynmw6vk>

Environmental impact of cardiovascular health care

A recent study led by the Centenary Institute and the University of Sydney, highlights the potential to effectively reduce environmental impacts within cardiac care, without compromising on quality of health care. Twelve studies were analysed, covering cardiac imaging, pacemaker monitoring, pharmaceutical prescribing, and in-hospital care, including cardiac surgery. Among these studies, three used the gold-standard Life Cycle Assessment method to estimate environmental impacts. Interestingly, one study found that the environmental impact of echocardiography was significantly lower (1%-20%) compared with cardiac magnetic resonance imaging and Single Photon Emission Tomography scanning.

The review highlighted opportunities to reduce the environmental impacts of cardiovascular health care. For instance, opting for echocardiography as the first cardiac test before more resource-intensive options like CT or CMR can reduce carbon emissions. Remote monitoring of pacemaker devices and teleconsultations when suitable also contribute to environmental preservation. Moreover, specific interventions, such as rinsing bypass circuitry after cardiac surgery, can help minimise waste generation.

Notably, implementing these eco-friendly practices not only reduces the environmental burden but also offers various co-benefits. These include cost savings, health benefits like cell salvage blood for perfusion, and social advantages such as reduced time away from work for patients and caregivers.

<https://tinyurl.com/yrrb73av>

News in Brief

Pregnancy-related spontaneous coronary artery dissection

Spontaneous coronary artery dissection (SCAD) is a rare cause of MI, often seen in young patients without significant risk factors. In pregnancy, SCAD poses a higher risk of life-threatening arrhythmias, cardiogenic shock, and death. Understanding its mechanism remains incomplete, and underdiagnosis contributes to its high mortality rate. A recent case involved a 38-year-old pregnant woman at 29 weeks gestation presenting with persistent chest pain, diagnosed with SCAD in the left anterior descending artery. Conservative management was chosen due to potential risks of intervention and her stable condition. Early recognition and appropriate management are crucial for improved outcomes in these challenging cases.

<https://tinyurl.com/b58t3p6k>

Cardiac injury after traumatic brain injury

Traumatic brain injury (TBI) is a growing public health concern, leading to high mortality rates, morbidity, and a significant impact on survivors' quality of life. During TBI management in the intensive care unit, extracranial complications, including cardiac injury, commonly arise and can worsen patient outcomes. The complex interplay between the brain and heart, triggered by acute brain injury, leads to a systemic inflammatory response and a surge of catecholamines, resulting in cardiac complications such as QTc prolongation and arrhythmias. β -blockers have shown promise in mitigating these effects and improving cardiac and cerebral function, but further research is required to fully understand their therapeutic role in severe TBI.

<https://tinyurl.com/26tzc6bj>

Cholesterol varies widely by country and region, showing need for targeted recommendations

A recent study evaluated the lipid distributions from over 461 million patients aged 20–89 years across seventeen countries on five continents. The results highlighted the global variability in lipid levels, which may be influenced by genetics, lifestyle habits, lipid testing practices, and medical treatments. Despite these variations, elevated atherogenic lipid levels remain a prevalent issue worldwide, contributing to CVD risk. This comprehensive study offers valuable information to inform national policies and health system approaches aimed at reducing CVD risk associated with abnormal lipid levels.

<https://tinyurl.com/2r6yt7pd>

COVID-19 Resources for Cardiologists

CSANZ <https://tinyurl.com/y3xp2729>

ACC <https://tinyurl.com/y68aud3a>

ESC <https://tinyurl.com/wn3fst5>

Conferences, Workshops, and CPD

Please click on the links below for upcoming local and international cardiology meetings, workshops, and CPD.

ACRA <https://tinyurl.com/y4yj8xb5>

CSANZ <https://tinyurl.com/3mwt5tr>

Cardiac Skills Australia <https://tinyurl.com/7hx6zmdt>

Heart Foundation <https://tinyurl.com/y34smdoz>

Australian Centre for Heart Health <https://tinyurl.com/e2yjcreu>

ACC <https://tinyurl.com/y2khytpz>

AHA <https://tinyurl.com/zajc9a7>

ESC Congresses and Events <https://tinyurl.com/y6ko68yf>

ESC Education <https://tinyurl.com/y3zkjp3o>

Research Review Publications

[Acute Coronary Syndrome Research Review](#) with Professor John French

[Atrial Fibrillation Research Review](#) with Dr Andre Catanchin

[Cardiology Research Review](#) with Associate Professor John Amerena

[Heart Failure Research Review](#) with Professor John Atherton, Professor Andrew Coats, and Dr Mark Nolan

[Interventional Cardiology Research Review](#) with Conjoint Professor Craig Juergens

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