

Decades of progress: Evidence-based medicine's role in reducing cardiovascular mortality

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CARDIOVASCULAR DISEASES (CVDs) remain the leading cause of mortality worldwide, claiming millions of lives annually.

Over the past few decades, substantial progress has been achieved in utilising evidence-based medicine to prevent and treat cardiovascular diseases, resulting in a notable reduction in cardiovascular mortality.

We have witnessed the refinement of risk prediction models, enabling clinicians to identify individuals at heightened risk of cardiovascular events with greater accuracy.

Advances in biomarker testing, including high-sensitivity troponin assays and B-type natriuretic peptide (BNP) testing, have further enhanced risk stratification and the early identification of patients at high risk of adverse cardiovascular events.

Since landmark trial results from the 1990s became available,¹ statins have been the cornerstone of dyslipidaemia management, exhibiting potent lipid-lowering effects and exerting pleiotropic effects, including stabilising atherosclerotic plaques and reducing inflammation, thereby reducing the risk of cardiovascular events and mortality. Recent trials on PCSK9 inhibitors also show promising results for low-density lipoprotein cholesterol lowering and reduction in cardiovascular events.^{2,3}

Clinical trials conducted on angiotensin-converting enzyme (ACE) inhibitors in the 1990s, beta-blockers, aldosterone antagonists in the late 1990s to early 2000s, and angiotensin receptor blockers (ARBs) in the 2000s have played a pivotal role in managing hypertension, heart failure and post-myocardial infarction care, thereby reducing cardiovascular mortality.⁴

Renin-active agents provide benefits across various patient populations, including patients with heart failure with or without left ventricular dysfunction, established vascular disease and those with diabetes. A trial conducted in patients with heart failure and systolic dysfunction in 2014 with the angiotensin receptor-neprilysin inhibitor (ARNI), sacubitril-valsartan combination, which simultaneously blocks the renin-angiotensin system and inhibits the breakdown of several vasoactive peptides, has shown additional benefits in reducing the risks of death and hospitalisation for heart failure.⁵

The emergence of novel antithrombotic agents such as direct oral anticoagulants (DOACs) has transformed the management of atrial fibrillation, reducing the risk of stroke and systemic embolism.⁶

Since the requirement by the US Food and Drug Administration in 2008 to demonstrate cardiovascular safety for new diabetes medications, there has been a paradigm shift in the management of patients with type 2 diabetes. SGLT-2 inhibitors and GLP-1 RAs have demonstrated remarkable cardiovascular benefits beyond glycaemic control. SGLT-2 inhibitors have been shown to reduce heart failure hospitalisations and cardiovascular mortality. GLP-1 RAs are associated with a notable reduction in cardiovascular mortality, non-fatal myocardial infarction and non-fatal stroke; they have also transformed the approach to obesity treatment.⁷

Advancements in interventional cardiology with early revascularisation, particularly in ST elevation myocardial infarction, have improved outcomes in patients with acute coronary syndromes. The use of aspirin and additional antiplatelet agents, such as clopidogrel and ticagrelor, in the context of post-myocardial

infarction care and following stent insertion, has shown better outcomes and a decrease in the incidence of stent thrombosis.⁸

Introduction of implantable cardiac devices, including pacemakers, implantable cardioverter-defibrillators for primary and secondary prevention, and cardiac resynchronization therapy (CRT) devices, has significantly improved the management of arrhythmias and heart failure, thereby reducing mortality rates.

Integration of digital health technologies such as wearable devices, telemedicine and remote monitoring systems has facilitated early detection and treatment of cardiac events.

Incorporating genetics into cardiovascular care holds promise for reducing the global burden of CVD and improving patient outcomes, representing a pivotal advancement towards tailored and efficient healthcare in the future.

In this issue of the *Australian Journal of General Practice*, we have comprehensively covered a wide range of cardiovascular conditions that general practitioners encounter in everyday practice, providing up-to-date information and management guidelines based on current evidence.⁹⁻¹⁴

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