Heartbeat: reducing inequities in cardiovascular disease mortality

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Cardiovascular disease (CVD) remains a leading cause of death in Europe with persistent geographic and socioeconomic inequities even though overall CVD mortality has declined substantially over the past 30 years. In a prospective registry-based study of CVD mortality from the 1990s to early 2010s in 12 European populations, Girolamo and colleagues¹ observed similar and rapid declines in absolute CVD mortality in both high and low socioeconomic groups. However, relative declines were faster among higher socioeconomic groups so that relative differences in CVD mortality have not been eliminated when considering gender, educational level, occupational class or geographic location (figure 1).

In the accompanying editorial, Leyland and Dundas² discuss the value of considering both absolute and relative inequities in seeking to improve outcomes across the socioeconomic spectrum. In our efforts to reduce inequities in medical care and clinical outcomes, we should ponder their recommendations: 'An effective and fair health system will be responsive to the needs of its population regardless of social circumstances; perhaps the greatest opportunity for medical care to reduce inequalities is if more disadvantaged groups are encouraged to seek healthcare earlier in the progress of the disease. The greatest opportunity to reduce inequalities, however, must be through the modification of lifestyle risk factors including smoking, alcohol consumption, diet and physical activity. These can bring about rapid change, show strong social patterning and are amenable to population-wide intervention such as through policy.'

Advances in diagnosis and treatment of acute myocardial infarction (AMI) have primarily been evaluated in terms of 'hard endpoints' including mortality and major adverse event rates. The patient experience has received less consideration with limited data on health-related quality of life (HRQoL) and long-term changes (or trajectories) in HRQoL after AMI. In a study of 9655 survivors of AMI between 2011 and 2015, Munyombwe and colleagues³ found that patients with no improvement (22%) or a decline (10%) in HRQoL after AMI,

Figure 1 Total cardiovascular disease age-standardised mortality rates (ASMR) and 95% CI among low and high educated, by population and gender, 35–79 years, 2010–2014.

compared with those with improved HRQoL (68%) were more likely to be women with an non-ST elevation myocardial infarction and have additional long-term health issues (figure 2). The authors suggest that targeted interventions are needed to improve HRQoL in these patients.

As Doll⁴ notes in an editorial, patient reported outcomes (PROs), such as the Seattle Angina Questionnaire or Kansas City Cardiomyopathy Questionnaire, increasingly are recognised as valid and

meaningful endpoints in clinical trials. 'However, implementing PROs in clinical practice, and targeting QOL with specific treatments, remains challenging.' As he points out, it is not surprising that there is less improvement in HRQoL after AMI in patients with advanced age, an STEMI or multiple comorbidities. The explanation for the lack of improvement in women is less evident and deserve further attention. He further suggests that clinical trials should include PROs because 'While avoiding

Figure 2 Patterns of change over a year. (A) EQ-5D-3L, (B) EQ VAS by myocardial infarction type; (C) EQ-5D-3L, (D) EQ VAS by class, - - - - - UK general population, UK >75 years). NSTEMI, non ST-elevation myocardial infarction; STEMI, ST-elevation myocardial infarction.

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Figure 3 Mechanisms of action, main effects and cardiovascular (CV) benefits of glucagon-like peptide-1 receptor agonists (GLP1ra) and sodium glucose cotransporter-2 inhibitors (SGLT2i). ASCVD, atherosclerotic cardiovascular disease; HF, heart failure.

mortality and ischemic events remains paramount, a greater focus on PROs can place quality of life next to quantity of life as dual goals of AMI treatment.’

Diabetes and cardiovascular disease (CVD) are inextricably linked both in terms of disease pathogenesis and in terms of targeted treatment to reduce the risk of atherosclerotic vascular disease and heart failure. To better understand the newer pharmacological agents for treatment of diabetes and prevention of CVD, clinicians will want to read the timely review article⁵ in this issue of *Heart* on the cardiovascular benefits of glucagon-like peptide-1 receptor agonists (GLP1ra) and sodium glucose cotransporter-2 inhibitors (SGLT2i). (figure 3) In addition to summarizing clinical trial data for these medications, this

article also provides practical advice for prescribing, and a summary of risks and side effects. (figure 4)

A second review article in this issue of *Heart* provides clinical advice on prevention of stroke and thromboembolism in patients with atrial fibrillation (AF).⁶ Although the CHA₂DS₂-VASc score remains the standard approach to risk assessment, refined approaches to risk stratification would be desirable. The primary therapy for prevention of systemic embolization in patients with AF now is a non-vitamin K anticoagulant (NOAC) medication with warfarin now used only in some specific situations. The role of left atrial appendage occlusion devices, cardioversion or AF ablation procedures in prevention of stroke remains unclear. Increased detection of AF by patients with consumer smart devices

is likely to change our understanding of AF prevalence and challenge our assumptions about optimal treatment approaches in the near future.

The *Education in Heart* article⁷ in this issue discusses inflammation and atherosclerosis in clinical practice, and potential new anti-inflammatory therapies for atherosclerosis. Clinical trials of several potential agents have been negative (such as methotrexate and darapladib) while trials of others are still in progress.

The *Cardiology in Focus* article⁸ addresses the difficulties in the transition of adolescent with congenital heart disease from the pediatric to adult cardiology clinic and the importance of a structured transition program for optimal patient outcomes.

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Lifestyle management and metformin	
SGLT2i	GLP1ra
Established or at risk of ASCVD Risk of HF eGFR >60 mL/min/1.73m ² Signs/symptoms of HF LV ejection fraction ≤50% Preference for oral administration History of pancreatitis/gallstones	Established or at risk of ASCVD Obesity eGFR <30 mL/min/1.73m ² No HF symptoms LV ejection fraction >50% History of peripheral vascular disease History of fracture

Figure 4 Considerations for selecting second-line glucose-lowering drug in cardiology patients with type 2 diabetes mellitus. ASCVD, atherosclerotic cardiovascular disease; eGFR, estimated glomerular filtration rate; GLP1ra, glucagon-like peptide-1 receptor agonist; HF, heart failure; LV, left ventricle; SGLT2i, sodium glucose cotransporter-2 inhibitor.