SNAPSHOT IN CARDIOLOGY

ROBERTO FERRARI, MD, PhD; KIM FOX, MD, FRCP

These articles were taken from the New England Journal of Medicine, The Lancet, and JAMA between January 1, 2018 and December 31, 2018. All research articles on cardiology were included; reviews and guidelines were excluded.

JANUARY

The multicenter, randomized ORBITA trial, which analyzed PCI vs placebo for angina relief, showed that, in patients with angina and severe coronary stenosis, percutaneous coronary intervention did not increase exercise time compared with placebo.

The COMPASS trial showed that, in patients with peripheral artery disease, low-dose rivaroxaban taken twice a day plus aspirin once a day reduced major adverse cardiovascular and limb events vs aspirin alone. Although major bleeding was increased, fatal or critical organ bleeding was not.


The COMPASS trial showed that, in patients with stable coronary artery disease, the addition of rivaroxaban to aspirin lowered major vascular events, but increased major bleeding. Overall, there was also a significant net benefit in favor of rivaroxaban plus aspirin, including a 23% reduction in death.

The REPRISE III trial showed that, in high-risk patients with severe, symptomatic aortic stenosis, the use of a mechanically expanded valve was not inferior to a self-expanding valve for the primary safety end point or the primary effectiveness end point.

In older patients (≥65 years old) with atrial fibrillation undergoing cardiac surgery (ie, coronary artery bypass grafting, mitral valve surgery with or without coronary artery bypass grafting, or aortic valve surgery with or without coronary artery bypass grafting), surgical left atrial appendage occlusion was
associated with a lower risk of readmission for thromboembolism over 3 years compared with no surgical left atrial appendage occlusion.

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This self-controlled case-series study showed that, in patients hospitalized for acute myocardial infarction that occurred within 1 year before and 1 year after a positive test for influenza, there was a significant association between respiratory infections, especially influenza, and acute myocardial infarction.

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In patients with severe aortic stenosis and preserved left ventricular ejection fraction, perioperative myocardial injury was significantly lower in those who underwent isolated aortic valve replacement surgery in the afternoon. An ex-vivo analysis of human myocardium showed transcriptional alterations in circadian gene expression with the nuclear receptor Rev-Erbα being highest in the morning, suggesting that Rev-Erbα antagonism may be a pharmacological strategy for cardioprotection.

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Thrombectomy plus standard care resulted in better 90-day disability outcomes post-treatment in patients with acute stroke who had been well 6 to 24 hours prior to the stroke and who had a mismatch between clinical deficit and infarct vs standard care alone.

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The CANTOS showed that, in patients with a history of myocardial infarction, reaching a high-sensitivity C-reactive protein concentration <2 mg/L with canakinumab resulted in a 25% reduction in major adverse cardiovascular events and a 31% reduction in both cardiovascular mortality and all-cause mortality, whereas no significant benefit was observed with high-sensitivity C-reactive protein concentrations ≥2 mg/L.

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The SENIOR trial showed that, among elderly patients (≥75 years old) who underwent primary coronary intervention, the combination of a drug-eluting stent and a short duration of dual antiplatelet therapy is better than the combination of a bare-metal stent and a similar duration of dual antiplatelet therapy regarding the occurrence of all-cause mortality, myocardial infarction, stroke, and ischemia-driven target lesion revascularization.

This population-based study showed that, from 2002 to 2014, despite seeing a decrease in the incidence of heart failure, the estimated absolute number of individuals with newly diagnosed heart failure in the UK increased, as did the estimated absolute number of prevalent heart failure cases. In addition, socioeconomic disparities were observed for heart failure incidence and age at onset.

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The DESSOLVE III trial showed that MiStent, a sirolimus-eluting bioabsorbable polymer stent, was noninferior to the everolimus-eluting durable polymer stent for a device-oriented composite clinical end point at 12 months in an all-comer population.

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The ACS QUIK trial showed that, in patients with acute myocardial infarction in Kerala, India, the use of a quality improvement intervention, which included audit and feedback, checklists, patient education materials, and links to emergency cardiovascular care and quality improvement training, did not decrease the major adverse cardiovascular events at 30 days compared with usual care.

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The CASTLE-AF trial showed that treating atrial fibrillation in patients with heart failure using catheter ablation resulted in a significantly lower rate of the composite end point of death from any cause or hospitalization for worsening heart failure than in those receiving medical therapy.

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The PRESERVE trial showed that, among patients at high risk for renal complications who were undergoing angiography, there was no benefit of intravenous sodium bicarbonate over intravenous sodium chloride or of oral acetylcysteine over placebo for the prevention of death, the need for dialysis, or persistent decline in kidney function at 90 days or for the prevention of contrast-associated acute kidney injury.
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MARCH


The TARDIS trial showed that, among patients with recent cerebral ischemia, the incidence and severity of recurrent stroke or transient ischemic attack did not differ between intensive antiplatelet therapy with three agents and guideline-recommended therapy (ie, aspirin plus dipyridamole or clopidogrel alone). In addition, the intensive therapy resulted in a significantly higher risk of major bleeding.


This community cohort study showed that, despite the poor outcomes associated with isolated mitral regurgitation, only a minority of affected patients undergo mitral (or any type of cardiac) surgery, even when all means to diagnose and treat the disease are available and accessible.


The SMART-DATE trial showed that a 6-month duration of dual antiplatelet therapy, compared with 12 months, in patients with acute coronary syndrome who underwent percutaneous coronary intervention with current-generation drug-eluting stents resulted in an increased risk of myocardial infarction.


This systematic review showed that coronary artery bypass grafting resulted in a mortality benefit compared with percutaneous coronary intervention in patients with multivessel disease, particularly those with diabetes and higher coronary complexity, but not in patients with left main disease.


The TASMINH4 trial showed that, in patients with poorly controlled hypertension, the use of self-monitoring, with or without telemonitoring, to titrate antihypertensive medication results in significantly lower blood pressure than titration guided by clinic readings.

An analysis of a registry-based, multicenter, national cohort that included 63,910 adults recruited from 2004 through 2014 in Spain showed that ambulatory blood pressure measurements were a stronger predictor of all-cause and cardiovascular mortality than clinic blood pressure measurements.


The SECURE-PCI trial showed that periprocedural loading doses of atorvastatin did not reduce the rate of 30-day major adverse cardiovascular events in patients with acute coronary syndrome and a planned invasive management with percutaneous coronary intervention.


The HONOR trial showed that a home-based exercise program, which involved using wearable activity monitoring and telephone coaching for patients with peripheral artery disease, did not improve walking performance at the 9-month follow-up appointment vs usual care.


The MOMENTUM 3 trial showed that, in patients with advanced heart failure, a fully magnetically levitated centrifugal-flow pump was superior to a mechanical-bearing axial-flow pump with regard to survival free of disabling stroke or reoperation to replace or remove a malfunctioning device.


This meta-analysis showed that patients with a high baseline level of low-density lipoprotein cholesterol (>100 mg/dL) had a greater reduction in the risk of total and cardiovascular mortality when receiving a more intensive therapy to lower low-density lipoprotein cholesterol vs those who received a less intensive therapy.


Among non-Hispanic black male barbershop patrons with uncontrolled hypertension, health promotion by barbers resulted in larger reductions in blood pressure when coupled with medication management in barbershops by specialty-trained pharmacists.

In rural areas of China, higher risks of cardiovascular and all-cause mortality was associated with the use of solid fuels for cooking and heating; however, this risk may be reduced by switching to clean fuels and using ventilation.


In patients undergoing elective coronary artery bypass grafting, graft patency after 1 year significantly increased in those receiving ticagrelor plus aspirin vs those receiving aspirin alone.


This meta-analysis showed that, in patients with type 2 diabetes, the use of sodium-glucose cotransporter 2 inhibitors or glucagon-like peptide 1 agonists was associated with lower mortality than the use of dipeptidyl peptidase 4 inhibitors.


During a 12-month follow-up of patients undergoing stenting of de-novo saphenous vein bypass graft lesions, no significant differences in outcomes were found between patients receiving drug-eluting stents and those receiving bare-metal stents.


The RADIAL investigators showed that radial-artery grafts for coronary artery bypass grafting procedures resulted in lower rates of adverse cardiac events and a higher rate of patency after a 5-year follow-up period than did saphenous vein grafts.


This meta-analysis showed that, in patients with distributive shock, the combination of vasopressin and catecholamine vasopressors was associated with a lower risk of atrial fibrillation compared with catecholamines alone.

Pooled cohort equations, which are based mainly on old patient cohorts, overestimate the risk of cardiovascular disease in New Zealand, as evidenced by a large prospective cohort study. This study was representative of typical patients in primary care in New Zealand who were recommended for cardiovascular disease risk assessment, showing that most patients are now at a low risk of cardiovascular disease.


Performing surgical occlusion of the left atrial appendage in patients during cardiac surgery (eg, coronary artery bypass graft or valve surgery) reduced the risk of subsequent stroke and all-cause mortality vs patients not undergoing surgical left atrial appendage occlusion during surgery.


The RADIANCE-HTN SOLO trial showed that, compared with a sham procedure, endovascular ultrasound renal denervation reduced ambulatory blood pressure at 2 months in patients with combined systolic-diastolic hypertension in the absence of medications.


The MANAGE trial showed that, in patients who had myocardial injury after noncardiac surgery (MINS), dabigatran 110 mg twice daily lowered the risk of major vascular complications, with no significant increase in major bleeding.


The multicenter trial PREDIMED showed that, in people at high cardiovascular risk in Spain, the incidence of major cardiovascular events was lower among those assigned to a Mediterranean diet supplemented with extra-virgin olive oil or nuts than among those assigned to a reduced-fat diet.

The SPYRAL HTN-ON MED trial showed that, compared with a sham control, renal denervation in the main renal arteries and branches significantly reduced blood pressure, with no major safety events.

JULY


In patients with recent acute coronary syndrome and depression, a 24-week treatment with escitalopram vs placebo lowered the risk of major adverse cardiac events, ie, a composite of all-cause mortality, myocardial infarction, and percutaneous coronary intervention, after a median of 8.1 years.


This prospective cohort study determined a baseline bleeding risk estimate in people without cardiovascular disease who were not taking antiplatelet therapy, which could be useful in the decision-making process for the primary prevention of cardiovascular disease.


The mSToPS trial, a direct-to-participant randomized clinical trial showed that, among individuals at high risk for atrial fibrillation, immediate monitoring with a self-applied wearable electrocardiogram patch led to a higher diagnosis rate of atrial fibrillation after 4 months than did delayed monitoring.


In patients with angiographically significant stenoses, ie, patients with at least one hemodynamically significant stenosis (fractional flow reserve [FFR], ≤0.80), FFR-guided percutaneous coronary intervention plus medical therapy significantly lowered the rate of the primary composite end point of death, myocardial infarction, or urgent revascularization at 5 years vs medical therapy alone.
AUGUST


The AIRWAYS-2 trial showed that, among patients with nontraumatic out-of-hospital cardiac arrest, an advanced airway management strategy that used a supraglottic airway device did not result in a favorable functional outcome at 30 days when compared with a tracheal intubation.


The English Football Association cardiac screening program, which consisted of a health questionnaire, physical examination, electrocardiography, and echocardiography, showed that 0.38% of adolescent soccer players had diseases associated with sudden cardiac death.


Data from the PURE study showed that sodium intake was associated with an increase in cardiovascular disease and stroke, but only in communities with an average sodium intake >5 g/day.


While the use of epinephrine in adults with an out-of-hospital cardiac arrest significantly improved the rate of 30-day survival vs placebo, its use resulted in more survivors having severe neurologic impairment.


Patients with diabetes have a higher risk of death and cardiovascular outcomes than the general population; however, patients with type 2 diabetes in whom the five risk-factor variables (glycated hemoglobin levels, low-density lipoprotein cholesterol levels, albuminuria, smoking, and blood pressure) were within the target ranges, appeared to have little or no excess risk of death, myocardial infarction, or stroke when compared with the general population.


This register-based cohort study of individuals with type 1 diabetes in Sweden showed that an important determinant of survival and cardiovascular outcomes was the age at the onset of type 1 diabetes, with the highest excess risk occurring in women.


Low doses of aspirin (75-100 mg) effectively prevented vascular events in patients who
weighed <70 kg, but not in 80% of men and 50% of women weighing >70 kg. However, high doses of aspirin effectively prevented vascular events in patients weighing ≥70 kg.


In older adults, the risk of dementia and the rate of cognitive decline were lower for those with an optimal cardiovascular health level (defined by the American Heart Association as nonsmoking, body mass index <25, regular physical activity, eating fish ≥2 times per week and fruits and vegetables at least 3 times a day, cholesterol <200 mg/dL [untreated], fasting glucose <100 mg/dL [untreated], and blood pressure <120/80 mm Hg [untreated]).


While national screening programs reduced deaths from abdominal aortic aneurysm in men and are cost-effective, this analysis shows that an abdominal aortic aneurysm screening program for women, designed to be similar to that used to screen men, is unlikely to be cost-effective.


The TRIUMPH study showed that, among patients with mild-to-moderate hypertension, low-dose triple blood pressure-lowering therapy increased the proportion of patients who achieved their target blood pressure goal vs usual care.

SEPTEMBER


The CAMELLIA–TIMI 61 trial showed that, in a high-risk population of overweight or obese patients, lorcaserin, a selective serotonin 2C receptor agonist that modulates appetite, facilitated sustained weight loss without causing a higher rate of major cardiovascular events compared with placebo.


The ARRIVE trial analyzed the effects of aspirin vs placebo on the time to the first occurrence of cardiovascular death, myocardial infarction, unstable angina, stroke, or transient ischemic attack; however, the event rate was much lower than expected, meaning that the role of aspirin in primary prevention among patients at moderate cardiovascular risk could not be addressed.


The ASCOT Legacy Study, a 16-year follow-up study of the ASCOT trial, demonstrated long-term beneficial effects on mortality of antihypertensive treatment with a calcium channel blocker–based treatment regimen and lipid lowering with a statin; patients who received an amlodipine-based treatment had fewer stroke deaths and patients on atorvastatin had fewer cardiovascular deaths more than 10 years later.


The BASKET-SMALL 2 trial showed that, in patients with de-novo lesions (<3 mm in diameter) in coronary vessels and an indication for percutaneous coronary intervention, drug-coated balloons are noninferior to drug-eluting stents regarding major adverse cardiovascular events.


The TIM-HF2 trial showed that a structured remote patient management intervention, when used in a well-defined population of patients with heart failure, could reduce the percentage of days lost due to unplanned cardiovascular hospital admissions and all-cause mortality.

The TARGET All Comers study showed that, in patients with symptomatic or asymptomatic coronary artery disease and objective evidence of myocardial ischemia who qualified for a percutaneous coronary intervention, the FIREHAWK drug-eluting stent was noninferior to the XIENCE everolimus-eluting stent.


The multicenter, international, double-blind, placebo-controlled, phase 3 ATTR-ACT trial showed that, in patients with transthyretin amyloid cardiomyopathy, tafamidis not only reduced all-cause mortality and cardiovascular-related hospitalizations, but also reduced the decline in functional capacity and quality of life vs placebo.


The TRICS trial showed that, in patients undergoing cardiac surgery who were at a moderate-to-high risk of death, a restrictive strategy of red-cell transfusion was noninferior to a liberal strategy concerning the composite outcome of death from any cause, myocardial infarction, stroke, or new-onset renal failure with dialysis 6 months after surgery.


In patients with stable chest pain who had been referred to a cardiology clinic for evaluation, a significantly lower rate of death from coronary heart disease or nonfatal myocardial infarction at 5 years was obtained when coronary computed tomographic angiography was added to standard care, without significantly increasing the rate of coronary angiography or coronary revascularization.


The CRISP-CT study, a post-hoc analysis of outcome data on consecutive patients undergoing coronary computed tomography angiography, showed that the perivascular fat attenuation index enhances cardiac risk prediction and restratification vs the current coronary computed tomography angiography by providing a quantitative measure of coronary inflammation.


Patients with an acute myocardial infarction and an ejection fraction of 35% or less who received a wearable cardioverter-defibrillator plus guideline-directed therapy did not have a significantly lower rate of the primary end point of arrhythmic death compared with those who received only guideline-directed therapy.

The BIOSCIENCE trial, a randomized, single-blind, multicenter, noninferiority trial, showed that the 5-year risk of target lesion failure in all-comer patients undergoing a percutaneous coronary intervention was similar between biodegradable-polymer sirolimus-eluting stents and durable-polymer everolimus-eluting stents.


Despite showing that the use of a high-sensitivity cardiac troponin assay in patients admitted to emergency departments with suspected acute coronary syndrome resulted in 17% being reclassified as patients with myocardial injury or infarction, use of the assay did not alter the subsequent incidence of myocardial infarction or cardiovascular death at 1 year.


The MARINER trial showed that medically ill patients who were at an increased risk for venous thromboembolism who received rivaroxaban for 45 days after hospital discharge did not have a significantly lower risk of symptomatic venous thromboembolism and death due to venous thromboembolism compared with placebo.


The MATRIX program, a program of three nested, randomized, multicenter, open-label, superiority trials in patients with acute coronary syndrome in Italy, the Netherlands, Spain, and Sweden, showed that, in patients with acute coronary syndrome, radial access was associated with lower rates of net adverse clinical events vs femoral access, but not major adverse cardiovascular events at 1 year; however, bivalirudin was not associated with lower rates of major adverse cardiovascular events or net adverse clinical events vs unfractionated heparin.


The GLOBAL LEADERS trial showed that ticagrelor plus aspirin for 1 month followed by ticagrelor alone for 23 months was not superior to 12 months of standard dual antiplatelet therapy followed by 12 months of aspirin alone in the prevention of all-cause mortality or new Q-wave myocardial infarction 2 years after a percutaneous coronary intervention.

The IMPERIAL study, in a comparison of the safety and efficacy of the polymer-coated, paclitaxel-eluting Eluvia stent with the polymer-free, paclitaxel-coated Zilver PTX stent for treatment of femoropopliteal artery segment lesions, showed that the Eluvia stent was noninferior to the Zilver PTX stent in terms of primary patency and major adverse events at 12 months.


In patients ≥40 years old who have type 2 diabetes and cardiovascular disease, a subcutaneous injection of the glucagon-like peptide 1 receptor agonist albiglutide (30 to 50 mg) once a week in addition to their standard care was superior to a matched volume of placebo with respect to major adverse cardiovascular events.


This prospective cohort study in patients with incident hypertension showed that key factors mediating the racial difference between black and white adults in the US include a Southern diet score, the dietary ratio of sodium to potassium, and education level. In addition, waist circumference and body mass index also were key factors among women.


In adults ≥70 years of age or older (or ≥65 years of age among blacks and Hispanics in the United States) and no cardiovascular disease, dementia, or disability, the use of low-dose aspirin as a primary prevention strategy resulted in a significantly higher risk of major hemorrhage, but it did not significantly lower the risk of cardiovascular disease vs placebo.


The ABSORB IV study showed that, in patients with stable coronary artery disease or acute coronary syndromes who were ≥18 years old, polymeric bioresorbable vascular scaffolds had noninferior 30-day and 1-year rates of target lesion failure and angina vs metallic drug-eluting stents.

von Birgelen C, Zocca P, Buiten RA, et al. Thin composite wire strut, durable polymer-coated (Resolute Onyx) versus ultrathin cobalt-chromium strut, bioresorbable polymer-coated (Orsiro) drug-eluting stents in...

In this noninferiority trial in an all-comer population in Belgium, Israel, and the Netherlands, the Resolute Onyx stent was shown to be noninferior to the Orsiro stent concerning the combined safety and efficacy end point at the 1-year follow-up assessment.


This individual patient-data meta-analysis of seven randomized, placebo-controlled, statin outcome trials showed that elevated levels of lipoprotein(a) both at baseline and while taking statins had an independent and approximately linear relation with the risk of cardiovascular disease.


The double-blind, randomized COMMANDER HF trial showed that, in patients with chronic heart failure, a left ventricular ejection fraction ≤40%, coronary artery disease, and elevated plasma concentrations of natriuretic peptides, but not atrial fibrillation, rivaroxaban 2.5 mg twice daily in addition to standard care after treatment for an episode of worsening heart failure did not significantly lower the rate of death, myocardial infarction, or stroke vs placebo.


The INDIE-HFpEF trial showed that, in patients with heart failure with preserved ejection fraction, a 4-week treatment of inhaled inorganic nitrite did not significantly improve exercise capacity vs placebo.


Contrary to the current dietary guidelines that recommend minimizing the consumption of whole-fat dairy products, the PURE study showed that there was an association between the consumption of dairy products and a lower risk of mortality and major cardiovascular disease events.


In patients who have had an acute coronary syndrome and are receiving high-intensity statin therapy, alirocumab, a human monoclonal antibody to proprotein convertase subtilisin-kexin type 9, lowered the risk of recurrent ischemic cardiovascular events vs placebo.

In young Korean adults, the presence of stage 1 and stage 2 hypertension, compared with normal blood pressure, was associated with an increased risk of subsequent cardiovascular disease events.


While the risk of 30-day death or renal replacement therapy was lower in patients with acute myocardial infarction and cardiogenic shock who were assigned culprit-lesion-only percutaneous coronary intervention vs immediate multivessel percutaneous coronary intervention, there were no between-group differences in mortality at the 1-year follow-up.


Among a group of participants without cardiovascular disease who received follow-up care over a median of 18.9 years, no consistent relationship was identified between the risk of cardiovascular disease and the direction of change in the composite metric of cardiovascular health as measured using the 7 metrics of the American Heart Association.


An analysis of the CARDIA study showed that young adults (<40 years old) with elevated blood pressure, stage 1 hypertension, and stage 2 hypertension had a significantly higher risk of subsequent cardiovascular disease events than did the young adults (<40 years old) with normal blood pressure.

Among patients with early-onset atrial fibrillation (ie, onset of atrial fibrillation in patients <66 years old), there was a statistically significant association between loss-of-function variants of the titin gene and early-onset atrial fibrillation.


Patients who were prescribed a renin-angiotensin system inhibitor at hospital discharge after a transcatheter aortic valve replacement had a significantly lower risk of mortality and heart failure readmission.


In patients who have chronic heart failure with reduced left ventricular ejection fraction and severe secondary mitral valve regurgitation, there was no difference between percutaneous mitral valve repair and medical therapy alone concerning the rate of death or unplanned hospitalization for heart failure at 1 year.


Among patients with heart failure who have moderate-to-severe or severe secondary mitral regurgitation due to left ventricular dysfunction, transcatheter mitral valve repair lowered the rate of hospitalization for heart failure and lowered all-cause mortality within 24 months of follow-up vs medical therapy alone.


Among Medicare beneficiaries, the Hospital Readmissions Reduction Program was significantly associated with an increase in 30-day postdischarge mortality after hospitalization for heart failure and pneumonia, but not for acute myocardial infarction.