One of the key indicators of the success, maturity, and overall health of a research field is its ability to attract and train bright and talented young investigators. In this regard, the recent Young Investigator Competition at the American Heart Association’s Quality of Care and Outcomes Research (QCOR) conference is a perfect testament to the fact that our field is vibrant and thriving. As a co-chair of the QCOR Young Clinician and Investigator Committee and one of the organizers of the competition, I was heartened to witness the outstanding quality of science that was displayed by the finalists. Not only were their research projects innovative, methodologically sound, and impeccably presented, but they also provided data that were immediately clinically relevant and impactful. The finalists clearly understood the main mission of an outcomes researcher—generating knowledge to improve clinical care and health care delivery with the goal of optimizing patient outcomes.

The Next Generation

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Articles see pp 337, 347, and 358

This issue of Circulation: Cardiovascular Quality and Outcomes includes 3 of the articles that were presented at the QCOR Young Investigator Competition. Although these reports address a wide spectrum of issues, and use different methodologies to achieve their objectives, they all address highly clinically relevant issues that will have actionable implications for clinical management of patients with cardiovascular disease.

In the first article, Salisbury et al define a new, previously underappreciated clinical entity of hospital-acquired anemia (HAA). The authors examined the prevalence and prognostic importance of HAA in patients hospitalized with acute myocardial infarction and found that it was very common and associated with higher mortality and worse health status after hospital discharge. Importantly, this effect was independent of bleeding; in fact, the majority of patients with HAA did not have a documented bleeding event. These findings are important because they define a new, previously unrecognized type of anemia that may be a result of how patients are treated during their hospitalization for acute myocardial infarction and thus could be potentially preventable. This work is likely to lead to future interventions aimed at early identification of patients at high risk for HAA and implementation of interventions aimed at preventing HAA, such as minimizing phlebotomy and use of bleeding-avoidance therapies at the time of invasive procedures for high-risk patients. The results of this investigation also raise a question of whether HAA could be considered as a potential end point in clinical trials, because it is more likely to capture minor (but prognostically important) bleeding events that would be missed by standard bleeding definitions.

In the second article, Amin et al used a decision analytic model to evaluate the cost-effectiveness of bivalirudin therapy (as compared with unfractionated heparin) across the spectrum of baseline bleeding risk in patients who undergo percutaneous coronary intervention (PCI). The concept of assessing the differential clinical and cost-effectiveness of various therapies according to patient risk is critically important, particularly as the number of novel (and expensive) therapeutic choices increase, while at the same time health care resources become more limited. The authors demonstrate that the use of bivalirudin does not appear to be cost-effective in the vast majority of patients undergoing PCI because of their relatively low risk of bleeding. However, in a small, selected group of patients at high risk for bleeding complications during PCI (about 2.5% of the patient cohort), bivalirudin would be highly cost-effective, both in terms of the cost per quality-adjusted life-year saved and cost per bleeding event prevented. These findings have the potential to provide practical guidance to physicians and hospitals on how to direct expensive therapeutic interventions to the patients who are most likely to benefit from them. The findings are also very timely; as the recent publication in the Journal of American Medical Association from the same group shows, the use of bleeding avoidance strategies, such as bivalirudin, is actually least common in patients at the highest risk for bleeding during PCI. Implementing strategies to appropriately realign the use of treatments, such as bivalirudin, toward those at the highest risk for bleeding has the potential to reverse this treatment-risk paradox; and similar methodology can be applied in multiple other instances in which this paradox exists.

Finally, in the third article, Maddox et al use a relatively novel method of analyzing trajectories of patient blood pressure control over time. They identified 4 distinct trajectories of blood pressure control (good, borderline, poor, and improved control) and studied the impact of treatment intensification and medication adherence on these trajectories and the association of blood pressure trajectories with clinical outcomes in patients with coronary artery disease. The study...
demonstrates that treatment intensification is related to improved blood pressure control over time and that better blood pressure control is associated with lower risk of myocardial infarction and revascularization. As with any observational analyses, it is unclear if these blood pressure trajectories directly mediate patient outcomes or whether they simply identify patients who have lower baseline risk for adverse events. This limitation notwithstanding, the study showcases the methodology that is superior to the typical cross-sectional analyses of blood pressure management. Such methodology also has implications beyond hypertension control; it can be used broadly to examine the treatment of various risk factors in patients with coronary artery disease and applied in other disease conditions.

As can be gleaned from this brief overview, the articles authored by the young investigators and published in this issue of the Journal reflect the essence of outcomes research: to identify potential deficiencies in the systems of care and then develop potential solutions to these problems with the purpose of improving patient outcomes. The innovative and actionable science presented in these articles should serve as the source of pride and a testament to the success of our field.

Disclosures
Dr Kosiborod is a senior author of the article by Salisbury et al, is a training program director of the American Heart Association PRT Outcomes Research fellowship at Saint-Luke’s Mid America Heart Institute in Kansas City, Mo, and is a co-chair of the QCOR Young Clinician and Investigator Committee.

References

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