



# Introduction: The transition from milestones to innovations

Physicians who were educated and began practicing in the 20th century have witnessed some of the most significant innovations and discoveries in the history of healthcare. While major surgical and therapeutic milestones defined the previous century, our current century is defined by the high-speed pace of technological innovations that affect the practice of medicine. For example, the proliferation of hand-held communication devices now provides immediate access to a wealth of healthcare information. Ultimately, recollecting information will be less necessary and far less valuable than understanding the concepts behind it. The challenge for providers is to recognize how to incorporate these innovations into the traditional model of treating diseases with the goal of improving outcomes and containing costs.

With that objective in mind, the articles in this *Cleveland Clinic Journal of Medicine* supplement on cardiovascular disease aim to not only review traditional treatment models for cardiovascular disease but, more importantly, to address the broad implications of new innovations on day-to-day clinical practice.

Stephanie Mick, MD, and colleagues look at how the emergence of new devices and technologies has dramatically improved the treatment of severe aortic valve stenosis and expanded the patient population eligible for aortic valve replacement. The authors review the expanded array of surgical approaches to transcatheter aortic valve replacement and the development of new devices in light of their impact on reducing the risks and improving the outcomes associated with this therapy.

Oussama Wazni, MD, and colleagues present evidence underlying the evolving strategies to prevent serious complications of stroke and thromboembolism in patients with atrial fibrillation. Newer anticoagulants are changing the strategic picture. The article includes discussion of the safety and efficacy of the available anticoagulants, as well as nonpharmacologic approaches, and considers how the new data and medications affect traditional treatment models. The authors integrate the data into an evidence-based appraisal of how to best use these innovations to reduce stroke risk in this patient population.

Acute strokes have a significant impact on morbidity and mortality worldwide. Findings that stress the importance of reducing the “time to treatment”—the shorter the time, the better the outcomes—have pushed treatment approaches to center stage. A key factor is the time it takes for patients to arrive in the emergency department. One way to reduce this time is to take the treatment to the patient. Peter A. Rasmussen, MD, looks at how innovations in scanning technologies and wireless data transmissions have led to the development of specially equipped mobile stroke units that can accurately differentiate the types of stroke and enable practitioners to more quickly begin appropriate thromboembolic therapy and reduce the time to therapy.

Barbara Heil, MD, and W. H. Wilson Tang, MD, review the use of cardiac biomarkers to diagnose and treat heart failure. Studies have shown the efficacy of using biomarkers to identify high-risk patients, but various factors limit their diagnostic accuracy and clinical adaptability. The authors summarize the data and explain how to incorporate biomarkers into clinical practice.

Hypertension control remains an elusive goal for practitioners. Joel Handler, MD, reviews how new evidence and innovations are revising the diagnostic guidelines and the recommended treatment strategies. He discusses innovations associated with out-of-office monitoring and new data from clinical trials that are changing the clinical practice model. He also addresses the controversy regarding systolic blood pressure goals in elderly patients and how these data have affected evidence-based guidelines.

We hope you find this supplement both informative and thought-provoking.

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