



Cardiometabolic Medicine: A Call for a New Subspecialty Training Track in Internal Medicine

The epidemic of obesity, metabolic syndrome, and type 2 diabetes shows no sign of remission. Although each individually are costly important medical outcomes, it is the relationship of these metabolic maladies to cardiovascular disease that is graded, strong, and almost certainly responsible for reversing the decades-long temporal trends of reduced cardiovascular disease mortality.¹

Importantly, the landscape of drug therapies to treat these metabolic conditions has expanded dramatically.² For example, 3 cardiovascular outcome trials using glucagon-like peptide-1 (GLP-1) receptor agonists, which also serve as effective weight loss drugs, have shown improvements in multiple cardiovascular risk factors as well as important cardiovascular outcomes and total mortality.³ Three sodium-glucose co-transporter 2 (SGLT2) inhibitors have shown benefits on cardiovascular risk factors and important cardiovascular outcomes including heart failure and cardiovascular mortality. Although the mechanisms for these cardiovascular benefits remain unclear, they extend well beyond glycemic lowering,⁴ and therefore are probably best considered diverse “cardiometabolic” pharmaceuticals rather than simply type 2 diabetes drugs.

Yet to be clarified is who becomes the physician of record when patients who are obese, have type 2 diabetes mellitus treated with metformin, and glycosylated hemoglobin (HbA1c) of 8.2% are hospitalized for acute coronary syndrome.

At discharge, there are several medications to be managed, including high-intensity statin, angiotensin-converting enzyme inhibitor or angiotensin receptor blocker, beta blocker, and a dual antiplatelet regimen. In follow-up, nonstatin therapies may need to be added for further low-density lipoprotein

cholesterol (LDL-C) or triglyceride lowering, and anti-hypertensive titrations may be needed to achieve stricter blood pressure goals.^{5,6} A cardiologist, who may not have been the inpatient attending physician of record, is most commonly the first outpatient visit. Does this physician have time, bandwidth, and capacity to manage traditional cardiovascular medications yet also consider GLP-1 receptor agonist or SGLT2 inhibitor therapy?

For optimal care of patients with cardiovascular disease in 2019 and beyond, a critical question before the medical community must be answered: is the cardiology practice willing and capable of taking on the responsibility of assuming at least part of the patient’s cardiometabolic disease?⁷ This includes treating obesity, managing type 2 diabetes mellitus (ie, setting HbA1c goals), modifying glucose-lowering medications, and when prescribing a GLP-1 receptor agonist or SGLT2 inhibitor, assessing for potential adverse effects of medications, including nausea and vomiting with injectable GLP-RAs and genital mycotic infections or rare diabetic ketoacidosis (often with near normal levels of plasma glucose) with SGLT2 inhibitors.⁸

In 2019, we believe that nearly all cardiology practices are poorly suited to assume the role of an endocrinologist or experienced primary care physician. Thus, even though the cardiologist may understand the importance and have an interest in prescribing GLP-1 receptor agonist or SGLT2 inhibitor therapy, primary attention may be diverted to ongoing issues including angina, heart failure, cardiac arrhythmia, medication-related bleeding, and beyond. An alternative follow-up plan directed to cardiometabolic disease management, broadly interpreted, is desperately needed.

With no end in sight to the medical issues related to an aging and increasingly sedentary and obese population with cardiovascular disease,⁹ we believe a new internal medicine subspecialty is more than timely and much needed. Rather than shunting patients back and forth among cardiologist, endocrinologist, and primary care physician—with uncertain “ownership” of different aspects of the patient’s care—the cardiometabolic specialist will be sufficiently trained in internal medicine, preventive cardiology, and endocrinology with a practice designed to be the medical home for patients with cardiometabolic disease and atherosclerotic cardiovascular disease.

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What would be the components of a training program in cardiometabolic medicine (Figure)? This specialized training experience would be preceded by 2-3 years of focused general internal medicine house-staff training. The next 3 years would be a composite of endocrinology and cardiology.

The endocrine component would be metabolism-centric with an extensive experience in conditions such as obesity, metabolic syndrome, types 1 and 2 diabetes mellitus, lipid and lipoprotein disorders, hypertension, and lifestyle. Part of this training would include obesity pharmacology, frequent interactions with metabolic surgeons, advanced training in basal/bolus insulin administration, insulin pumps, and glucose sensors. This would be distinct from the classic board-certifiable training program in endocrinology, metabolism, and diabetes because there would be no additional education in disorders of the thyroid, hypothalamic-pituitary-adrenal axis, reproductive endocrinology, or metabolic bone disease, including parathyroid disorders.

The cardiology component of cardiometabolic medicine training would be focused on primary and secondary prevention of atherosclerotic cardiovascular disease. This would include inpatient cardiology consults, outpatient preventive cardiology clinic, electrocardiogram and echocardiography interpretation, stress testing, cardiac rehabilitation, and interpretation of noncontrast and contrasted coronary computed tomography. To stay focused on cardiometabolic disease, there would be no requirement for training in critical care medicine, interventional cardiology, electrophysiology, advanced heart failure, and cardiac transplantation. For more expertise in severe hypertension, at least 2 months of elective time should be spent in a multispecialty resistant hypertension clinic, with at least a 1 month spent learning vascular medicine.

Finally, a substantial component of cardiometabolic medicine training would be advanced concepts in lifestyle. This experience would go far beyond inquiring about diet, exercise, tobacco, alcohol, and illicit drug use. The cardiometabolic physician would gain expertise in smoking cessation including cessation pharmacology, novel tobacco products, advanced concepts in nutrition and diet, and use of mobile health technology to promote general physical activity and individualized exercise goals.

Who would choose such a specialty? For starters, the 2 authors of this Commentary would have chosen such a specialty. We believe that many internal medicine residents are interested in obesity and diabetes, yet may not be interested in thyroid, bone health, or endocrinologic cancer syndromes. Likewise, many residents are interested in atherosclerotic cardiovascular disease, yet do not envision training spent predominantly in the hospital setting seeing patients who are critically ill with heart failure or performing electrophysiology procedures. Currently, such potential cardiometabolic specialists pursue cardiology, perhaps begrudgingly spending more than 6 months of training in the catheterization or electrophysiology lab, only later pursuing additional sub-specialty training in preventive cardiology.

In the end, the cardiometabolic medicine physician would be a new type of board-certified specialist poised to address issues related to the major global health problem of the 21st century. Over time, the practicing cardiometabolic physician's practice would grow to include nurse educators, a dietician, certified diabetes educator, a mobile technology hub, and an adjoining facility for cardiac rehabilitation and supervised exercise.

What are the next steps forward? The American Board of Internal Medicine (ABIM) could conduct a needs assessment

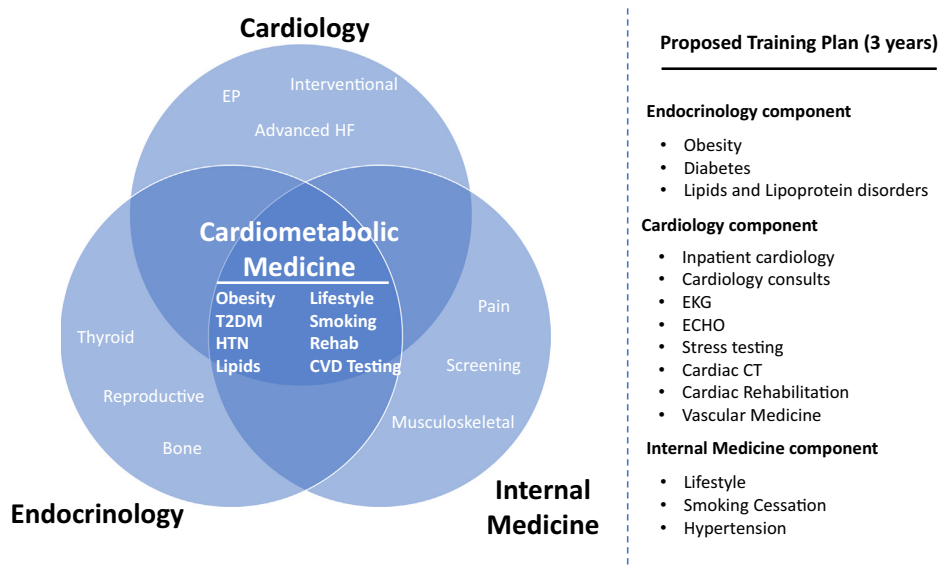


Figure Conceptual Approach to Cardiometabolic Medicine. The left panel of the figure illustrates the proposed overlap among cardiology, endocrinology, and internal medicine. The right panel details a proposed 3-year training plan for a Cardiometabolic Medicine specialist. CVD = cardiovascular disease; EP = electrophysiology; HF = heart failure; HTN = hypertension; T2DM = type 2 diabetes mellitus.

and surveys documenting interest in a new specialty. Health systems might perform analyses of how cardiometabolic specialists might improve the flow of patients through the system, improve adherence to lifestyle and pharmacology therapy, and improve risk-factor control metrics. Internists, endocrinologists, and cardiologists could come together to hash out the outlines of a training program with a proposed curriculum. The subspecialty may start as a fast-track pathway within both endocrinology and cardiology, later differentiating into a stand-alone 3-year program.

Barriers to implementation would be familiar. Turf wars between specialists could occur, and the training program must find a clear academic “home” within either cardiology or endocrinology (perhaps most likely cardiology). However, we believe the increasingly complicated treatment landscape will bring together the many stakeholders.

It’s time to move forward and not wait until we wish we had. The answer should not be to add more training, but to sharpen and focus existing education concepts to produce the product we know we need.

As Albert Einstein said, “In the middle of difficulty lies opportunity.”

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