As a thought leader in heart failure diagnosis and management, Mariell Jessup, MD, has served in many roles that have impacted medical decision-making and patient care. Her publications have included clinical investigations of heart failure treatments, as well as a broad range of disease and practice insights and perspectives on leading-edge topics in the field.

In the past decade, Jessup helped carve out recognition of advanced heart failure/transplant cardiology as an ABIM (American Board of Internal Medicine)-certified subspecialty. She also chaired the panel that wrote the 2009 American College of Cardiology/American Heart Association (AHA) guidelines update on managing heart failure, and served as AHA president in 2013–2014. Recently, she stepped down as the cochair of the American College of Cardiology/AHA prevention guidelines panel and chair of the AHA’s science and clinical education lifelong learning committee.

Jessup, 66, earned her bachelor’s degree in biology at the University of Pennsylvania and her medical degree at Hahnemann Medical College in Philadelphia. She served her internship and residency at Hahnemann University Hospital and her fellowship in cardiovascular diseases at the Hospital of the University of Pennsylvania. Faculty positions followed at Hahnemann, Temple University and Penn, and on January 1, 2017, Jessup became Chief Scientific Officer of the international grant-making institution Fondation Leducq, which funds international cardiovascular and neurovascular research.

During her education and early career, a few key mentors (one of them her future husband), along with a host of game-changing developments in heart failure care, laid for her a foundation of enthusiasm about the field that has fueled nearly 4 decades of advocacy. In looking back, Jessup says, “I’ve been so blessed to be able to watch how patients with heart failure, who used to die in a year or so after diagnosis, continue to live … as patients I’ve taken care of for 20 and 30 years.”

I went every summer to the same camp my mother went to when she was a kid, out in Massachusetts, not far from the head of the Cape. That influenced me a lot and helped me develop social skills. Camp Wampatuck was an all-girls’ camp where girls were allowed to be anybody they wanted to be. I learned how to play a lot of sports and compete hard—things girls were not encouraged to do in public schools at the time. I learned how to make friends and influence people.

Going to high school outside New Haven, there was a sense that one either went to Ivy League or you didn’t go anywhere. I was very clear that I didn’t want to go to an all-girls college. To fulfill those two criteria, and Yale wasn’t taking women yet, I came to Penn and I never managed to leave Philadelphia until 2017. (Laughter.)

I went to Penn at the time of the tumultuous late ’60s and early ’70s. I somehow managed to be premed and yet live the hippy life. Most of my friends were English majors and had 1-hour seminars, and I was getting up really early and going off to biology class or chem lab.

At some point, I do feel I had a calling to be a doctor, but I can’t remember when, why, or where I knew that medicine was the right course for me.

My mother was a musician, a talented organist. My father was in product development and then sales of a large metals corporation. I think as he moved up in the company we moved to new cities.

Both of my parents were very churchgoing people and they loved to sing and always would become part of the choir of every church they joined. We’re Protestant, and (when we

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moved) they would find the Protestant church in our neighborhood that had the best music. Sometimes we were Methodist, sometimes we were Congregationalist, but there was always good music. I credit their actions to my feeling that we were part of the community and that there was stability, no matter how often we moved. My parents were happy because they had friends and were part of the church fellowship. We felt that as kids.

How Did You Become Interested in Science?
I had a very good biology class in high school, which may have initiated the spark. And when I was pretty small, I wanted a chemistry set; there were lots of family pictures of me down in the basement doing who knows what with test tubes, making all kinds of concoctions. My brain is much more left-sided, logical. Importantly, no one ever told me I could not be a scientist because I was a girl.

How Did You Get Into Cardiology?
By the time I was in medical school, I realized I really liked cardiology. And so much was changing. Physicians were first using β-blockers and that was exciting. I can remember being taught about a Swan-Ganz catheter. Our instructor said: “There is this new device and you can float it in a patient’s vein while awake and alert and figure out about their hemodynamics.” He was so excited.

I was captured by it. I loved cardiology.
And I loved it because of my mentors. They were excited about their field, and they passed on that love of cardiology.

Who Were Your Early Mentors?
My late husband (Philadelphia cardiologist William Likoff) was probably my most important mentor. He was already a revered cardiologist by the time I went to medical school. He was significantly older than I was. (Likoff died in 1987.)

All the residents and medical students thought he was wonderful. It was a big deal if you got to go on rounds with him. He truly loved cardiology, and he would tell fascinating stories about clinical cardiology and, more importantly, about people. He taught us about the humanity of patients and how each patient has a different story, stressing the need to tailor therapy for individual patients. I learned a lot about communicating with patients and with families from my late husband.

I was learning to love cardiology, and then I learned to love him.

And Other Mentors?
One of his partners, (Philadelphia cardiologist) Bernard Segal, was one of the first people using echocardiography routinely in clinical practice. Bernie taught me to think logically about the heart and how it works; to look at a cath film or an echo and how each test adds to our understanding.

From What You Learned From Your Mentors, How Have You “Paid It Forward”?
I would watch them both, Dr Segal and Dr Likoff, as they took the (patient) history—that’s so critical, that’s the beginning of your communication with the patient. I try to teach that, to pay it forward. I say, “Let’s go back over the history, talk to me more about the beginning of their symptoms.” This is so critical for modern-day residents who are so used to technology and communication through the typewritten word or texting. We spend a lot of time at the bedside trying to figure out what it is we’ve learned from the patient’s story and how that helps in the task of differential diagnosis and/or etiology.

Young physicians need role models for a variety of reasons. But, I frequently tell residents you don’t have to act like me, you don’t have to think like me, you don’t have to be anything about me other than you must learn how to talk and listen to patients. You have to be a good detective and figure out what happened to them.

What Are the Highlights in Heart Failure Research You’ve Seen in Your Career?
As I was doing my residency, the concept of vasodilator therapy was emerging, it was changing the potential for the outcome of patients with acute heart failure for the first time. In the mid-’70s to end of ’70s, Chatterjee and Parmley,15 among others, published observations about the beneficial hemodynamic effect of vasodilator therapy in patients with pulmonary edema after a myocardial infarction. By the time I was a fellow, it was routine to use the same Swan-Ganz catheter I had learned about in medical school at the bedside of someone dying of a heart attack and institute vasodilator therapy. There was a great sense that we could effect change, we could help these patients. Lives once lost were now being saved.

There was a lot of empiricism in the years that followed, of trying one thing after the other in patients with chronic heart failure: first vasodilator therapies, then inotropic therapies, then β-blockers, then specific vasodilators, and ultimately, ACE (angiotensin-converting enzyme) inhibitors. Our growing understanding and the inhibition of the renin–angiotensin–aldosterone system—that, in the course of 20 to 30 years, completely changed how we managed heart failure patients; it completely changed their prognosis. And it created a whole new field of cardiology: heart failure.

When I started as a cardiovascular fellow (at Penn), the really hot areas were cath (interventional) and electrophysiology. That’s where the late Mark Josephson, a giant in electrophysiology, was my chief (of cardiology). After I’d been a fellow for a while, I scheduled a visit with Mark. I told him I didn’t want to be in the cath lab because it was very testosterone-laden, and I was not that keen on EP.

Dr Josephson directed me to meet with (Penn cardiologist) Karl Weber—his advice was pivotal. Karl was doing fundamental research in cardiac development and function and a lot of work with the interaction of the heart and lungs. I met with him and asked to work with him; he was the most generous of mentors. He immediately involved me in all his early clinical heart failure work. He taught me a lot about the meticulousness of clinical research and was a real perfectionist in writing papers. And, he was doing some of the earliest clinical trials on heart failure, with captopril, and later, with amrinone.

Karl set me on the path for my career in heart failure. He ultimately left Philadelphia and left me with his patients and the capacity to run clinical trials.
That’s how I began my practice in Philadelphia. It was one of the earliest heart failure programs in the city, and we were getting all kinds of referrals from clinicians to start their patients on captopril. Nobody knew what to do with these patients and because I’d done those trials under Karl’s direction, I quickly built a huge practice.

In 1984, new (antirejection) drug therapy was developed, cyclosporine, that changed the outcomes in cardiac transplant significantly, so more and more transplant programs were initiated. A transplant program did start in Philadelphia, at Temple University, and I ultimately moved there.

During this time there was the growing impact of mechanical circulatory support, or ventricular assist devices. So there was a great sense of the rapid development of effective medical therapies for heart failure, a realization that centers were documenting pretty good outcomes with heart transplant, and early attempts at mechanical support devices were salvaging patients waiting for transplant, all happening around the same time. In the electrophysiology world, effective implanted defibrillators were perfected and prevented sudden death. Seemingly overnight, patients could live many, many years with chronic heart failure. I am so fortunate I was able to play a small part during these remarkable years.

What Do You Consider Your Most Profound Contributions to Cardiovascular Care and Research?

I have not done anything spectacular as far as clinical or basic research; I’ve participated in many of the key clinical trials, however.

Probably the most important thing I’ve done, and I didn’t do it alone, was pull together the evidence and documentation about our new field of heart failure and transplant. I worked with other key people to go through the steps required by the ABIM and the ACGME (Accreditation Council for Graduate Medical Education) for recognition of our discipline as a secondary specialty of cardiology.

That effort required an unbelievable amount of paperwork and explaining and convincing. But now there are multiple journals in this country and worldwide focused on heart failure, there is an ABIM board of heart failure, and physicians talk with pride about their advanced heart failure and transplant board certification. I realize when I started as a fellow not a single person had even heard of the field of heart failure, and now it is firmly established.

In Research, Where Are Challenges Remaining?

There are a number of challenges. I’m hoping that basic scientists will provide the clues to their solutions, as they have in the past. There are two types of heart failure, heart failure with reduced ejection fraction (HFrEF) and heart failure with preserved ejection fraction (HFpEF). Most of the advances in treatment have been in patients with HFrEF.

Patients with HFpEF tend to be older and have multiple comorbidities. We haven’t found one drug that works effectively for these people. Consequently, the possibility of preventing heart failure, particularly in the elderly patient with comorbidities, is really key.

A new challenge is our appreciation that many patients with several forms of cardiomyopathy have genetic abnormalities that are, in part, responsible for their symptoms. Identifying these patients, or their children, cataloging their genotypes, and preventing the phenotype of disease will require real collaboration around the world. There is an infrastructure of research that has to be built.

(Another challenge is) disparities of care, not just in the United States but around the world. It is just dawning on us what a problem this is.

Then, standard medical therapy for a patient with HFrEF is 5 or 6 or 7 drugs (and) a medical device like a defibrillator. It’s expensive. Maybe not every patient needs all of them. So (a challenge is) trying to figure out which patient responds to which therapy and do they really need all the therapy? This has been labeled precision medicine, and we are not very close to that ideal in heart failure.

Finally, a lot of what has been accomplished is through clinical trials in heart failure. I think the potential now is to go back to the bench, which is happening. Researchers are looking again at molecular mechanisms and other potential pathways. This is where the successes of heart failure started: trying to understand how the heart worked and why the failing heart didn’t work.

What Is the Best New Hope for Heart Failure Patients?

The hope is the lesson we’ve learned from a new class of drugs called ARNI (angiotensin receptor neprilysin inhibitors). We feared that medical therapy had reached its limit in helping the patient with HFrEF—another drug could not make a difference. But a pivotal trial, PARADIGM-HF (Prospective Comparison of ARNI [Angiotensin Receptor–Neprilysin Inhibitor] with ACEI [Angiotensin-Converting–Enzyme Inhibitor] to Determine Impact on Global Mortality and Morbidity in Heart Failure Trial), proved that conventional wisdom was wrong. The trial showed that a drug that exploits a pathway beyond the renin–angiotensin system could be successful. It was the go-ahead to explore other pathways with vigor.

What Aspects of Your Work Are You Most Passionate About?

My involvement with the AHA has been a critically important part of my career. I have made many good friends and have always felt I was part of a vital and impactful organization. Volunteering for the AHA is like Sunday dinner with a huge, extended family.

I’m very interested in the lifelong learning of a clinician or a scientist: How do we continue to stimulate the joy of learning and maintain our skills and competencies? How does the adult learner learn best? Why do people go to scientific meetings, how do you make the meetings valuable?

I’m (also) very interested in the types of research we need as we move forward. How do you organize people to do research that will start to get to the promise of precision medicine? Do we need different mechanisms of funding? Do we need different infrastructures? Do we need to get patients involved earlier? How do we bring promising discoveries to the clinical arena faster?
These are compelling questions for me and prompted me, in part, to make a major change in my career and become Chief Scientific Officer of Fondation Leducq. I’ve moved to Boston after living in Philadelphia since 1968.

**Did You Ever Remarry, Have Any Children?**

No, I didn’t remarry, to my regret. However, to my great joy, I did adopt my daughter, Mary Parker, in China (in 1994), and she’s now 25. She saved me from myself, I think. Children make you adaptable; you have to think about them and not always about yourself.

She’s always been an artist, and she looks at the world completely differently than I do. Since she was a little girl she’d notice things and I’d think, “why in the world would she notice that?” because our brains are so dissimilar. It’s an ongoing wonder to me to watch what she does and what she creates.

I have 3 dogs, and I have lots of friends all over the world, and I am very close to my sister and her family. So I’m really, really lucky.

**What Do You Do for Fun?**

I love to travel. I love to garden; I had a huge garden in Philadelphia and none in Boston. Time for a new hobby, I guess.

Catching up with friends—I love to have people come over and cook and have an informal dinner.

**Do You Have Any Favorite Books, or Movies, or Music?**

I always have a Kindle with me and read constantly.

I can’t pretend I see all the great movies, but I read all the movie reviews. I watch a lot of escapist stuff. People laugh at me when I say I like Lord of the Rings and James Bond and Game of Thrones.

I read all kinds of books. I read mysteries and current literature, a wide variety.

**Are There Lessons Your Career Has Taught You That You Share With Up-And-Coming Clinicians or Investigators?**

I tell residents three at the end of a rotation:

1. Don’t ever be afraid to say “I don’t know.”
2. Always tell the truth, to the patient and in your work.
3. Seek help if you are not happy. If you talk to most people, (they found their path) because they went to someone to ask for advice. There are many people who will help point the way to the next step. I credit Mark Josephson with pointing me in the right direction and finding Karl Weber.

**How Important Have Factors Like Hard Work Been in Your Success?**

You have to work hard. I have been lucky, but I have worked hard, possibly to the detriment of my personal life. You have to work hard, you have to follow deadlines, and if you’re going to get involved, you have to get involved all the way.

**After More Than Three Decades in the Field, What Inspires You Every Day?**

I can’t help but be motivated by patients. I guess in a way I started with patient stories, and I still get inspired by their stories, seeing how people get better or how they cope with a chronic fatal illness. How could I not be inspired?

**Disclosures**

None.

**References**

Mariell Jessup: Shaping a Subspecialty
Karen Patterson

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