Daniel J Lenihan* speaks to Gemma Westcott, Commissioning Editor: A cardiologist at Vanderbilt University (TN, USA), Daniel J Lenihan is President of the International CardïOncology Society-North America. In 1988, Daniel graduated from the University of Tennessee College of Medicine at Memphis and did his residency at Wright-Patterson Air Force Base in Dayton (OH, USA). Ultimately, he gained a cardiology fellowship from the University of Cincinnati (OH, USA) and went on to become Professor and Director of Cardiovascular Research in the Department of Cardiology at The University of Texas MD Anderson Cancer (TX, USA). He now works as Professor of Medicine and Director of Clinical Research in the Division of Cardiovascular Medicine, Vanderbilt University Medical Center, Nashville (TN, USA) specializing in advanced heart failure medicine and cardio-oncology. For over 20 years, he has been active in clinical research in heart failure, and the main focuses of his work have included hemodynamic assessments, angiogenic growth factor response, novel cardiac biomarkers and optimal methods to prevent or detect heart failure at the earliest stage possible in patients undergoing treatment for cancer.

Q Can you tell our readers about your career to-date & how you came to be in your current role?

I am not sure if you can exactly figure out how you end up in that spot! During my cardiology fellowship I had always had an interest in heart failure. Immediately after fellowship I was in the US Air Force for several years but continued to be engaged in clinical research in heart failure. After the military, I went to a couple of academic positions where I primarily dealt with heart failure and cardiac transplantation. After a few years of doing that, I ended up at MD Anderson Cancer Center in Houston. I was there for around 7 years and during that time I really grew to love caring for patients with cancer and helping to manage cardiac conditions. Since then, I have been attempting to improve practices across the country in terms of cardio-oncology, but also really trying to advance the research that is being done. About 5 years ago, I came to Vanderbilt with my primary role being the Director of Clinical Research, and in that context have continued to be focused on heart failure and cardio-oncology studies; I have been doing that ever since.

Q So what drew you toward the field of cardio-oncology?

Initially I was a cardiologist at a cancer center and was very engaged in the care of the patients. The really interesting thing about that from my perspective was that the cancer patients have to go through so much; they have surgery, radiation, chemotherapy and it is intense and prolonged. It is a real challenge. Whenever cancer patients encounter a cardiology-based issue, it seems like they have to add it to the heavy list of things that

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they already have to deal with. In my role as a cardiologist, I wanted to minimize those things and I did not want a cardiology-based issue to add to their difficulties.

Can you tell our readers about some of your key work within the field?
The main thing that we are trying to do is to advance general education about cardio-oncology concerns and then advance what is really known from a clinical research point of view. Being very disciplined in how we report on our findings and trying to apply contemporary cardiology issues to the prevention of heart failure in cancer patients is my main goal. So, what I spend most of my day doing is making sure that patients are treated optimally from a heart point of view, and ideally if we can prevent the development of a cardiac issue then I think that it is a huge victory.

You are currently President of the International CardiOncology Society North America. How did you come to be involved?
Back in 2007 when I was at Houston, we had our first cardio-oncology meeting and had a group of international representatives. The friendships that I developed from that lead to the introduction of the International Society of CardiOncology in 2009, and since then we have just tried to develop more and more friends around the world that are interested in and committed to improving the care of cancer patients.

What are the International CardiOncology Society’s main aims?
We have about three or four principal goals. The first would be to improve the care of cancer patients from a cardiology perspective, and then second to raise awareness about the potential and real cardiac issues that occur during cancer treatment. Third, it is also about cancer survivors. There have been more discussions about that in recent years, but we still really have a very limited understanding of how to screen and detect underlying cardiac issues in those patients. For the most part, if patients survive their cancer then they are pretty much sent out on their own. We had really like to improve that process of detecting underlying cardiac conditions if possible and focusing on cancer survivors is a big part of our picture. Lastly, one of the biggest general concepts that we’ve been trying to battle with, is that an oncologist who is treating a patient with cancer does not really want someone to tell them that their drug can cause a problem. However, one of the things that we want to point out as a group is that naturally we are on the same team. We want to get rid of the cancer too and if we can figure out a way to protect the heart or improve the cardiac function while the patient gets their best cancer treatment then that is really our combined goal. It is not to identify whether a certain drug has a certain side effect.

You are also the co-chair of the Global Cardio-Oncology Summit. Can you tell us a little about what we might expect in 2015?
We are very excited about that. That is going to be in Nashville and so for all of those people who have not come to Nashville before; it is a perfect excuse to come to the music city of the world! It is a great city and the hope is that we can really attract an international audience to discuss not only the things that we are doing well in terms of managing cardiac issues, but also what research we can do together and how we can build better partnerships to really impact patients and the care that they are receiving or have received in the past. There really has not been a true international meeting in that regard before and we are hoping that we get a lot of people to attend from all over the world, thinking about how each area can improve their local and regional partnerships to improve patient outcomes overall. We really want to partner with the oncology groups in the different areas, as well as industry and regulatory entities. If there is a cancer drug, for instance, that appears to be effective from a cancer point of view but has an important cardiac side effect, a lot of the time that drug could get taken off the market unnecessarily and if we could do a better job at managing the cardiac side effects, the patient could get what is otherwise a very effective cancer drug. This is a message that we definitely want to push out to all of the groups, so partnering with industry and regulatory entities is a key piece of what we are trying to do.

Cardio-oncology is very much an emerging field. Are there any trends that you are seeing?
The really exciting thing about it is that all of these different major institutions are starting to pop up with some kind of cardio-oncology program so they must have thought: “Ok, this is an important issue and so we need to put some emotional and physical resources in to make this happen.” To see the number of programs around the USA...
and Canada increase is wonderful. There is just a tremendous amount of energy in that way and so many major institutions have come up with some sort of program. We hope that that type of situation is duplicated in Europe. In England in particular, I have some close colleagues that have really committed to this and are working on developing programs as we speak.

Over the last few years, more hospitals have developed effective cardio-oncology programs. What strategies do you believe are vital for integrating this care by oncologists & cardiologists?

I think that there is no question that active, engaged communication is absolutely key. It is one thing to see the patient who has a heart problem and you decide to do a test, but that is it, you just sort of make that decision on your own. That is really a systemic problem in healthcare; we operate almost in our own world. To have an effective cardio-oncology program you really have to communicate well; it cannot be once every 2 or 3 months where you have a 10 min meeting, it has to be when you have an issue in the patient, you consider doing one thing and that thing may have an impact on the oncology side. You need to have an active conversation at the time. For example, if a person has atypical chest discomfort and they have a stress test, and that stress test is abnormal, in the cardiology world you may just go straight for a coronary angiogram. The patient would probably end up with a stent, then eventually a drug-eluting stent and they’re supposed to be on clopidogrel for a year, or forever if you believe recent presentations. To have someone on aspirin and clopidogrel when they are about to undergo chemotherapy or major surgery for the treatment of cancer, that has a huge potential impact. We need to enhance our communication in the situations before taking that step, conversing with our colleagues to say: “you know it is better to do something different” – that is the most important thing.

What would you say are the current challenges in trying to minimize cardiotoxicity induced by current cancer therapeutics?

The biggest challenge right now is that our accepted techniques for detecting a problem are blunt at best. If you do a fancy echocardiogram, and think that will be the best way to get the answer, well the truth is that is just not the case. You cannot do an echocardiogram every day, plus echocardiograms have limitations in terms of detecting a problem; it is really only going to detect a severe problem. We believe it is actually going to be a combination of things: clinical examination, possibly biomarkers, possibly imaging and for certain conditions and certain drugs, preventative therapy would be indicated. It is all of these issues that we need to think about and we need to conduct careful research to try and answer those questions. Each institution has to communicate with others so that we are doing research that will advance the field. We do not want to just do our own thing in our own world and not communicate with others.

Are there any potential cardioprotective therapies on the horizon?

Since my background is primarily in the heart failure world I am very partial to typical heart failure medication; certainly carvedilol, angiotensin II receptor blockers, and angiotensin converting enzyme inhibitors, which are a good solid basic medicine that we like and in certain situations do prevent the development of cardiotoxicity. The newer drug, LCZ696, is a very attractive drug in the sense that it is a combination medication and has had such an impact in the heart failure world that perhaps it will have an important role in preventing cardiotoxicity. The other thing is to do all of the things that we know are effective; for example, using aspirin as a preventative measure in certain situations in people with hyperlipidemia or a family history of heart disease. There are a lot of different areas, including exercise and diet of course, and there are really a lot of different facets that we can apply to each situation.

Finally, where would you like to see the field in 10 years time?

One of the things that we are proposing is to develop a fellowship, so there would be a focused fellowship in cardio-oncology and with that you would need to have a curriculum and ongoing research that advances the field. We hope to have an organized cardio-oncology fellowship in the next 5–10 years. I think that 5 years from now, if we can say that cardiologists are communicating with their colleagues very effectively, then that would be a huge accomplishment.

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