DR. TROST: Well, hello, and thank you for joining me for this discussion of therapies for non-psychogenic erectile dysfunction. My name is Dr. Landon Trost. I'm one of the assistant professors in urology and the current head of andrology and male infertility at Mayo Clinic in Rochester, Minnesota.

Well, in discussing available therapies, we really divide this into three different categories, which is-- one, improving the comorbid conditions. Two, minimizing any iatrogenic impact. And then finally, treating symptoms themselves.

When we look at erectile dysfunction, it's important to recognize that it really is a good barometer for your overall health. The combination of erectile dysfunction and cardiovascular disorders really is about 20% to 30% of patients, whereas men who do not have preexisting coronary artery disease, they have about a 45% greater risk of cardiovascular events if they have erectile dysfunction, compared to if they don't. To put this into perspective, this is equivalent to smoking. And in fact, erectile dysfunction is really even a better predictor of cardiovascular events than HbA1c, blood pressure, and lipids. So really, one of the most important questions which should be asked of men is whether or not they have erectile dysfunction.

When we look at controlling comorbid conditions, there are several conditions which impact erectile function, including diabetes, various medications-- such as anti-depressants, opioids, and beta blockers-- as well as alcohol, which all impact the nerve side of erections. In regards to vasculogenic causes for erectile dysfunction-- which are indeed the most common cause of erectile dysfunction-- we can see certain comorbid conditions, such as diabetes, high blood pressure, high cholesterol, tobacco use, as well as various medications. In particular, those that are used to treat high blood pressure-- such as beta blockers and thiazides-- can also be implicated. We do check hormones, including testosterone, and thyroid as well, as these can contribute to erectile dysfunction.

Now, testosterone replacement is somewhat of a controversial issue. However, we do know that men who have normal testosterone levels-- so say over 300-- they do not get a benefit in receiving testosterone supplementation in regards to erectile function. Now, the lower their testosterone is below this, the more likely they are to benefit. So this is one area which should be discussed.

Now, along those lines, there is no benefit to over supplementing. When you look at the graph there, the stronger the erection-- which is located by the IIEF score, 25 being a perfect erection-- you can see there really is no correlation with testosterone levels. So anything over 300 would not likely benefit from therapy.

When we move on to treatments of the symptoms themselves, the first-line therapies include PDE5 inhibitors, such as Viagra, Levitra, Cialis, and Stendra. As you can see on the mechanism on the right, by inhibiting phosphodiesterase 5, cyclic GMP is able to go on to result in vasodilatation. And normally, phosphodiesterase 5 breaks this down and results in detumescence.

Now, among the various therapies, they're very similar. The majority will last about six hours. However, Tadalafil does have a difference in this regard, in that it last about a day or day and a half. Sildenafil-- or Viagra-- has some vision changes. Vardenafil, it's important to recognize the QT prolongation. Tadalafil is different in that you can take it as a daily versus on demand therapy, and you can also take it with food. The majority of the others need to be taken about one to two hours on an empty stomach prior to anticipated intercourse. Avanafil is one of the newer medicines. It does have faster onset-- about 15 to 30 minutes-- and it is the least expensive of the current therapies.

In regards to advantages of use, these PDE5 inhibitors are clearly easy to use. They work about 2/3 of the time. They are more expensive. They do require intact nerves. And they don't work as well with multiple comorbidities. Now, the thing you commonly hear about erections lasting longer than four hours or loss of vision-- these are extremely rare, and you don't even need to routinely discuss them at the time of consultation.

When we look at success rates, comorbidities such as hypertension tend to respond very well to these medicines, whereas uncontrolled diabetes, or any surgery which impacts the nerves, such a prostatectomy, tend not to respond quite as well. Now, a side option for first-line therapy is a vacuum device. These really work best in men who have venous leaks, so men who can get an erection, but they lose it quickly. They can't be on any anticoagulation. And really, these have a much lower satisfaction profile in general. When you look at the dropout rates, they tend to be very high.

For second-line therapies, we move to intracavernosal injections. These work very well. They tend to bypass the nerves. They result in firm erections. And they do have very high satisfaction scores, overall. They also can have a high dropout rate if you don't have routine follow up with the patients and consistently encourage and train them how to do these. And generally, these consist of one or more medicines, including Alprosadil, Papaverine, or Phentolamine, among others. Penile prostheses, these do remain the gold standard therapy for medically-refractory erectile dysfunction. You can see some historical pictures there on the right, as well as the current devices on the bottom.

Satisfaction rates are actually very high with these. So anywhere from 90% to 100% of patients say that they are satisfied with the device and would do it again. The expectations being fulfilled is anywhere from 80% to 90%. And these do result in no change in sensation, orgasm, or ejaculation. They simply make the erection firm again.

There are risks any time you undergo surgery. With a prosthesis, it does require surgery. These tend to break. About 10 years, 60% of them are still working, but any longer than that, and they do tend to break over time. You will lose the ability to maintain or to achieve a spontaneous erection. And infection rates are typically less than 2% with these.

So in summary, men with erectile dysfunction are at much higher risk for cardiovascular events. Treatment includes controlling comorbid conditions, minimizing any iatrogenic effects, and to treat the symptoms themselves. PDE5 inhibitors are first-line therapies, with vacuum devices also being a viable option. Intracavernosal injections are second-line, and placement of a penile prosthesis is third-line. Once again, I'm Dr. Landon Trost, and thank you for joining me for this discussion of therapies for non-psychogenic erectile how dysfunction.