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Hi, my name is Christine Kessler, I'm a nurse practitioner at a general endocrinology practice and I have been speaking and treating and writing on the subject of thyroid disorders since late 1970s, it's been a while. When we're looking at endocrinopathies or endocrine disorders, the most-- the second most common out there worldwide is thyroid or thyroid disorders.

Among the thyroidopathies, the most common is hyopthyroidism-- primarily primary hypothyroidism and in this country it is autoimmune thyroiditis, Hashimoto's. I say that because if you look on the world wide scale, it's actually iodine deficiency, the biggest cause of hypothyroidism, but in this country, it's going to be autoimmune hypothyroidism is the cause. And what's interesting about this particular disorder-- it is so prevalent even among those who might be watching this, among you and among your patients, it is so prevalent that I fear it may become somewhat of a wallpaper diagnosis. Not quite taken as seriously as we should take it, and that's what we'll be talking about-- it's very important we take this seriously looking at hypothyroidism.

Now when you're looking at the problem and why this is so impactful on the body and on health care cost is understanding with thyroid hormone does. And the thyroid hormone affects every tissue in the body, so if you have any disruption in the production and delivery of thyroid hormone it's going to affect widespread systemic health. And to look at-- and when you're looking at the consequences for our patients, well, we have to understand what thyroid hormone does to the major systems that your patients and my patients complain mostly about.

I like to start off by saying, I always consider hypothyroidism, particularly primary hypothyroidism, as a cardiometabolic disorder, is a cardiac disease. The greatest impact we see when it comes to long term morbidity and indeed, mortality, is due to cardiovascular sequelae from a deficiency encircling thyroid hormone. Thyroid hormone affects three-- a number of major systems, but the one I want to focus on is cardiac, cardiovascular system, the CNS, and fertility, as well as fat mass and many others.

The most metabolically active of the thyroid hormones is triiodothyronine or T3, which has profound effects on all major systems in the body, especially the cardiovascular system where it affects contractility of the heart, heart rate when it affects endothelial function, systemic vascular resistance, and also lipid metabolism. Now this is important because as you get a reduction in sufficiency of thyroid or T3 output, you're going to have a decrease in myocardial contractility, which increases the risk of heart failure.

You're going to have a decrease in heart rate, which is going to lead to bradycardia, actually a lot of prolonging of intervals looking at EKG changes. You're going to have increases in systemic vascular resistance, you're going to have endothelial dysfunction. It increases the risk of cardiovascular disease or coronary artery disease with heart attacks and stroke and you're going to have an increased risk of hard to treat dyslipidemia. So that's why the most common thing I look for and gives me greatest concern is getting these patients treated.

The other thing with hypothyroidism and the one that brings a lot of patients to us is the effect on the CNS. You cannot understate this. It affects profoundly mood and it affects neural cognition, so what you're going to end up getting is problems with fatigue, depression, significant depression, and then you're going to have problems with thrombogenesis, as T3 plays a big role in maintaining body temperature in times of greater need.

The other one that's going to bring the patients to you due to their hypothyroidism is infertility and changes in their menstrual cycle if they're premenopausal. So that is a-- those are the biggest things you see, as well as adiposity and I won't go into that for this talk. But I cannot minimize the impact of thyroid hormone on fat mass. And when you're in the presence of hypothyroidism, you're going to get increased central adiposity and you're going to have increase of visceral adiposity with non-alcoholic fatty liver, which, colleagues, is one of the biomarkers of cardiometabolic impairment or metabolic syndrome. Again I focus on this is being the big reason we must pay attention.

Now when we treat these patients, it's most important to understand the patient has a problem. And when they're coming to you with very ubiquitous symptoms, that's hard. The majority of patients with hyperthyroidism are managed in primary care unless they have a concomitant endocrinopathy that endocrinology's measuring or they have an underlying condition that makes treating or thyroid hormone replacement very difficult like ischemic heart disease. The majority of these patients are in the purview and in the ballpark of primary care. And so that's why it's important that we look at this and understand how first to identify these patients at risk, how to treat them efficiently, effectively, and safely. And they can be very confusing when you're seeing guidelines coming out that they don't quite meet what your patients are showing. We'll be talking about that further.