

## **Estrogen Patch Reduction of Signs of Alzheimer's Disease in Post-Menopausal Women**

Hello, this is Dr. Sonya Harden, Program Director for the Geriatric Workforce Enhancement Program Grant at East Carolina University. Podcasts are being developed for primary care providers with topics in neurology. This short podcast is focused on estrogen patch reduction of signs of Alzheimer's disease in post-menopausal women.

So let me begin today by saying that we have research that was published in July of 2016 in the Journal of Alzheimer's Disease that has shown that an estrogen skin patch reduces amyloid beta deposits, which is an indication of Alzheimer's disease, and this has been seen in newly post-menopausal women. This is going to be very important in how we treat our post-menopausal women in the future because this study showed for the first time that the brain amyloid deposits, which is a hallmark sign of Alzheimer's disease, is reduced when women received 17-beta estradiol patch form of hormone therapy.

Women with the APOE-4 have a greater genetic risk for Alzheimer's disease, particularly benefited from this therapy of using an estrogen skin patch. As you are well aware of, previous studies of hormone therapy for Alzheimer's disease led to a lot of controversial results because in the Women's Health Initiative Memory Study, WHIMS, hormone therapy increased the risk of dementia. However, remember that subjects in that study were women in late menopause, so they were 65 years old and older.

In this new study, researchers investigated whether estrogen could preserve neurological function and decrease the risk of dementia when given to women during a window of opportunity in early menopause. So that's the period of 5 to 36 months after their final menstrual period. This study was conducted with women ages 42 to 59, and they were looking to see if the hormone treatment could possibly slow the progression of atherosclerosis in these newly post-menopausal women.

Keep in mind that we know that there is a huge difference between oral estrogen therapy and the estrogen transdermal patch. Three years ago there was a study that was connected where by they used a PET scan to scan for the amyloid beta deposits in a subset of patients, and they were trying to compare the estrogen patch along with oral estrogen and the placebo pill and a placebo patch. One of the things that they realized is that women treated with the transdermal patch had lower measures of amyloid beta deposits compared with those in the placebo group. However, women treated with oral estrogen did not show fewer amyloid deposits.

So this transdermal patch did lower amyloid beta levels in women, most particularly with those that had the APOE-4 genotype, and as we know, women who are APOE-4 carriers are at higher risk for Alzheimer's disease related pathology and may benefit most from preventive interventions at an early age, such as using a transdermal patch.

Given these results, future studies are being planned to examine the transdermal estrogen patch as a form of prevention of Alzheimer's disease. This concludes our podcast for today. Thank you very much.