The clinical effectiveness and cost effectiveness of genotyping for CYP2D6 for the management of women with breast cancer treated with tamoxifen: a systematic review


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**What is the question?** Does pharmacogenetic testing of women with breast cancer help to improve their survival and is it cost-effective?

**How was this studied?**
This article reviewed 39 published studies which looked at the clinical effectiveness (health outcomes) and cost-effectiveness of pharmacogenetic testing for women with breast cancer. The women were tested for a specific gene (CYP2D6) which affects the way their body reacts to tamoxifen. Tamoxifen is a commonly prescribed treatment for women who have been diagnosed with a certain type of breast cancer (estrogen receptor positive). It is also approved for the prevention of breast cancer in women at high risk of developing the disease. Although the studies varied greatly in terms of the way they were designed, several thousand women participated in these studies all together.

**What are the Results?** When the data from all of the studies was combined and analyzed, the results suggest that subjects who are tested and found to have a ‘normal’ gene for Tamoxifen metabolism have less of a chance for breast cancer relapse or recurrence when compared to women whose Tamoxifen metabolism gene is abnormal. Investigators were not able to determine if testing for this metabolism gene costs less than treating the patient without genetic testing.

**Take Home Message:** It is difficult to try to answer very specific questions using data from multiple studies that were all done differently. But it is helpful to look for trends that show up in at least several studies. And since multiple studies showed a difference in health outcomes (recurrence and relapse), physicians should consider using pharmacogenetic tests to determine if Tamoxifen is the best treatment for the patient being considered.