

The Women's Health Research Program

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Testosterone improves verbal learning and memory in postmenopausal women: results from a pilot study¹

This recently published study lead by Dr Sonia Davison of the Women's Health Research Program explored the effects of testosterone on brain function in early postmenopausal women.

Nine women on non-oral menopausal hormone replacement therapy received a novel testosterone spray, applied to the abdomen daily for six months. The dose of the spray was designed to restore testosterone levels to those of early reproductive aged women. Testosterone levels decline with age in women and reach a low at around the age of 65 years. This is also the age at which dementia incidence begins to increase, hence our interest in seeing whether restoring testosterone levels to those typical of younger women may have a beneficial effect on cognition. A variety of cognitive, or brain function tests were administered before the treatment, and after six months, using a sensitive computerised cognitive test, 'CogState'. CogState uses a series of different games or tasks each time it is used, hence the tests cannot be remembered or learned, which is a common criticism of other methods of testing cognition.

A control group of 30 women received no treatment but had CogState testing

at identical time points. With testosterone treatment, an improvement was seen in verbal learning and memory, with more words recalled on a shopping list. In the control group of women, who did not receive treatment, no improvements were seen in any area of cognitive testing. This exciting exploratory finding is currently being tested in randomised placebo controlled studies in two groups of postmenopausal women by members of the Women's Health Research Program.

1. Davison SL, Bell RJ, Gavrilescu M, Searle K, Maruff P, Gogos A, Rossell SL, Adams J, Egan EF, Davis SR. *Maturitas*. 2011 Nov; 70(3):307-11.

Screening Mammography: benefits and harms

You may have seen coverage in the general media recently about screening mammography. This coverage has spilled over from a debate in the medical literature over the last 2–3 years about the risks and benefits of breast screening.

Mammographic screening programs, with the invitation to screen for women aged between 50 and 70 years, are accepted practice in developed countries. These screening programs were developed in the late 1980's and early 1990's when evidence from a series of randomised trials showed that screening reduced deaths from breast cancer. The randomised trials were studies in which women were randomly allocated to either be invited for screening or not and then



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followed up to assess the impact of screening on deaths from breast cancer. A randomised trial is the strongest study design in which to evaluate the benefit of screening.

However other changes were occurring around the same time as the introduction of screening mammography with an increasing proportion of women being treated with chemotherapy and endocrine therapy (such as tamoxifen), both of which have also been shown in randomised trials to be highly effective at reducing breast cancer mortality.

The challenge has been to work out how much of the overall reduction in mortality from breast cancer over the last 20 years has occurred as a result of screening and how much can be attributed to new treatments¹.



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A second challenge has been to estimate the impact of an issue called 'over diagnosis'. Over-diagnosis is the identification by screening of small, slow-growing tumours which would never have been identified clinically in a woman's lifetime if she had not been screened.

The issue with 'over-diagnosis' is that it is not currently possible in an individual woman to determine whether she has a tumour which has the potential to threaten her life or one which she would never have known about if she had not been screened. So this means some women treated for screen-detected cancer will be treated unnecessarily.

The ratio of lives saved by screening versus the 'harm' of over-diagnosis is still in dispute, however in the meantime, we need to change the approach taken to communicating with women about mammographic screening so that women are given balanced information about the benefits and harms of screening, rather than simply being persuaded to attend for screening.

A paper recently published in the *Journal of the National Cancer Institute (JNCI)*² concluded with the following statement:

"It is time for cancer control scientists, organizations, and advocacy groups to work together to develop an approach to screening that embraces, encourages, and routinely provides both the harms and benefits of cancer screening tests to all patients in a transparent fashion. It involves a fundamental respect for individuals and a tolerance for truly informed decisions even if, as individuals ourselves, we would not make the same choice."

1. Burton RC, Bell RJ, Thiagarajah G, Stevenson C. Adjuvant therapy, not mammographic screening, accounts for most of the observed breast cancer specific mortality reductions in Australian women since the national screening program began in 1991. *Breast Cancer Res Treat.* 2011; DOI 10.1007/s10549-011-1794-6.

2. Edward Stefanek M. Uninformed Compliance or Informed Choice? A Needed Shift in Our Approach to Cancer Screening. *J Natl Cancer Inst.* 2011 Nov 21.

Get involved in research

Are you aged 55–70 years old and interested in being involved in a study to evaluate if low dose testosterone therapy might enhance learning and memory? To participate you need to be otherwise well and not taking any hormone therapy or antidepressants.

If you would like more information, regarding this and other studies please visit our website: womenshealth.med.monash.edu.au or contact the Women's Health Research Program on 03 9903 0820 or by email on womens.health@monash.edu