

The Women's Health Research Program

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Last month Professor Susan Davis gave invited presentations at international meetings reporting on the research undertaken within the Women's Health Research Program regarding the effectiveness and safety of testosterone therapy for women. The first presentation was at the North American Menopause Society Annual Congress held in Washington, DC, followed by a presentation at the Testosterone Action, Deficiency and Substitution Congress held near Munich. This bulletin summarises the information presented at these meetings.

Testosterone in women

Testosterone is an important hormone for women because not only does it have direct actions throughout the body but also because it is converted into oestrogen. Before menopause testosterone is the main source of oestrogen production. In young healthy women blood testosterone levels are about 10 times those of oestrogen. Whereas oestrogen levels drop suddenly at menopause, testosterone levels decline progressively in women from the third decade of life. As a result by the time most women have reached their 40s their testosterone levels are about half what they were in their 20s. Why this occurs is not well understood. Apart from ageing, factors that lower testosterone levels in women include use of the oral contraceptive pill, long term use of tablets like prednisolone,

removal of the ovaries, premature menopause and uncommon conditions such as pituitary and adrenal failure.

One of the biggest challenges confronting research in this area is the precise measurement of testosterone at the lower levels found in women. Therefore testosterone deficiency cannot be defined by a blood level because of the inaccuracy of the testing methods available. This means there is no cut off level of testosterone below which we can say a woman is experiencing testosterone deficiency. In general however large studies have shown associations between low testosterone and both low bone density and increased fracture risk in postmenopausal women. Contrary to general belief most large studies also have shown that women with low testosterone are at greater risk of atherosclerosis and cardiovascular disease. A number of researchers have tried to look at the relationship between testosterone and breast cancer risk. Overall studies do not show a significant relationship between testosterone levels in the blood and breast cancer.

Testosterone for low libido

A number of studies have looked at whether testosterone treatment would improve sexual well-being in women experiencing low libido. The initial studies were conducted in women who had their ovaries surgically removed and were taking oestrogen therapy in tablet form. Testosterone



Professor Susan Davis,
Chair of Women's Health.

therapy significantly increased the number of times each month women reported having a satisfactory sexual encounter (for research purposes these were called satisfactory sexual events) and significantly increased sexual desire, arousal and pleasure and reduced sexual concerns. These effects were all greater than that seen for placebo therapy. Subsequently similar studies have been conducted involving naturally menopausal women taking oestrogen therapy, and naturally and surgically menopausal women not taking oestrogen therapy with similar outcomes. The women least likely to respond to testosterone were those taking oestrogen as conjugated equine oestrogen (commonly known as Premarin) and women who had a very high level of the protein that carries testosterone in the blood (sex hormone



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binding globulin). In most of these studies, testosterone has been administered by a skin patch (Intrinsa) which is changed twice a week. The testosterone patch has been approved for use in women in Europe. A testosterone gel for women (Libigel) has also been developed and presently a very large study is being conducted in the US to evaluate the longer term effects of this testosterone gel in women in terms of cardiovascular disease risk and breast cancer. In Australia testosterone is commonly prescribed as a transdermal cream for women (Androfeme one per cent). This has been shown to be effective in small studies. As the daily dose needs to be measured out, women using this product need to have their blood testosterone level monitored regularly. It is important that women do not use the higher strength cream which has been made for men, as it is very easy to apply a fraction too much and as a result end up with testosterone levels way above those that are normal for women. Testosterone implants are also commonly used in Australia. These are small pellets of compressed testosterone which are inserted just under the skin under local anaesthetic and which are effective for several months.

With each of these therapies improvements in sexual well-being emerge after several weeks of testosterone use. However studies will be shortly underway in Australia to determine whether an intranasal testosterone gel will help women who are no longer able to experience orgasm used on an 'as needed' basis.

Women considering using testosterone not infrequently worry that they may become hairy or develop a deep voice. Testosterone therapy may mildly increase hair growth in about 15 to 20 per cent of women, but most women do not experience this as a

problem. Studies of the testosterone patch have not shown higher rates of acne or voice deepening with its use. In terms of other health risks, the use of testosterone as a skin patch or gel or other transdermal preparations has not been associated with adverse effects on blood cholesterol levels, blood glucose and carbohydrate metabolism or any other metabolic effects.

Other possible benefits of testosterone therapy

Testosterone therapy has been shown to improve bone density but no studies have been done to evaluate whether testosterone will prevent fracture. Research suggests that testosterone may have favourable effects on memory and learning in postmenopausal women and we are presently looking at this further. We are still recruiting women aged 55 to 70 years to participate in our study of the effects of testosterone on learning and memory.

Who should use testosterone?

Not all women with low libido will experience benefit with testosterone therapy. This is most likely because sexual well-being is complex and hormonal action is only one part of the jigsaw that constitutes female sexuality. As there is no clinical test to identify women most likely to benefit from testosterone treatment it is commonly on a trial and error basis, with about 60 per cent of women likely to experience benefit. The effects of testosterone have not been studied in women experiencing low libido associated with antidepressant use but currently we are investigating this. More information regarding testosterone action and treatment can be found on our website womenshealth.med.monash.edu.au

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