Oxytocin...It's not just about sex!
Jill C. Carnahan, MD

Oxytocin... it's not just about sex! The pituitary is a very important gland located at the base of the brain, just below the hypothalamus. The two main sections of the gland, the anterior and posterior pituitary secrete some very essential hormones for life....

Anterior Pituitary Hormones

- ACTH (Adrenocorticotropic Hormone) - stimulates adrenal gland to produce cortisol
- FSH (Follicle Stimulating Hormone) and LH (Luteinizing Hormone)- control sexual characteristics and reproductive functioning, known as gonadotrophins.
- TSH (Thyroid Stimulating Hormone) - stimulates thyroid gland to release thyroid hormone
- Prolactin - stimulates breast to produce milk for lactation
- MSH (Melanocyte Stimulating Hormone) - deficiency can increase pain,
inflammation and sleeping issues.

- GH (Growth Hormone) - stimulates growth and repair

**Posterior Pituitary Hormones**

- ADH (Antidiuretic Hormone) - controls blood fluid and mineral levels along with hydration

- Oxytocin - more below about the many functions of oxytocin...

**Oxytocin... it's not just about sex!**

The hormone oxytocin is often referred to as the neuropeptide of "love and attachment". Perhaps the least understood of the pituitary hormones, it has been linked to maternal-infant bonding, lactation, social behavior, trust, and sexual pleasure. It is best known for release when a mother breast-feeds her newborn infant, stimulating the uterus to contract to avoid blood loss and increasing the bonding between the mother and her baby. An article in Psychological Science describes it here. Several studies suggest it may be useful in treating autism and obsessive compulsive disorder (OCD). In the Autism Speaks-funded pilot study researchers administered oxytocin spray to 25 children twice a day for 2 months. The children who received oxytocin showed greater improvement in social behaviors compared to those who received the inactive nasal spray.

The excitement over the hormone began in the 1990s when researchers discovered that breastfeeding women were calmer than bottle-feeding mothers in the face of psychosocial stress. Recent research is probing whether or not administration of oxytocin can also promote trust and generosity.

**A 2005 study published in Nature** showed that the effect of oxytocin on trust is not just due to a general increase in the ability to bear risks. Instead oxytocin specifically affects an individual's willingness to accept social risks arising through interpersonal interactions.

**A Tale of Two Voles...**

The Prairie vole, native of the woodlands of Europe and Asia, is one of the only 3% of mammals who prefer to pick a partner and mate for life. However, a close relative the Montane vole, has no interest beyond a one-night stand with it's partner. What makes these closely related species so different? Turns out it's the two posterior pituitary hormones, ADH and oxytocin, which the Prairie vole has receptors for but the Montane vole does not. If the release of these hormones is blocked, the Prairie voles become like their cousin and have a fleeting affair.
instead of life-long monogamy. More here...

Social Separation and Stress

Recently, studies show that this hormone is also released in response to social separation and stress. According to research by Grippo and Porges, the findings support the hypothesis that oxytocin may protect against behavioral and cardiac dysfunction in response to chronic social stressors and may also provide insight into social influences on autonomic function in humans.

So in times of well-being, oxytocin reinforces the human bonding experience, spouse to spouse, parent to child, or even among friends. In contrast, during times of great stress or pain, oxytocin may lead people to seek out social connection to better deal with the trauma. In a brain imaging study, University of Cambridge neuroscientist Pradeep Nathan, PhD, showed that, in people with social anxiety disorder, oxytocin calmed an exaggerated response to fearful faces typically seen in their amygdalas.

The Top Ten Effects of Oxytocin in Humans

1. Promotes maternal-child attachment
2. Encourages monogamous behavior between spouses
3. Enhances sense of well-being and improves sleep
4. Fosters generosity and trust.
5. Decreases the stress response to traumatic events but may at the same time imprint stressful memories

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6. Facilitates childbirth and breastfeeding

7. Reduces drug and alcohol cravings

8. Improves social skills and social interaction

9. Boost sexual arousal and increases intimacy post-intercourse

10. Triggers protective and social instincts in both men and women

**Bottom line:** Oxytocin is much more diverse and complex than previously thought...

**Your doctor may prescribe Oxytocin...**

- To treat milk-letdown issues in breast-feeding
- To treat autistic spectrum disorders and social anxiety disorders
- To treat sexual arousal disorders and attachment disorders
- To treat couples in therapy who are interested in increased intimacy and bonding after intercourse
- To treat delayed orgasm in men
- To treat deficiencies in ADH hormone (oxytocin has slight anti-diuretic properties)

**How is Oxytocin given?**

Chymotrypsin, present in the GI tract, destroys oxytocin, rendering oral administration relatively ineffective. Oxytocin requires a prescription and is usually given as a sublingual immediate release tablet or more commonly as a 24IU nasal spray.

**Future Applications**

I have a feeling we are just scratching the surface of the varied and many applications of oxytocin. New uses include a **topical oxytocin cream for vaginal lubrication** in women with atrophy who may not be candidates for estrogen therapy. In addition, it is being investigated as an anti-aging tool to protect loss of muscle mass as we age and **reduce overeating** by reducing caloric intake. It is also being researched for use use in **treating leaky gut**, treating systemic inflammatory disorders, and even in the **protection against breast cancer**! I have recently been using it in patients who are symptomatic for oxytocin insufficiency and have dysfunctional pituitary secretion of ADH and MSH related to Chronic Inflammatory Response Syndrome (CIRS). Read more about **toxic mold exposure and CIRS here.**
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So stay tuned as we learn more about this important hormone that has many more functions than just love and sex!

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Written by Jill C. Camahan, MD

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Very interesting article. I had no idea as to oxytocin's broad-base effects. Thank you for posting.

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