

## The Weston A. Price Foundation

# How to Ensure Optimal Hormonal Development in Your Child

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During the last few years, a development long simmering in the background, the increased incidence of gender dysphoria—reduced sexual dimorphism and confusion about the defining behaviors of male and female—has appeared on the front pages of our newspapers and in headlines on the Internet.

As early as 1948, Dr. Francis Pottenger warned about this trend. In an article published by the American Nutrition Society he wrote: “Experimental work with animals shows a loss of secondary sexual characteristics after two or three generations on impoverished diets. Males lose their heavy masculine frame; their makeup begins to resemble the female. Females also tend to lose their distinguishing build so that both sexes approach a state of physical neutrality. . . .”<sup>1</sup>

How prevalent is gender dysphoria? According to the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition, published in 2013, gender dysphoria prevalence accounts for a mere 0.005 to 0.014 percent of the population for biological males and 0.002 to 0.003 percent for biological females.<sup>2</sup> However, more recent studies put the rate considerably higher. A Dutch study, conducted in 2016, indicated that 4.6 percent of over eight thousand study participants who were born male and 3.2 percent who were born female identified themselves as ambivalent to their specific birth gender.<sup>3</sup> A recent Pew Research Center study found that among adults under age thirty, 5.1 percent self-identified as trans or non-binary. This compares with 1.6 percent of adults thirty to forty-nine years of age and 0.3 percent of adults fifty or older.<sup>4</sup>

More recently still, Maryland’s Montgomery County school district reported an almost 600 percent increase in the number of students who identify as “non-binary.” The school district required students from elementary through high school to fill out a form asking for their “identified name,” “identified gender” and “preferred pronouns.” In 2019, only thirty-five students in the whole school

district identified as non-binary; the 2021 survey saw this number increase to two hundred thirty-nine.<sup>5</sup>

According to a Gallup poll of more than three hundred forty thousand adults in the United States, 8.1 percent of millennials (born between 1980 and 1999) identified as LGBT in 2022, compared to 5.8 percent of millennials in 2012.<sup>6</sup>

While the recent social media focus on this subject and encouragement by teachers and other adults can explain some of this upsurge, there are good reasons to conclude that a portion of this increase is real and that a growing number of young adults are genuinely confused about their gender and uncomfortable with traditional expectations of sexual behavior.

## HEARTBREAKING DILEMMA

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Parents of gender-confused children find themselves in a heartbreaking dilemma. As one parent of a transgender child put it, “We’re one hundred percent accepting of her no matter who she is, but this isn’t anything I would wish on my child because of the challenges she’s likely to encounter in the world.”

These challenges are serious. People with gender dysphoria have a higher rate of suicide than the general population.<sup>7</sup> An alarming 32 to 50 percent of people with gender dysphoria attempt suicide. In addition, an estimated 26 percent of gender-dysphoric people resort to substance abuse.<sup>8</sup>

Parents are right to be concerned about the difficulties encountered by their transgender child. And even the most accepting parents are likely to lament the prospect of seeing their child unable to have biological children or themselves growing old without biological grandchildren.

## ENVIRONMENTAL INFLUENCES

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Shanna H. Swan, PhD, describes many of the modern influences that can disrupt normal hormonal development in infants and children in her book *Count Down: How Our Modern World Is Threatening Sperm Counts, Altering Male and Female Reproductive Development and Imperiling the*

*Future of the Human Race*, published 2021. Most modern children grow up in a sea of gender-disrupting chemicals, chemicals that can interfere with physical development as well as the complex biochemical pathways of the brain.

This exposure often begins in the womb. For example, male monkeys exposed to bisphenol A (BPA) in utero exhibited more female behavior, such as clinging to their mothers, after birth.<sup>9</sup> A 2002 study from the Netherlands found that exposure to dioxins and PCBs was associated with more feminine play behavior in boys (such as a preference for dolls over trucks) and with less feminine play behavior in girls.<sup>10</sup> And scientists believe that these estrogen-mimicking chemicals are a cause of declining sperm counts in men, a phenomenon observed worldwide.

Marijuana has estrogenic effects. According to a 2015 study from Denmark, men who smoked marijuana more than once a week had a 29 percent lower sperm count; when marijuana is combined with other recreational drugs, the decline is even greater. Men ages eighteen to twenty-eight who used marijuana more than once a week along with other recreational drugs had a sperm count reduced by 55 percent.<sup>11</sup>

Opioid pain killers can lower testosterone levels and increase DNA damage in sperm. Even Tylenol can cause sperm abnormalities, including DNA fragmentation. Boy babies born to moms who take Tylenol during pregnancy are likely to have less “male-typical” brains and behavior.<sup>12</sup>

Endocrine-disrupting chemicals (EDCs) are everywhere and can have profound effects not only on physical development but also on the developing brain in ways that affect a person’s sexual identity. When ingested, EDCs alter the normal levels of estrogen in both females and males by binding to and activating estrogen receptors. They are in carpets and fabrics saturated with stain-resistant chemicals, flame retardants, personal care products, air fresheners, scented household products, antibacterial hand soaps, canned foods and beverages in plastic bottles. Swan describes an experiment in which men exposed themselves to these products and then collected urine and blood samples for analysis. The levels of chemicals increased significantly in the blood and urine, especially an EDC called monoethyl phthalate (MEP), which increased from 64 to 1410 nanograms per milliliter in one volunteer. “This was the direct result of smearing himself with scented toiletries, including hair-care products, shaving gel, deodorant, fragrance and lotions, as well as using scented liquid soap and plug-in scented oil in the test room.”<sup>13</sup>

Swan doesn’t mention sunscreen products, which can contain not only estrogenic chemicals but also testosterone blockers. A particularly dangerous EDC in sunscreen is oxybenzone, which is easily absorbed through the skin. Used by pregnant women, it may harm the developing fetus; smeared on growing boys, it may interfere with normal sexual development; in girls, it causes negative effects

on the mammary glands.<sup>14</sup> Titanium dioxide also has endocrine-disrupting effects.<sup>15</sup> No one should apply these products to themselves or their children—instead use coconut oil plus a hat and organic cotton tee shirt.

Men who ingest EDCs may suffer from symptoms such as low semen concentrations, poor semen quality, lack of sperm motility and eventually a reduced sexual appetite—problems that usually reverse themselves when exposure to estrogens is terminated. For the developing male fetus, however, these environmental estrogens can have severe and lifelong detrimental consequences to reproductive and urogenital development.

Female babies are also affected, usually with premature breast development and early and difficult menstruation.

## NUTRITION FOR OPTIMAL HORMONAL DEVELOPMENT

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Most commentators on hormonal development, including Dr. Swan, recommend a “Mediterranean” diet for parents and growing children, a diet based on organic fruits and vegetables, whole grains, wild fish, skinless poultry, nuts and seeds, with olive oil as the only fat. This advice ignores several fundamental facts:

- Our bodies make sex hormones out of cholesterol (see Figure 1).
- Infants and toddlers do not make cholesterol and must get it from their diet.
- A key vitamin your body needs for transforming cholesterol into sex hormones is vitamin A.<sup>16,17</sup>

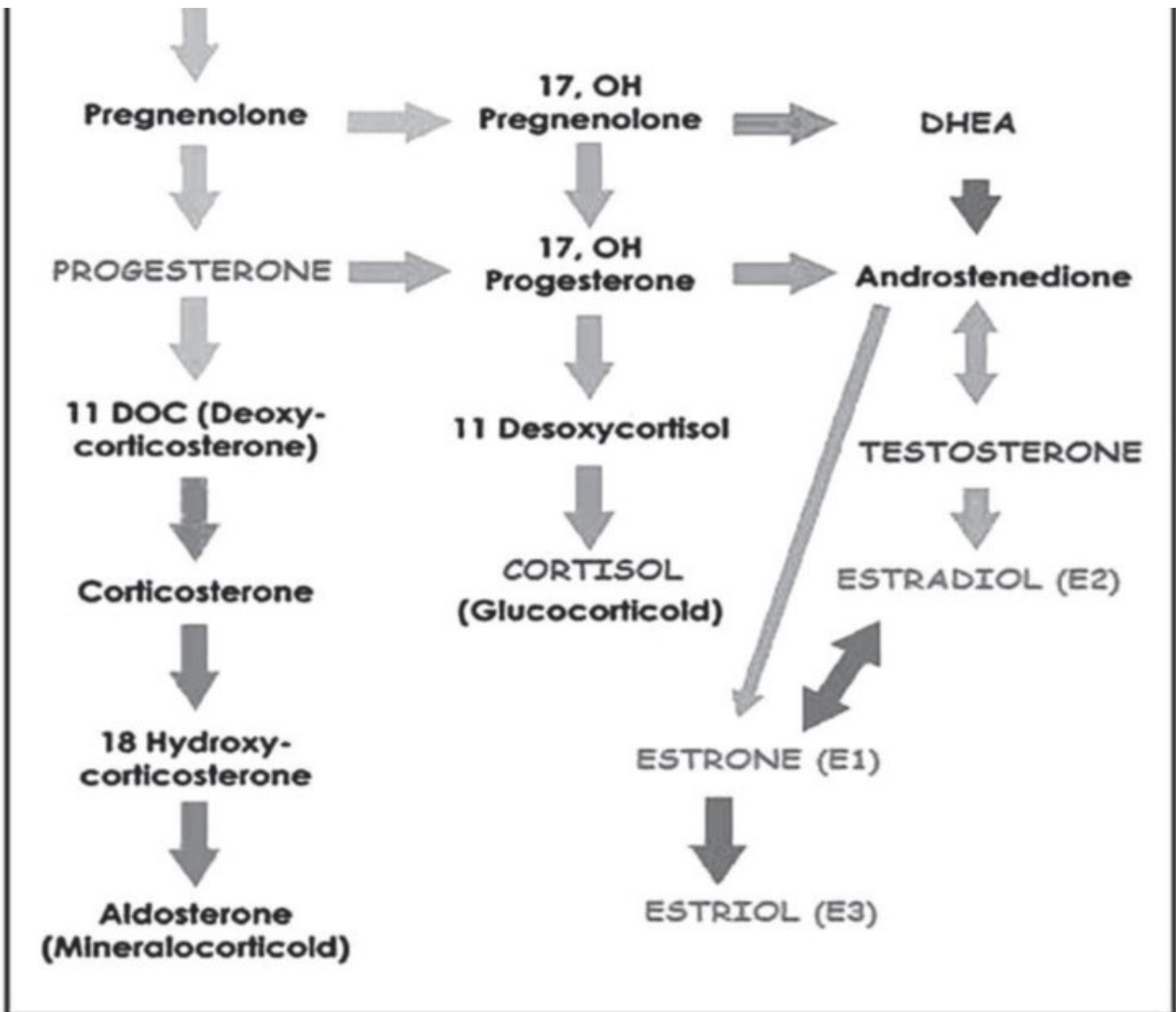
Commentators like Dr. Swan warn against animal fats and healthy foods such as cheese, butter and naturally cured meats like salami because EDCs concentrate in the fats of animals. But EDCs concentrate in seed oils as well, including seed oils used to adulterate most oils labeled as “olive oil,” not only as pesticides and processing chemicals, but also as overtly estrogenic substances called isoflavones occurring naturally in soybean oil—and 80 percent of oil used in processed food is soybean oil. One website indicates one tablespoon of soybean oil contains levels of estrogenic compounds equivalent to one birth control pill!<sup>18</sup>

Back to the key fact: we need cholesterol to make sex hormones, and that goes for children as well as adults. In fact, male infants undergo a surge of testosterone—with levels as high as that of an adult male—during the first six months of life. This testosterone surge programs male babies to express male characteristics later in life. Other key periods of sexual differentiation include weeks

six through twelve in pregnancy, when the male and female sexual organs form; the second half of pregnancy when a peak of testosterone programs several areas of the brain to express male or female gender identity later in life; and ages two to four during which the number of cells in an area of the hypothalamus associated with sexual differentiation reaches a peak (and thereafter declines in females but remains high in males).<sup>19</sup>

FIGURE 1. How Hormones Are Made in Your Body





Obviously, mothers and their children need to avoid EDCs during the whole period of growth and development, but especially during these critical periods. A diet rich in organ meats and animal fats, supplying plenty of cholesterol and vitamin A, during pregnancy and growth will ensure that these complicated processes proceed as nature intended.

Babies must obtain cholesterol from their diet—they do not have the enzymes on line yet to make their own cholesterol. Mother’s milk—indeed, raw milk from any species—is rich in cholesterol and contains special enzymes to ensure that the baby absorbs 100 percent of that cholesterol. There is no cholesterol in infant formula; all these formulas, including organic varieties, are based on skim milk and vegetable oils—and babies on soy formula are also getting a whopping dose of estrogenic isoflavones. A study conducted in 2000 found that the daily exposure of infants to isoflavones in soy infant formula was four to eleven times higher on a body weight basis than the dose that has

hormonal effects in adults consuming soy foods. Circulating concentrations of isoflavones in the seven infants fed soy-based formula were 13,000–22,000 times higher than normal plasma estrogen concentrations in early life.<sup>2</sup>

Most American babies are weaned on pureed fruits and vegetables packaged in estrogenic plastic or containers lined with aluminum—guaranteed to give your baby a bad start in life!

USDA advice suggests giving babies lean meat or tofu, the occasional egg and cheese, fruits and vegetables, lowfat milk, low-trans-fat spreads, whole grains (such as dry breakfast cereals) and reduced salt<sup>21</sup>—in summary, a diet that does not support the optimal hormonal development of your baby boy, nor your baby girl either.

Which are the best weaning foods? It is obvious from the chart on the opposite page that the ideal weaning foods for your baby—foods that will support optimal hormonal development—are chicken liver and egg yolk. The high cholesterol content of egg yolk qualifies yolks as the ideal first food for babies—baby should receive one egg yolk per day, starting at four to six months. (The whites can be allergenic and are best delayed until one year of age.)

Egg yolks and chicken liver also supply vitamin A, with its cofactors vitamins D and K2—to support the creation of sex hormones out of cholesterol in just the right proportions. Red meat and gizzard provide nutrient-dense alternatives. All four of these animal foods are rich in zinc, another important nutrient for sexual development and fertility.

It's also clear from the chart that fruits and vegetables are not nutrient-dense foods, although well cooked and mashed with butter and cream, they can supplement baby's diet of healthy animal foods.

Obviously, parents should continue a nutrient-dense diet for their children throughout the growing years, a diet that contains organ meats and plenty of animal fats like butter, cream, egg yolks, lard, tallow and poultry fat—no skinless chicken breasts, please! Of course, these foods should come from pasture-fed animals not raised in the industrial system. But even if your only choice is

supermarket foods, it's still better to feed your children rich animal foods instead of processed foods based on vegetable oil and sugar. Vitamin A and saturated fat in animal foods can protect the body from dioxins and similar endocrine-disrupting chemicals.<sup>22</sup>

## VEGETABLE OILS

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The greatest dietary change in the history of the human race occurred in the first half of the twentieth century as Western nations began to use industrial seed oils. Before the invention of the stainless steel roller press in the late nineteenth century, the only seed oils available to human beings were those easily removed with a stone press—sesame seed oil, rape seed oil and flax seed oil—and these occurred in diets where the chief fats were saturated and monounsaturated fats from animals and poultry, and oils from fruits such as olives, coconut and palm fruit.

The industrial seed oils come in two forms: partially hydrogenated margarines and shortenings, and polyunsaturated oils for cooking, dressing and spreads. Partially hydrogenated oils contain *trans* fats, which block hormone production. The polyunsaturated oils are highly unstable and break down into small molecules called aldehydes—think formaldehyde—which cause extreme oxidative stress to every kind of tissue with a wide range of deleterious effects, almost certainly including the reproductive organs and the hormone-producing centers in the brain.

More seriously, these industrial fats and oils have replaced saturated animal fats such as butter, lard, tallow and poultry fats. Saturated fats support hormone production,<sup>23</sup> while poly unsaturated and *trans* fats do not; in addition, saturated animal fats carry vitamin A and other fat-soluble vitamins without which hormone production cannot occur.

Per 100g	APPLE	CARROT	RED MEAT	GIZZARD	EGG YOLK	CHICKEN LIVER
PHOSPHORUS	6 mg	31 mg	140 mg	148 mg	390 mg	299 mg
IRON	0.1 mg	0.6 mg	3.3 mg	2.5 mg	2.7 mg	9.0 mg
ZINC	0.05 mg	0.3 mg	4.4 mg	2.7 mg	2.3 mg	2.5 mg



	0.03 mg	0.3 mg	3.3 mg	33 mg	330 mg	3300 mg
COPPER	0.04 mg	0.08 mg	0.2 mg	0.04 mg	0.08 mg	0.4 mg
VITAMIN B2	0.02 mg	0.05 mg	0.2 mg	0.2 mg	0.5 mg	1.8 mg
VITAMIN B6	0.03 mg	0.1 mg	0.07 mg	0.1 mg	0.4mg	0.72 mg
VITAMIN B12	0	0	1.84 mcg	1.2 mcg	1.9 mcg	16.6 mcg
VITAMIN C	7 mg	6 mg	0	3.7 mg	0	18 mg
VITAMIN A	0	0	40 IU	64 IU	2300 IU	34,000 IU
VITAMIN D	0	0	8 IU	?	1400 IU	370 IU
VITAMIN K	0	0	2.5 mcg	?	35 mcg	9.5 mcg
CHOLINE	3 mg	7 mg	38 mg	104 mg	820 mg	290 mg
CHOLESTEROL	0	0	78 mg	537 mg	1085 mg	631 mg

To make matters worse, most oil used in processed and fast food is soybean oil, which contains phytoestrogens such as genistein. In 1995, researchers demonstrated the effects of exposure in utero to genistein on the rat endocrine system.<sup>24</sup> They injected groups of rats with various levels of genistein and found that genistein caused feminization of external male genitalia, even at low doses.

Another study indicated that developmental genistein treatment, at levels that decrease maternal and offspring body weight, also causes subtle alternations in some sexually dimorphic behaviors.<sup>25</sup> Low-dose genistein also proved to delay puberty and dampen signals for development of masculinization in young rats.

From these findings, the researchers were able to conclude that genistein, at high and low levels, influences not only the physical development of the male sexual organs but also areas of the hypothalamus associated with male and female thinking and behavior.

Further research by the same team demonstrated how serious these morphological changes can be to male subjects.<sup>26</sup> This research showed conclusively that even at low levels, genistein decreased sexual dimorphism in rats, causing both males and females to act in the same manner during courtship, sexual arousal and during intercourse. In effect, male rats were expressing female sexual behaviors including lordosis, the typical female mating stance. Exposure to genistein in the womb rendered the males non-receptive to typical female behaviors.

A recent study found that soybean oil fed to mice affected the hypothalamus in such a way that oxytocin levels declined.<sup>27</sup> Oxytocin, produced in the hypothalamus, is the nurturing hormone, associated with “warm, fuzzy feelings” in both men and women. (A surge of oxytocin during labor helps strengthen uterine contractions; without it, labor cannot proceed.) Whether the decline in

oxytocin was due to the polyunsaturated structure of soybean oil, or the estrogenic compounds it contains—or a combination of both—is unknown, but it is fair to ask whether the consumption of soybean oil over the last three generations has led to lack of affection in males and decreased motherly instinct in females.

## MSG

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The hypothalamus is key to differences in male and female behavior. The volume of a specific nucleus in the hypothalamus is twice as large in heterosexual men as in women and homosexual men. In addition, an area that regulates mating behavior is about twice as large in men than in women and contains twice as many cells. This large size is determined by male sex hormones in utero and during the period of growth. Furthermore, the male hypothalamus has a higher number of androgen receptors than that of young adult women.<sup>28</sup>

Obviously, we should avoid any foods that cause damage to the hypothalamus, yet one ubiquitous ingredient in the food supply does just that: MSG.

According to a review published in *Biomedical and Environmental Sciences*, exposure to MSG in infants “results in a clearly defined lesion of the arcuate nucleus (AN) of the hypothalamus,” leading to “clear histological changes. . . in testicular tissue.”<sup>29</sup>

MSG acts on glutamate receptors, which are especially numerous in the hypothalamus, hippocampus and amygdala. Results from both animal and human studies have demonstrated that administration of even very low doses of MSG has toxic effects on the reproductive system.<sup>30</sup>

According to commentator Jack Kruse, humans absorb MSG. . . five to seven times more aggressively than any species ever tested. “This effect is more dramatic when the human is younger with a developing immune system in the gut. The younger the gut and brain are, the more aggressive is the uptake and the more sensitive the developing nervous system is to its cumulative effects.”<sup>31</sup>

MSG lurks in all processed foods, including powdered milk and whey protein concentrate used in infant formula and flavored milks served in school lunches. Anything hydrolyzed, extracted, concentrated or autolyzed can contain MSG—and hydrolyzed protein is a frequent additive in baby food. “Caseinates,” “flavorings,” “natural flavor,” “seasonings” and “spices” can all harbor MSG. Of

course, we should avoid processed food at all times, but it is especially important to make sure your baby and growing children are receiving home-cooked meals using simple, natural ingredients.

## SUGAR. . . AND CAFFEINE

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Sugar is an empty food that causes hormone disruption in many ways. By stimulating the release of cortisol and adrenalin from the adrenal glands, sugar consumption leads to adrenal fatigue, making it harder for the body to produce sex hormones—and remember that children as well as adults need to produce sex hormones.

Since the hypothalamus is involved in blood sugar control, a high-sugar diet can cause inflammation of this important master gland.<sup>32</sup> In fact, the hypothalamus is particularly sensitive to a high-sugar diet.<sup>33</sup> The hypothalamus produces gonadotropin-releasing hormone (GnRH), which stimulates the production of testosterone. Too much sugar in the diet can depress testosterone production in boys at critical periods of growth.

Add caffeine to sugar, as in sodas, and you have a double whammy to the delicate balance of hormones that children need for normal development. No parent should allow their children to consume sodas—nor set a bad example by drinking sodas themselves.

## MILK

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Many practitioners advise against milk for growing children, based on the perception that the hormones in milk will interfere with hormone production in the child. Such advice ignores the fact that healthy, stable, milk-drinking populations, characterized by normal sexual dimorphism, thrive in isolated communities all over the world. Simple observation makes it clear that whole milk from healthy animals—including cows, goats, sheep, camels, reindeer and water buffalo—supports normal growth and optimal hormonal development in human beings.

Modern milk presents a different story. It comes from animals bred or pushed to excessive milk production. Modern cows get soy in their feed, and the estrogenic substances in soy come out in the milk. Modern milk is low in fat and often has (unlabeled) powdered nonfat milk added, a source of

MSG. In addition, pasteurization renders milk highly allergenic, a condition that puts stress on the adrenal glands.

If you can't obtain raw milk for your child, don't feed them milk! Give them high-quality cheese as a

source of calcium, as well as butter from grass-fed cows.

## SALT

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High levels of cortisol—from sugar consumption, caffeine consumption or stress—can decrease testosterone. In contrast to sugar, salt supports adrenal function and decreases the stress response, allowing the production of more sex hormones, particularly testosterone.

As explained by John Gildea (*Wise Traditions*, Fall 2022), citing a 2020 study on regulation of male fertility,<sup>34</sup> “Low sodium leads to increased renin angiotensinogen, ACE1, angiotensin II, aldosterone and epinephrine, all geared to increase sodium absorption. Angiotensin II in the testes reduces testosterone.” In particular, Gildea proposes that diets high in protein can cause a reduction in testosterone unless offset by plenty of salt. When feeding your baby high-protein foods like egg yolk and liver, be sure they are well salted (with unrefined salt, of course).

Babies need salt for many processes—for cell function, for brain development, for adrenal support and for digestion. Hydrochloric acid for digesting meat requires chloride, available only from salt. Government advice to restrict salt in babies and growing children, as well as in pregnant women, is a recipe for endocrine disruption. Much better is the Jewish custom of placing a grain of salt under the tongue of a newborn baby, and ensuring that mom (and dad) and all growing children receive plenty of salt with their food.

## WHAT IS A WOMAN? WHAT IS A MAN?

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No one had more to say about the ideal qualities of men and women than Shakespeare. Consider his character Rosalind in the play *As You Like It*. According to the convention of the time, the character of Rosalind would have been played by a boy. In the play, Rosalind disguises herself as a young man in order to have the freedom she craves; then, to woo Orlando, the man she loves, she pretends to be a woman—so the audience is watching a male actor playing a woman who is pretending to be a man acting the part of a woman. The character that Shakespeare has created is thus telling us that the favorable qualities of human beings have nothing to do with our sex. Rosalind refutes the perception of women as passive and adopts stereotypical “masculine” behavior;

she is wild and witty, initiating conversations and arranging marriages. Likewise, Shakespeare presents characters with aggressive “masculine” behavior—such as Hotspur and Richard II—in a negative light, as disruptive of peaceful society.

While we can celebrate the physical differences between the sexes, and be accepting of departures from the norm, in Shakespeare's ideal society, the behavioral characteristics of men and women are the same. Men and women should aim equally to be curious, courageous, patient, loyal, free-thinking and observant—firm in intentions but gentle in manner. Whatever the hormonal development of our sons and daughters, we should aim to instill in them the confidence to behave in a manner that can be called exquisitely human.

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## SIDEBARS

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### AVOIDING ENVIRONMENTAL ENDOCRINE DISRUPTORS

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As much as possible, and especially during preconception (for men and women) and pregnancy, avoid exposure to the following:

- Any pharmaceutical drugs, especially pain killers, including Tylenol
- Recreational drugs, such as marijuana
- Wall-to-wall carpet; outgassing linoleum
- Scented detergents and cleaning products
- Commercial and scented personal care products
- Air fresheners, scented candles
- Liquid, scented or antibacterial soap
- Fabrics treated with flame retardants or stain resisters
- Glyphosate (Roundup) in food and applied to lawns and gardens
- Sunscreen
- Beverages in plastic bottles
- Canned foods

### STRESS AND HORMONAL DEVELOPMENT

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The pathways for the creation of sex hormones out of cholesterol also contain the pathways for the creation of stress hormones. Note in Figure 1 that the corticoid hormones derive from progesterone.

When the body is under stress, progesterone is vectored into the production of stress hormones at the expense of sex hormones, especially in situations of vitamin A deficiency. If a mother is under severe stress during pregnancy, she may not be able to produce enough testosterone and estrogen for the optimal development of the sex organs or the optimal programming of the areas of the brain associated with sexual identity. Likewise, children under stress may not be able to produce the sex hormones they need for normal development in puberty.

Herein lies the scientific explanation for the belief that pregnancy and childhood should be happy and stress-free!

## CAN VACCINATIONS INTERFERE WITH OPTIMAL HORMONAL DEVELOPMENT?

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Vaccinations contain many toxins whose influence on hormonal development remains unknown. But the main toxin in vaccinations—aluminum—can definitely contribute to hormonal disorders.

In one study, for example, female mice treated with aluminum had a lower pregnancy rate while male mice showed significantly decreased testicular and epididymal weights, as well as significant decreases in sperm counts.<sup>35</sup> Another study found that serum testosterone concentrations declined in aluminum-treated mice.<sup>36</sup> Rabbits treated with aluminum exhibited decreased libido, sperm concentration, total sperm output and sperm motility.<sup>37</sup>

The research clearly indicates that along with many other adverse effects, aluminum can interfere with sexual development and performance. Yet, a fully vaccinated child receives over one thousand micrograms of injected aluminum at the two-month baby checkup and almost five thousand micrograms by eighteen months. In contrast, the maximum allowable aluminum per day for intravenous parenteral feeding is twenty-five milligrams.<sup>38</sup>

So, in addition to asthma, learning disorders and paralysis, vaccinations pose the risk of endocrine disruption and reduced fertility. You can protect your child and increase your chances of having grandchildren by just saying No to vaccines.

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## About Sally Fallon Morell

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