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Have you ever wondered about the women featured in the Viagra commercials? Thought that perhaps the key to their sexual fulfillment does not lie in a treatment aimed at men? In an effort that is part quest for eternal youth (and the youthful ability to go at it all night), part equal rights for the female gender, medicine and pharma are working on surgical procedures and potency pills to ensure that both sexes are perpetually satisfied.

Take the G-Shot, designed for women. In this doctor's-office procedure—not yet verified by published, peer-reviewed trials—collagen is injected into a woman's G-spot to enhance sexual pleasure. If a woman wants "the works," she can have the procedure in combination with Laser Vaginal Rejuvenation, intended to tighten the vaginal canal and make her sexual experiences even more intense.

Thirty-seven-year-old Violeta Estrada, a gentle-voiced real estate agent in California, is a fan of the new sex aids. She has had vaginal rejuvenation surgery to mend the damage of giving birth to two kids, a 10-pounder and a 12-pounder. She has also had the G-Shot and renews it every four months at more than $1,000 a pop.

"For a couple of months, I had a triple dose," she says. Did it really improve her sex life? She has no doubts: "Oh yes, yes. I can now have three or four orgasms in a row at one time. My partner once told me that he didn't have to put any work into it."

For pleasure pioneers like Estrada, it seems that human ingenuity is perfecting our sex lives. The consequences are likely to go beyond the quest for heightened pleasure. Revising our biology could, in turn, revise the psychology and sociology of *Homo sapiens,* for better or worse. "These trends all lead to the question of what's considered normal," says Jennifer Fishman, an assistant professor of biomedical ethics at McGill University.

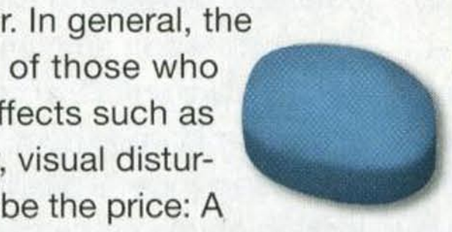
Current technological and scientific trends are building on each other, apparently moving us toward a world in which all of adult humanity, even great-grandparents, can have the sex drive of a high school senior. But is that really the standard of normal that we want to embrace?

In the *future,* will 80-year-olds *get it on* like teenagers? And is that *really* what we want? (Put your hand down, *Bill Clinton.*)

BY SUSAN KRUGLINSKI

For centuries, shysters have hawked ointments and oysters to the sexually insecure. Then Viagra came along and helped pull the sexual performance industry out of the back pages of porn magazines and onto prime-time TV. After Pfizer introduced Viagra in 1998 as a remedy for erectile dysfunction (ED), the drug topped $1 billion in sales in its first two years. For many men, swallowing an FDA-approved pill seemed infinitely easier (and more socially acceptable) than other medically sanctioned alternative erectile aids, such as vacuum pumps, injections, or inflatable tubes implanted below the scrotum.

The perhaps inevitable letdown about Viagra and its family of drugs—known as PDE5 inhibitors—is that they may not be the great sexual cure-all many men were hoping for. In general, the drugs are effective for about 70 percent of those who take it, although Viagra does have side effects such as flushing, headache, heartburn, and, rarely, visual disturbances. The biggest disappointment may be the price: A 2007 study by Swedish researchers found that more than half the men for whom Viagra was prescribed had stopped using the drug two years later, often because it was too expensive. Others stopped because of side effects or unrelated health concerns.



Big pharma is now throwing resources into developing new sex drugs to keep the market growing. Part of that effort focuses on the half of humanity that is not male. Procter & Gamble has developed Intrinsa, a testosterone patch for women who have gone through menopause after having their ovaries and uterus surgically removed. The patch produces a 50 to 75 percent increase in sexual desire, according to company-sponsored studies. Intrinsa is already available in the United Kingdom (by prescription only) for women who have had hysterectomies. At the University of Arizona, chemist Victor Hruby and his colleagues have been tweaking a peptide hormone, Melanotan II, that can be squirted up the nose to induce hands-free sexual stimulation in both men and women. (It was originally developed as a sunless skin-tanning agent, but interesting side effects turned up during testing.) Nastech Pharmaceutical in Washington State is also developing a treatment that fosters desire in both sexes, a spray that works on the neurotransmitter dopamine.

Fishman speculates that the drug companies' accelerated effort to find a sexual-desire booster for women is motivated by their sex-pill-popping male customers. "You've heard the urban legend of the Viagra divorce," she says. "Well, I'm just conjecturing here, but with men all of a sudden able to do it and women not wanting to, you can imagine the pharmaceutical companies' minds turning around all of this, thinking, 'How can we get a drug to market that makes women want to, and then allows men to take more Viagra for it?'"

A Beverly Hills doctor named David Matlock is also on the case, targeting female desire from the surgical side. The man who invented (and trademarked) the G-Shot and Laser Vaginal Rejuvenation (LVR) is a 47-year-old, telegenic, board-certified gynecologist and obstetrician. He has appeared on E!'s *Dr. 90210* interviewing young, nubile females to be his roommate, à la Hugh Hefner, but that TV persona does not seem to deter the hundreds of women who have asked him to alter their labia and birth canals at his Sunset Boulevard clinic. In addition to the G-Shot and LVR, he also does cosmetic surgery to the outer parts of the female genitals.

Unlike the makers of Viagra, Matlock does not claim to be treating a medical condition. "These procedures are for women with normal functioning," he says. "They are simply enhancements." The manufacturers of PDE5 inhibitors state that their drugs are meant only to aid dysfunction. But Viagra, too, has been embraced by the consumer as a modern-day love potion—an enhancement of sorts. "There are a lot of men asking for Viagra who don't medically need it," says Robert M. Romanoff, an internist who practices in Manhattan. "Young men, in particular, think they have ED problems when the real issue is performance anxiety or depression." The global flood of sex-drug e-mail suggests that many online vendors are only too eager to satisfy the demand.

Matlock reports that he has already trained 200 doctors to execute his procedures. There are no reliable statistics on the prevalence of this type of female genital surgery, since it is a doctor's-office procedure performed by physicians in a wide range of fields, but the American Society of Plastic Surgeons reports that more than 1,000 procedures for "vaginal rejuvenation" were performed in the United States in 2006 (the latest year for which the society has information), and again the anecdotal evidence points to a booming trend. "My patients are bringing all kinds of

pornographic information into the office and saying, 'I want to look like *this,*'" Matlock says. "Someday these procedures will be as common as breast augmentation."

In theory, all of these advances in sex drugs and genital surgery are tightly aimed attempts to satisfy our desires. In reality—as anyone in a relationship knows—desire and satisfaction are moving targets, adjusting to shifting circumstances.

Today perhaps the most consistent attitude toward perfect sex is anxiety about why we are not getting it. "We are susceptible to being convinced that whatever sex is going on in our lives is just not good enough," says Julia Heiman, director of the Kinsey Institute and a professor of psychology at Indiana University. Marketing that preys on our feelings of insecurity is an old business, she notes, but pharmaceutical research is changing the nature of that business. "Suddenly medicine—which we've always taken to do something for a problem—is getting involved in pure enhancement, which is more like cosmetics," Heiman says.

"One of the things that go along with attempts to make a new drug is the attempt to make a new diagnostic category of illness," Fishman of McGill University says. She suggests that, for some people at least, the definition of good sex has already shifted. "The fact that there's now a pill to help with sexual problems definitely changed the arena of sexual performance," Fishman notes.

Sex researcher Beverly Whipple of Rutgers University, one of the first scientists to discuss the G-spot, believes the word *dysfunction* should be dropped from the sexual lexicon and that surgeries to alter sexual pleasure or aesthetics should be dropped from medical practice. "I have a problem with surgeries on the vagina, because what is it for? If there is a medical condition, I can understand that. But why would somebody want to change what is natural and normal?"

Suddenly, *medicine* is getting involved in *pure enhancement.*

Regarding the G-Shot, Whipple says: "It could be the placebo effect. They're charging thousands of dollars for this, and it has never been tested in a double-blind, placebo-controlled manner." (Surgeries do not have to undergo the same scrutiny as, say, medications that are under FDA regulations.) The American College of Obstetricians and Gynecologists has released a statement that cosmetic vaginal surgery could be dangerous and ineffective. Matlock admits that he often has to repair surgeries performed by untrained doctors. Yet patients keep paying for procedures, perhaps hoping that a better sex life means a better relationship, a better family, a better life in general.

Since the 1960s, sexual experimentation has been associated with a breakdown of social barriers. Some researchers, including Fishman, worry that the current fixation on youthful sexuality could build other barriers back up. There is no denying the benefits of recent medical advances: addressing long-hidden sexual dysfunctions while also broadening our reproductive opportunities (see "Beyond the Test-Tube Babies," below). But as with so many aspects of expensive modern medicine, not everyone gets to benefit. "In the area of reproduction, some people are more eligible to have children than others are. Those who can't afford any of this may be labeled as abnormal simply because they can't afford these things," Fishman says. "New advances could alter our perception of 'old age,' with 65 at some point being considered young and virile"—for people with access to treatments. With both sex drugs and sexual surgery, the line that divides what we consider sexually normal and abnormal could depend ever more on class and income.

Medical advances intended to be liberating may thus end up promoting a narrower, less realistic definition of human sexuality. Whipple notes that variability—not an idealized uniformity—is the most deeply human trait. "Each person is unique, every person is different," she concludes. "Why even define what is normal?" Ω

Beyond the Test-Tube Babies

As sex has become more technologically advanced in recent years, so has the process of conception. In 1978 the first test-tube baby, Louise Brown, was a medical sensation and a media curiosity. When the public saw that Ms. Brown was not only healthy but adorable, in vitro fertilization (IVF) quickly crossed over the yuck line and became an everyday procedure. Since then, reproductive advances have generated new bioethical concerns.

The reproductive years have been radically extended. The current record holder is a 67-year-old Spanish woman. According to news reports, she conceived via IVF and delivered twin boys—and did it nearly two decades past the average age for menopause. Procreating late in life may sound risky; in fact, there is evidence that babies conceived by older couples are at higher risk of autism, schizophrenia, and Down syndrome. Having babies may seem even more appealing to older parents when the improving technologies of long-term egg and sperm banks allow fresh 20-year-olds to freeze their sex cells and defrost them decades later. Freezing oocytes (immature eggs) is already an established, if not totally reliable, practice at some IVF clinics.

In the longer run, reproduction is likely to get only more mechanistic and remote from its biological origins. One potential result: babies grown entirely outside the human body. At Cornell University, reproductive endocrinologist Hung-Ching Liu and her colleagues have devised an artificial womblike environment, designed to allow the implantation and nurturing of embryos. Researchers have grown a mouse fetus nearly to full term in this environment, although it was seriously deformed. The Cornell team will not permit a human embryo to develop past 14 days for legal reasons: IVF legislation in the United States forbids it.

A full-blown artificial uterus, able to sustain a more mature fetus, is on several researchers' drawing boards (especially with preemies surviving at ever-earlier stages). One iteration of this concept, developed at Juntendo University in Tokyo, is a tank filled with warm amniotic fluid and strewn with catheters, which function like umbilical cords to provide nutrition. The contraption allowed midstage goat fetuses to develop to full term; however, because a muscle relaxant was injected to keep the fetuses from kicking off the catheters, the goats were too weak to breathe.

Nurturing an early embryo is a far cry from growing it to full term. Making the leap from laboratory conception to laboratory birth—that is, no mom needed—is a long way off. Nevertheless, many scientists believe that day will eventually come. **S. K.**