Managing Impotence – A Patient Guide

Nadeem Rahman MD, Stan Rosenfeld, Tom F. Lue MD, Peter R. Carroll MD
Department of Urology
UCSF Comprehensive Cancer Center
University of California, San Francisco

GREETINGS!

These guidelines are designed to address impotence and its treatment for men with this problem and their partners. We hope that this information will give you confidence about addressing any erectile problems you may experience, no matter the cause.

For some people, this information is completely new. Others may be well informed about impotence and its treatment options, and much of what is discussed may be familiar. Either way, don't feel that this material has to be fully absorbed in one sitting. Also, reviewing the information presented here with your physician may make it more specific to *your* needs.

We would be grateful if you could fill out the questionnaire at the end of the booklet and return it to us with your feedback. This will help us ensure that future editions of this booklet address your questions and concerns.

Also, if you would like to discuss the various treatment options with patients who have had an erection problem and tried the various aids available, the Cancer Resource Center at Mount Zion can provide their contact information. The resource center is part of the UCSF Comprehensive Cancer Center, which can be reached at (415) 885-3693.

Table of Contents

3 Introduction

3 What is Impotence?

4 Impotence and Cancer Surgery or Radiation

12 Other Causes of Impotence

15 Mechanisms of Penile Erection

16 Future Directions

17 Additional Resources

Introduction

Impotence is a relatively common problem, affecting up to 30 million men of all ages in the United States, and over 150 million men worldwide. The ability to have an erection requires the normal, integrative function of nerves, blood vessels, muscles and the brain. Impotence may result from psychological, neurological, hormonal or vascular impairment, or any combinations of these factors. Our main goal in this *Patient Guide* is to explain how to effectively treat impotence, as well as how a normal erection is achieved and what conditions may cause impotence.

What is Impotence?

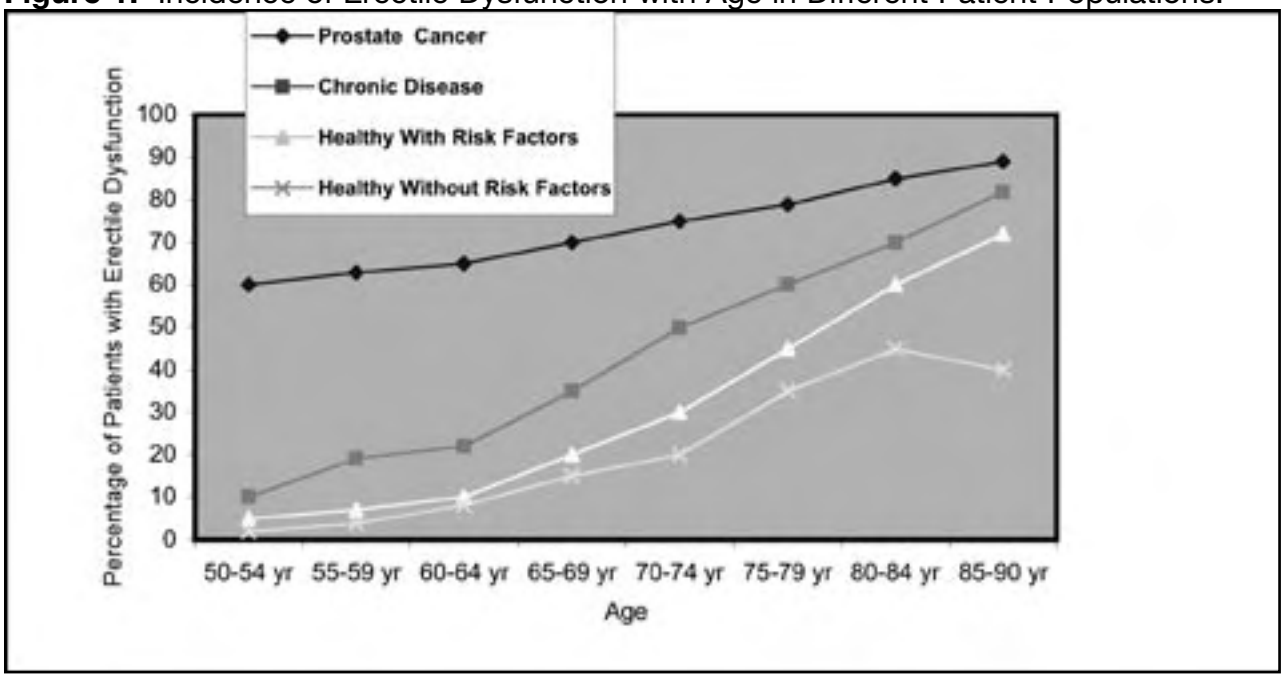
Normal male sexual function is a constellation of processes: sexual desire or libido, the erection when the penis becomes firm, release of semen (ejaculation) and orgasm. Erectile dysfunction -- commonly known as impotence -- is defined as the inability to achieve or maintain an erection that is sufficient for satisfactory sexual activity. *However, almost all men who have impotence can overcome it.*

Sexual desire, the release and expulsion of semen -- emission and ejaculation -- and the ability to have an orgasm occur via separate, distinct physical mechanisms. Due to a variety of reasons they can be dissociated from one another. For example, orgasm and ejaculation can occur without erection.

Sexual desire or libido is determined mainly by the amount of testosterone in the body. As men get older the amount of testosterone that circulates slowly declines, decreasing libido. A decrease in libido also may result from depression and various medical problems that affect overall mental and physical well being. Ejaculation, the expulsion of semen during sexual activity, is affected by testosterone levels and medications as well as by the normal anatomy of the prostate and bladder. Decreasing amounts of testosterone, often occurring as a result of normal aging, will affect the volume of the ejaculate. Certain medications may also affect ejaculation. With aging, the volume of the ejaculate decreases. Surgery on the prostate or bladder and radiation can affect the amount of secretion produced as well as the ability to have normal ejaculation. Orgasm occurs as an experience of intense physical and emotional pleasure during the sexual act, and can occur separately and independently from erections, emission or ejaculation. Many factors, including emotional and psychological considerations, contribute to the experience of orgasm. It is important to realize that male sexual function is defined by more than just the ability to have an erection. Mutually satisfactory sexual relationships can be maintained in the presence of impotence. For more information about this, look at some of the books listed at the end of this booklet.

Impotence is common with age and in the presence of other medical conditions

Figure 1: Incidence of Erectile Dysfunction with Age in Different Patient Populations.



Chronic disease includes other cancer, hypertension, cardiac disease, diabetes or stroke.

Risk factors include antidepressant use, consumption of more than two alcoholic drinks per day, smoking, obesity, lack of exercise and watching television for more than 8.5 hours per week.

Data from *Ann Intern Med*. 2003 Aug 5; 139(3): 161-8. Printed with Permission from the American College of Physicians

Impotence and Cancer Surgery or Radiation

Impotence following major pelvic surgery or radiation, including prostate and bladder surgery, has been widely reported. During a radical prostatectomy the nerves which allow erection, called cavernous nerve bundles, and which lie within millimeters behind and on the side of the prostatic capsule, may be injured by being cut or separated from the prostate. This may cause temporary or permanent impotence, although sexual desire and the ability to achieve orgasm should remain. As discussed in *Chapter Five: Other Causes of Impotence*, radiation to the prostate, the bladder or rectum can damage the cavernous nerves as well.

The “nerve-sparing” radical prostatectomy or radical cysto-prostatectomy procedures to remove a cancerous prostate or bladder attempts to preserve these cavernous nerve bundles without compromising complete cancer removal. In the hands of an experienced surgeon, if both nerve bundles are spared, 50 to 90 percent of patients -- depending on age and health -- may have an eventual return of *unassisted* erectile function over time. When only one nerve bundle is spared, the percentage of patients that have return of erections over time is 25 to 50 percent. If a non-nerve sparing technique is used, the potency rate drops to 16 percent or less, depending on patient age.

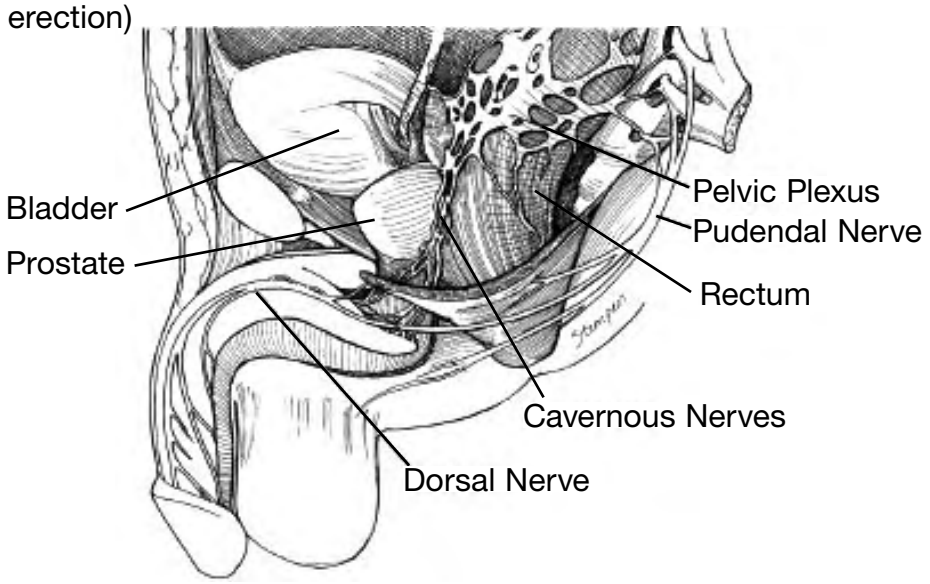
Aside from the degree of nerve-sparing surgery performed, other factors are associated with impotence after radical prostatectomy. The biggest risk factor is age. Studies have shown that while the majority of men under 50 years of age are potent after radical prostatectomy, only 22 percent of men over the age of 70 are potent after the procedure. Other medical conditions that increase the risk of impotence include hypertension, smoking, diabetes, elevated cholesterol (hyperlipidemia) and heart disease. Depression, as well as other psychogenic factors, may affect psychological well being and recovery of potency. Unfavorable clinical and pathological stage of cancer also is associated with worse potency outcomes, as these men may not be candidates for a nerve-sparing approach because it may leave cancer behind.

It should be remembered that even if both nerve bundles are spared, with their proximity to the prostate (See Figure 2), these structures will likely suffer some injury that will take time to heal. Healing of the cavernous nerves and return of any unassisted sexual function may not begin until six months or more after surgery; however, it usually continues to improve over the next two to three years. Indeed a large percentage of men may not recover sufficient function for 18 to 24 months, some even longer. With prolonged disuse, the smooth muscles of the penis may atrophy, which worsens erections. *Early and aggressive treatment of impotence with oral or injection medication may improve and speed up recovery of erectile function.*

For men undergoing radiation, the amount and extent of radiation as well as whether or not they are treated with hormone therapy correlates with the likelihood of impotence, either temporary or permanent. The reduction in libido and possible difficulties with erections from the use of hormone therapy is generally reversible when the therapy is discontinued. The likelihood of irreversible effects is related to patient age, pre-treatment sexual function and the length of time hormone therapy is given.

Even if impotence is present after surgery or radiation alone, the ability to achieve an orgasm should remain. However, with the prostate removed there is no ejaculate although some secretions may remain. During orgasm, there is no emission or expulsion of semen. The ejaculate volume will *decrease* with radiation as well.

Figure 2: Nerves of the Pelvis. Note the close relationship of the prostate to the cavernous nerves (Nerves that allow erection)



Treatment of Impotence

The type of treatment will depend on the reason(s) for impotence, patient age, health and patient and physician preference. Most often, a step-wise approach will be taken beginning with an oral medication, and depending on its effectiveness and patient tolerance, other approaches may be tried.

It should also be noted that it is not necessary to have an erection to have an orgasm. A vibrator and/or a creative and attentive partner can be helpful.

Table I: Treatment for Impotence

Type of Therapy	Advantages	Disadvantages
Oral Medication (Viagra, Levitra or Cialis)	• Pills taken by mouth • Effective in many men	• Not effective in patients who have prostatectomy, unless nerve-sparing approach used • Side effects including headache. Viagra and Levitra may cause blurry vision. Cialis may cause joint or back pain • Should not be used in some patients • 30-60 minute wait for response • Cannot be taken with some medications
Intra-Urethral Suppository (MUSE)	• Small pellet placed in the urethra without needles • Few systemic side effects • Effective in 43-62 percent of men	• Can cause penile pain • Requires training • Refrigeration required • May require tension ring placed at base of penis for best effects • Side effects include (rarely) painful and prolonged erection of more than six hours, fainting, dizziness
Penile Injection	• Highly effective (up to 90 percent) • Few systemic side effects • Works in three to five minutes	• Some medications require refrigeration • Requires injection • Requires office training • Can cause penile pain • Can cause prolonged erection and penile fibrosis or scaring
Vacuum Device	• Least expensive • No systemic side effects • Effective in 66-71 percent of patients	• Can cause numbness or bruising • Less “natural” erection • Trapped ejaculate • Some find awkward to use
Penile Prosthesis	• Highly effective • For men who have failed or are not satisfied with medical treatment of impotence	• Small risk of infection • Requires anesthesia and surgery • May require replacement after many years of use

Oral Medications

Since its release in March 1998, sildenafil (Viagra) has become the drug of choice for treating impotence. Sildenafil improves erections by working locally on the penis by inhibiting an enzyme phosphodiesterase-5 (PDE-5). Following sexual stimulation, chemicals like nitric oxide are released at the nerve terminals causing relaxation of penile smooth muscles. This occurs via a sequence of events beginning with nitric oxide, and involving a compound cyclic guanine monophosphate (cGMP). PDE-5 breaks down cGMP and returns the penis to a flaccid state. Sildenafil, by blocking the action of PDE-5, causes a resultant increase in the cGMP levels in the penis. This improves smooth muscle relaxation and erection. In the absence of sexual stimulation, nitric oxide production will be minimal and sildenafil will have little effect on the penis. *Sildenafil and all other oral agents must be followed by sexual stimulation in order to achieve the desired erection.*

Compared with those taking a "placebo" of an inactive or sugar pill, men taking sildenafil reported a higher satisfaction rate in overall sexual function, orgasm, penile rigidity and maintenance of erections. A patient's response to sildenafil may reach from 70 to 80 percent, depending on patient age, health, etc. For those men who have undergone radical prostatectomy, early and aggressive use of sildenafil may be associated with a more rapid return of sexual function by preventing smooth muscle atrophy of the penis. Men at risk for heart attack or stroke should consult with their physicians before beginning Viagra, as there could be serious side effects of this drug in this group of patients.

Other oral agents similar to Viagra include vardenafil (Levitra) and tadalafil (Cialis); both have been approved for treating impotence. These drugs have a similar mechanism to Viagra. Levitra has very similar duration of action compared to Viagra. Cialis has similar mechanism of action but may be active for longer periods; up to 36 hours. Studies show that both drugs seem to be well tolerated with few side effects. The precautions described for Viagra are the same for these newer drugs. Patients who are on medications such as Hytrin, Cardura and Flowmax to improve urinary symptoms should not take Levitra. Patients on Hytrin or Cardura should not take Cialis; however, Flowmax at 0.4 mg per day is well tolerated.

How to take Oral Medications (Viagra/ Levitra/ Cialis)	• Take 50mg of Viagra one hour before you are ready to engage in sexual activity • Viagra works best 30 minutes to four hours after taking the pill • Viagra works best on an empty stomach. Do not take Viagra after a high-fat meal • If you do not achieve an erection with stimulation, you can increase the dosage of medications used *the next time* sexual activity is planned. After surgery, most men require doses of 100mg of Viagra, or even more • Take 10 mg of Levitra one hour before you are ready to engage in sexual activity • Levitra works best 30 minutes to four hours after taking the pill • If you do not achieve an erection, you may need to increase the dosage • For Cialis, take 10 mg up to 36 hours before you are ready to engage in sexual activity • Cialis can be taken after meals • If you do not achieve an erection on 10 mg, higher dosages can be taken. Consult your doctor regarding higher doses.
Side Effects	• Most common side effects include headache, facial flushing and upset stomach • A small number of patients taking Viagra or Levitra may complain of a “blue cast” to their vision, sensitivity to light or blurred vision • Cialis is not associated with visual side effects • Back pain and joint aches can occur with Cialis
Things to Remember	• Do not use Viagra, Cialis or Levitra more than once per day • Do not use Viagra, Cialis or Levitra if you take medications such as nitroglycerin, Nitrostat, Nitro-Bid, Nitro-Dur, Isordil and Ismo, or Deponit • Do not use Levitra if you are on medications such as Flowmax, Hytrin or Cardura • Do not use Cialis if you are on Hytrin or Cardura. Flowmax in doses of 0.4mg is well tolerated

Urethral Suppository - MUSE

Prostaglandin E1 (alprostadil) placed inside the penile urethra, medicated urethral system for erection (MUSE), has been used when oral medications have been unsuccessful. Large studies from Europe and the United States demonstrated that MUSE was effective in 43 percent of men with impotence from various causes. The major advantage of MUSE therapy is that it is applied locally and has few side effects. The major drawbacks are that it may cause moderate penile pain, and it can have an inconsistent response rate. Sometimes the use of a rubber ring used as an adjustable penile constricting device and applied at the base of the penis improves results. Patients should have the first application performed in the physician’s office, as complications such as urethral bleeding, decreased blood pressures, sustained and prolonged erections, as well as a vasovagal reflex -- feelings of lightheadedness or decreased blood pressure -- may occur rarely.

How to Use MUSE Therapy	• Patients/partners should be trained in the office • Pellet of medication is inserted into urethral opening • Medication is absorbed to produce erection
Side Effects	• Penile pain • Can rarely cause priapism -- a prolonged erection greater than six hours • Fainting, dizziness, low blood pressure
Things to Remember	• After placement, stimulation is required to increase blood flow to the penis • Medication should be refrigerated • Maximum use is limited to one suppository per day

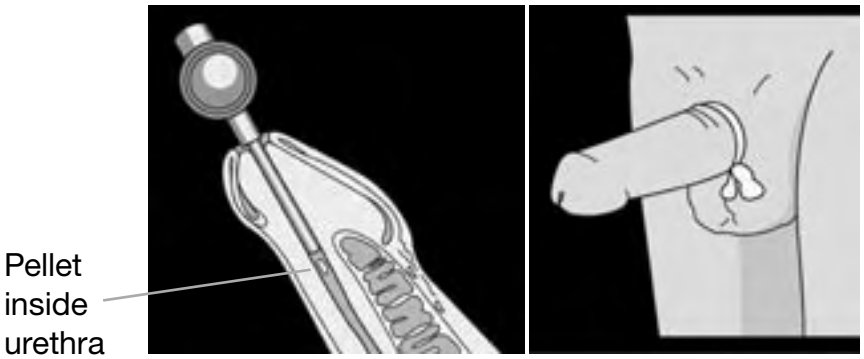


Figure 3: Application of intra-urethral suppository and constriction device. Application for intra-urethral delivery of alprostadil. Depressing the end releases the pellet into the urethra. Constriction ring may enhance penile response.

Penile Injection

When oral medication fails, penile injections to induce erection are another alternative to treat impotence. Even if you are among the many men who shudder at the thought of injecting into the penis, please read on to see that there are ways to ease the process. Thousands of men will testify to the ease and effectiveness of injections. The most commonly used agents include alprostadil or a combination of papaverine, phentolamine and alprostadil (Trimix). The rationale for using a combination of all three medications is to allow for a synergistic effect of the three medicines, while keeping the dosages of each individual medicine low enough to prevent side effects. Further, the response rate for the Trimix solution is as high as 90 percent.

Men must have appropriate training and education before beginning home injection therapy. The goal of the injection medication is to achieve an erection that is sustained for sexual intercourse, but not prolonged or painful. The injections must be given in proper amounts with the appropriate technique to minimize the risk of scarring the penis or priapism.

The medication is injected along either lateral side of the penis. First, the medication is drawn into the syringe, usually an insulin-type syringe with a small, very fine needle. The medication is given into the spongy tissue of the penis, called the corpora cavernosa. After choosing the proper site to inject, clean it with an alcohol wipe, “poke” the needle through the skin of the penis and then inject the medication into the penis. Immediately afterwards, press firmly on the injection site with either an alcohol pad or gauze with your thumb and first finger to compress the area for at least five minutes or up to 10 minutes for patients taking blood

thinning medication such as coumadin. The medication tends to work better if you stand, as it allows more blood to go to your penis. Also, external stimulation to the penis increases blood flow to the penis and allows the medication to take effect faster. An *auto-injector* is a spring-loaded device that inserts the needle into the penis very quickly, minimizing the discomfort and psychological "hesitancy." It comes in two forms, a simple non-prescription device designed to insert the needle for you, and a prescription device that also depresses the plunger for you. You can check with your local drug store for the non-prescription simple auto-injector. Many men prefer the auto-injector that does *not* inject the medications for them because they maintain the necessary feel to know that they have injected in the right place and to the right depth.

Improper injection and any subsequent scarring can lead to penile curvature and nodules in the penis, so it is important to get the proper training before beginning injection therapy. Most men and their partners find that injection therapy is easy and are very pleased with the results.

Some patients will use injection therapy early on after surgery and then switch to oral agents as their sexual function improves over time.

How to Perform Penile Injection	• Patients should be trained in the office • Generally performed with insulin syringe and small needle • Skin and injection site prepared with alcohol swab • Medication is drawn up in sterile manner with insulin syringe • Medication is injected on either side of the penis • Pressure is held on injection site for three to five minutes (up to 10 minutes for those on blood thinners)
Side Effects	• Occasionally associated with fainting, dizziness, low blood pressure • Priapism or prolonged erection occurs rarely • Can cause pain, infection, bruising and scarring if patients are not trained properly (rare)
Things to Remember	• May require self-stimulation to increase blood flow to the penis • If erection persists for more than six hours, seek medical care at local emergency room or with your urologist • May be ineffective if patients have vascular disease or blood flow problems

Figure 4: Intra-cavernous injection therapy. After cleaning with an alcohol swab, insert needle into side of penis and inject medication.

Figure 5: Auto-injection technique. The medication is drawn into the auto-injector. The side of the penis is cleaned with an alcohol swab and the injector placed against the penis. Pressing a button then activates the injector and the needle is automatically inserted.

Vacuum Erection Device

In patients who only have partial erections or who either do not respond to other treatments or prefer not to use them, a vacuum device maybe useful. The device consists of a plastic cylinder connected to a pump and a constriction ring. A vacuum pump uses either manual or battery power to create suction around the penis and bring blood into it; a constriction device is then released around the base of the penis to keep blood in the penis and maintain the erection. A vacuum device can be used safely for up to 30 minutes, which is when the constriction device should be removed. The advantage of such a device is it is relatively inexpensive, easy to use and avoids drug interactions and side effects. Side effects may include temporary penile numbness, trapping the ejaculate and some bruising.

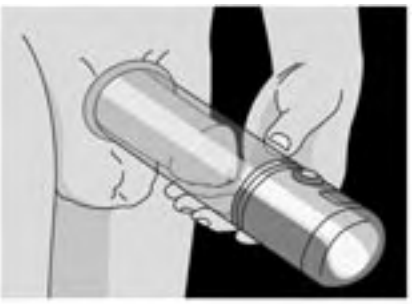


Figure 6:
Vacuum
Erection
Device

Penile prosthesis

For men with erectile dysfunction who have failed or cannot tolerate other treatments, a penile prosthesis offers an effective, but more invasive alternative. Prostheses come in either a semi-rigid form or as an inflatable device. Most men prefer the placement of the inflatable penile prosthesis.

The placement of the prosthesis within the penis requires the use of an anesthetic. A skin incision is made either at the junction of the penis and scrotum, or just above the penis, depending on which prosthesis and technique is used. The spongy tissue of the penis is exposed and dilated; the prosthesis is then sized and the proper device is then placed. The inflatable device -- a pump that contains the inflation and deflation mechanism -- is placed in the scrotum. The patient can control his erection at will by pushing a button under the skin. Although placement of the prosthesis requires a surgical procedure, patient and partner satisfaction rates are as high as 85 percent. Full penile length might not be restored to the patient's natural erect status. Rare side effects include infection, pain and device malfunction or failure. As the nerves that control sensation are not injured, the penile sensation and the ability to have an orgasm should be maintained.

Figure 7:
Example of a three piece
inflatable penile prosthesis

Causes of Impotence

Impotence can be due to psychogenic, neurogenic, vascular or drug-induced factors, or a combination these factors. Many medical conditions have been associated with impotence. (See Table 1)

Category of Impotence	Conditions associated with Impotence
Psychological	Depression Schizophrenia Performance anxiety Stress Relationship problems
Neurogenic	Stroke Pelvic surgery, injury or radiation Spinal cord injury Diabetic neuropathy
Vascular	Atherosclerosis Smoking Hypertension Diabetes Trauma Pelvic surgery, injury or radiation Peyronnies' disease
Hormonal	Hypogonadism (low testosterone) Hyperprolactinemia (high prolactin)
Drug Induced	Excessive alcohol consumption Androgen deprivation (LHRH agonists, i.e. Lupron, Zoladex) Anti-hypertensives Anti-depressants
Other Diseases	Older age Diabetes Chronic renal failure Obesity Peripheral vascular disease Heart disease

Psychological Causes of Impotence

Common causes of psychogenic impotence include depression and performance anxiety. Depression is associated with decreased energy, interest and decreased libido or desire. Performance anxiety, work stress or strained personal relationships can affect erectile function in both conscious and subconscious ways.

Neurogenic Impotence

Penile erection depends on an intact nervous system so any injury to the nervous system involved in erections may cause impotence. Diseases such as Parkinson's disease, Alzheimer's disease, stroke or head injury can lead to impotence by affecting the libido, or by preventing the initiation of the nerve impulses responsible for erections. Patients with spinal cord injuries will have decreased erections related to the extent of the injury. Patients who have undergone pelvic surgery such as radical prostatectomy, cystectomy or colectomy may have injury to the cavernous nerves that control erection. Long-standing diabetes may affect some nerves as well as causing impotence.

Hormonal Causes of Impotence

Diseases and conditions that decrease circulating testosterone in the body, such as castration or hormonal therapy used to treat prostate cancer, will decrease libido and impair erections.

Vascular Causes of Impotence

Diseases such as high blood pressure, high triglyceride and cholesterol levels in the blood, cigarette smoking and diabetes mellitus, and treatments such as pelvic irradiation to treat prostate, bladder and rectal cancers, may damage blood vessels to the penis over time. There is strong epidemiological association between heart disease, hypertension, low levels of high-density lipoproteins (HDL) and impotence. Patients with Peyronnie's disease which causes curvature of the penis, trauma, diabetes or old age may have damage to the spongy tissue of the penis, causing the veins to be more "leaky," which can lead to impotence.

Drugs and Impotence

Certain anti-depressants or anti-psychotics have been associated with impotence, especially those drugs that regulate serotonin, noradrenaline and dopamine. These include Prozac, Zoloft and Paxil. Beta-blockers and thiazide agents used to treat hypertension are associated with impotence. Cimetidine, a drug to treat acid reflux disease; chronic alcoholism; estrogens and drugs with anti-androgen action such as ketoconazole, and spironolactone can cause impotence, decreased libido and male breast enlargement. Even moderate alcohol intake may have an effect.

Class of Drug	Drug
Antihypertensive	Methyldopa Clonidine Reserpine Beta-blockers (atenolol, propranolol, metoprolol) Verapamil Guanethidine
Anti-androgens	Ketoconazole Cyproterone acetate Estrogen Flutamide Finasteride Gonadotropin releasing hormone agonists (Lupron, Zoladex)
Cardiac Drugs	Digoxin Gemfibrozil Clofibrate
Diuretics	Thiazides (Hydrochlorothiazide) Spironolactone
H2 antagonists	Cimetidine Ranitidine
Antidepressants	Tricyclic (migraine) Serotonin Reuptake Inhibitors (Prozac, Zoloft, Paxil) Pheothiazines Benzodiazepines (Vallium, Xanax) Meprobamate Barbituates Lithium
Other Drugs	Narcotics Baclofen Nonsteroidal anti-inflammatory drugs Tobacco Alcohol Marijuana

Aging and diseases which cause impotence

Aging, even in healthy men causes a progressive decline in sexual function. Medical studies have discovered that as men age, there is a decrease in turgidity, or “stiffness,” of erections as well as a decrease in the force and volume of ejaculation. Also, with normal aging, there is an increase in the length of time required between erections after orgasm, called the refractory period. Further, the sensitivity to touch decreases over time as do serum testosterone levels, with an associated decrease in desire. Studies indicate that half of all men with diabetes will eventually develop impotence. In addition, those with liver cirrhosis, chronic renal failure or coronary artery disease have a high incidence of impotence.

Mechanisms of Penile Erection

A normal erection requires the penis' nerves and blood vessel systems to be intact and to have appropriate hormonal levels, but also is moderated by psychological factors. The penis is stimulated by both the autonomic nervous system -- the part of the nervous system that functions independent of our conscious thought -- and the somatic nervous system -- the nervous system responsible for sensation and contraction of muscles attached to the penis. The glans or head and body of the penis have numerous sensory nerve endings that send messages of pain, temperature and touch back to the brain. The motor nerves stimulate the muscles in the pelvis and penis -- the ischiocavernosus and bubocavernosus muscles -- that are necessary to produce a rigid erection and ejaculation. The autonomic nervous system stimulates the rectum, bladder, prostate and sphincters, includes the cavernous nerve that stimulates the penis and controls the flow of blood during and after erection. (Figure 8)

With sexual stimulation, the cavernous nerves release chemicals that significantly increase blood flow to the penis. The erectile tissue of the penis rapidly fills, expands and becomes erect. During sexual activity, the bulbocavernous and ischiocavernous muscles of the penis are stimulated, which compresses the base of the penis to make the penis even harder.

During emission, seminal fluid is released from the seminal vesicles and the prostate into the urethra. The bladder sphincter then closes, and the seminal fluid becomes trapped. As the amount of fluid builds in the urethra, the pressure increases and the sensation of the inevitability of ejaculation is experienced. The bulbocavernous muscle contracts and expels the semen forcibly from the urethra. Orgasm normally coincides with ejaculation.

Detumescence, or loss of erection, occurs shortly thereafter and is produced by the breakdown of the factors that cause erection.

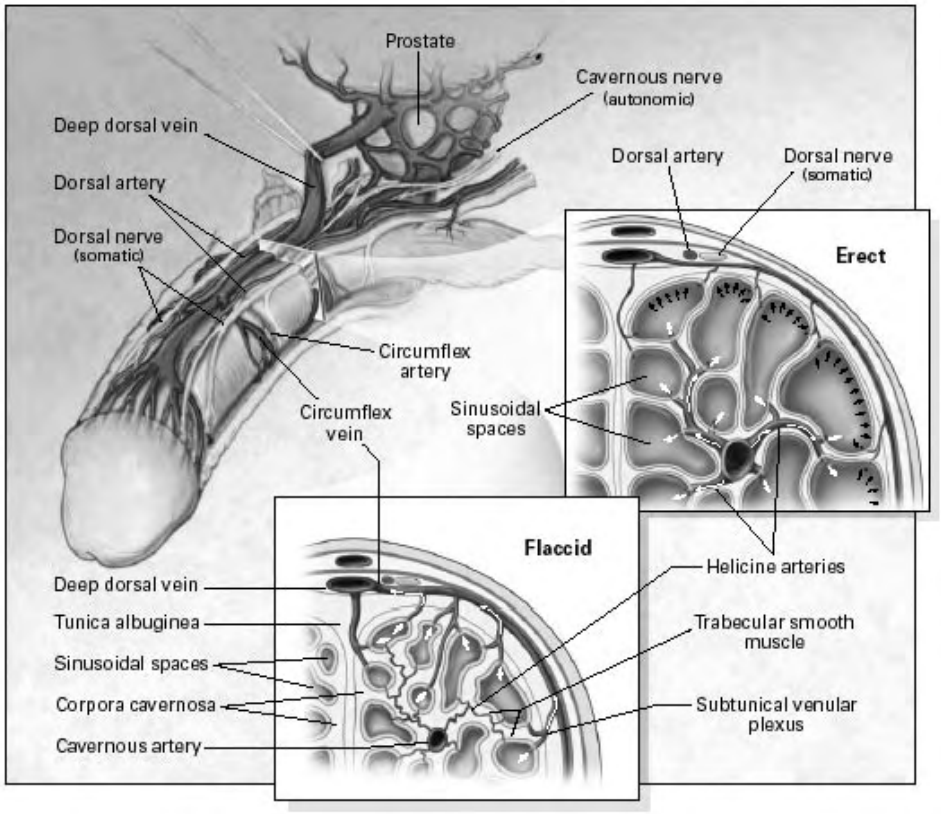


Figure 8:
Mechanism of Erection

Anatomy and Mechanism of Penile Erection

The cavernous nerves travel from the underside of the penis to the prostate. These nerves regulate blood flow within the penis during erection and flaccidity. In the flaccid state, inflow through the arteries is minimal and there is free outflow via the small veins exiting the spongy tissue just under the thick tunica (thick membrane surrounding the spongy tissue). During erection, the smooth muscle in the penis relaxes while the arteries widen to pump in more blood that expands the three cavities of the penis -- also called sinusoidal spaces -- to lengthen and enlarge the penis. The expansion of these cylinders compresses the small veins and reduces the outflow of blood.

(Lue, T.F., Erectile Dysfunction. *New England Journal of Medicine.* June 15,2000. 1802-1813.)
Reprinted with Permission from the Massachusetts Medical Society

Future Directions

Innovative research over the past several years has resulted in significant strides and improvement to understanding the anatomy and physiology of sexual function. For instance, increasing knowledge about details of the cavernous nerves in the pelvis led to refinement of nerve-sparing prostatectomy. Understanding the biochemistry of normal sexual functioning led to the development of medications including Sildenafil, Cialis and Levitra.

Current research is focusing on further understanding of the specific physiologic pathways responsible for normal sexual function, developing new, more effective agents for managing impotence and understanding how cavernous nerves heal and what factors can hasten the healing process. Use of "gene" or "stem cell" technology may be possible in the future, allowing men and their partners to enjoy better sexual health.

Additional Resources

Books

A Patient's Guide to Male Sexual Dysfunction by Tom F. Lue, M.D. Handbooks in Health Care Co., Newtown, Pennsylvania, 2000. ISBN: 1884065821

Overcoming Impotence-A leading urologist tells you everything you need to know by J. Stephen Jones. Prometheus Books, Amherst, NY, 2003. ISBN: 1591021286

The Lovin' Ain't Over: The Couple's Guide to Better Sex after Prostate Disease by Ralph and Barbara Alterowitz. Health Education Literary Publisher, Westbury, NY, 1999. ISBN: 1883257034

Our Journey Through Prostate Cancer by Jim and Julia Miller. JJM Publishing, San Francisco, CA, 2003. ISBN: 0974317209

Couples Confronting Cancer: Keeping your Relationship Strong by Joy L. Fincannon and Katherine V. Bruss. American Cancer Society, Atlanta, GA, 2003. ISBN: 0944235255

Websites

www.phoenix5.org
Phoenix 5's mission statement is to help men and their companions overcome the effects of prostate cancer.

http://www.prostatepointers.org/mailman/listinfo/pcai
PCAI offers an open and frank discussion about the problems associated with intimacy and prostate cancer.

Other Sources

American Association for Marriage and Family Therapy
112 South Alfred Street
Alexandria, VA 22314-3061
Phone: (703) 838-9808
Fax: (703) 838-9805

American Association of Sex Educators, Counselors, and Therapists
P.O. Box 5488
Richmond, VA 23220-0488
www.aasect.org

Sexual Function Health Council
American Foundation for Urologic Disease, Inc.
1000 Corporate Blvd, Suite 410
Linthicum, MD 21090
Phone: (410) 689-3990 or (800) 828-7866
Fax: (410) 689-3998
www.afud.org

The Sexuality Information and Education Council of the United States (SIECUS)
130 West 42nd Street, Suite 350
New York, NY 10036
Phone: (212) 819-9770

Sexual Medicine Society of North America, Inc.
1111 N. Plaza Drive, Suite 550
Schaumburg, IL 60173
Phone: (847) 517-7225
Fax: (847) 517-7229
www.smsna.org

MANAGING IMPOTENCE QUESTIONNAIRE

Please take a few minutes to answer the following questions. Your answers will help improve future editions of this quide.

Please check the appropriate box:

STATEMENT	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
Overall, the guide was helpful					
The information was presented clearly and in a way that was easy to understand					

STATEMENT	TOO MUCH	JUST RIGHT	Too Little
The amount of information presented was:			

1. What was most helpful about the Guidelines?

_____

_____

2. What was least useful about the Guidelines? Why?

_____

_____

3. Should anything have been made more understandable?

_____

_____

4. Should anything be added, or discussed in more detail?

_____

_____

5. Was anything in conflict with what you already know about erectile dysfunction?

_____

_____

If you would like to talk about the Managing Impotence Guide with a member of the group that prepared it, please write your name and phone number at the bottom of the questionnaire and one of the authors will contact you.

Please detach the questionnaire and either bring it in to the reception desk in the Uro-Oncology Department at the UCSF Comprehensive Cancer Center or mail it to:

Your Health Matters, Managing Impotence – A Patient Guide
Department of Urology, Box 1695
University of California, San Francisco
San Francisco, CA 94143-1695