Vasectomy: New Opportunities

For the man who wants no more children, vasectomy—voluntary male sterilization—offers much: effectiveness, a quick and simple procedure, permanent protection, convenience, little risk of complications, no long-term effect on his own health or sexual performance, and no health risks for his wife.

Yet vasectomy is among the least known and least used family planning methods. Many family planning programs have neglected vasectomy, but more training for providers and more publicity for the procedure can stimulate interest.

Worldwide, an estimated 42 million couples rely on vasectomy. By comparison, nearly 140 million rely on female sterilization. Vasectomy is a major family planning method only in six developed countries—the US, New Zealand, Australia, Great Britain, Canada, and the Netherlands—and in three developing countries—China, India, and South Korea. In most countries the method is hardly used, and few people have heard of vasectomy compared with other methods.

Why the Neglect?

Why is a good method so neglected? The blame has often been laid on men. It is said that men do not care about avoiding pregnancy, that they prize their fertility, that they think—wrongly—that vasectomy will end their manhood, that they unreasonably fear a minor procedure, that they put all responsibility for family planning on women.
But blaming men is no excuse for neglecting vasectomy services. Many men's attitudes are changing. They are concerned with the health and well-being of their wives and families, and so vasectomy makes sense for them. More men would change their attitudes if they understood vasectomy. The main reason for low levels of use may lie not in men's attitudes but rather in policy-makers' and providers' lack of attention to vasectomy—and sometimes even prejudices against it.

Experience makes clear that high-quality vasectomy services can draw clients. For example, private voluntary organizations in Colombia and Brazil have gradually built up a clientele for vasectomy. Even in parts of Africa some men are showing interest in vasectomy.

**Opportunities Now**

Now is the time to take advantage of new opportunities and expand vasectomy services. A new vasectomy technique has been developed, the importance of availability and high-quality service has become clear, and new, mass-media efforts to publicize vasectomy are attracting clients.

**No-scalpel vasectomy.** Vasectomy involves entering the scrotum, locating each vas (the tube that carries sperm from the testis to the ejaculate), and blocking both of them so that sperm cannot get through. Conventional vasectomy requires one or two small incisions in the scrotum. Now a new method, no-scalpel vasectomy, makes a very safe procedure even safer and easier for the client. It substitutes a tiny puncture for the incisions. The results: little or no bleeding, fewer infections, fewer build-ups of blood under the skin (hematomas), less postoperative pain, and contraception that is just as effective.

More than 9 million no-scalpel procedures have been done in China. Elsewhere the technique is catching on. Nearly all doctors who learn no-scalpel technique prefer it.

**High-quality, available services.** Services that attract clients are:
- **Convenient**—offered where men are and when they can come;
- **Designed for men,** often offering a range of health services in facilities for men only, where men feel comfortable;
- **Provided by well-trained staff;** and
- **Supported by good counseling** to explain accurately family planning methods including vasectomy, to make sure that men understand that vasectomy is permanent, and to help men make their own informed choice.

**Publicity.** Vasectomies at a São Paulo clinic rose by 80% during a publicity campaign that used television, radio, and print. More modestly, newspaper ads in Nairobi are drawing a steady flow of inquiries about vasectomy. People need information over time—often years—to decide on permanent contraception, so repeated publicity is needed. Also, word-of-mouth endorsements are crucial. As more men have vasectomies and talk to other men, demand accelerates. Thus the program that makes a small start now can expect many clients later.

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**Population Information Program**
Center for Communication Programs
The Johns Hopkins School of Hygiene and Public Health
Phyllis Tilson Piotrow, Ph.D., Director, Center for Communication Programs and Population Information Program
Ward Rinehart, Deputy Director, Population Information Program, and Editor, Population Reports
Anne W. Compton, Associate Director for POPLINE computerized bibliographic services
José G. Rimon II, Deputy Director, Center for Communication Programs, and Project Director, Population Communication Services, developing family planning communication strategies, projects, training, and materials.
Improving Vasectomy

Vasectomy is one of the safest and surest contraceptive methods. A single minor surgical procedure, it usually takes no more than 10 minutes, and it provides 99% permanent effectiveness against pregnancy. The procedure is as safe as it is effective. Most men experience no more than minor bruising and pain after the procedure. Complications requiring medical attention, such as infection or bleeding, occur in less than 3% of procedures.

But most family planning programs have neglected vasectomy. As a result, its use falls far short of its potential. Worldwide, approximately 42 million couples rely on vasectomy (see pp. 19–21). By comparison, more than three times as many couples—almost 140 million—rely on its female equivalent, tubal ligation, the family planning method most widely used by married couples (31).

But this neglect of a good family planning method may be ending. A new vasectomy technique is drawing providers’ attention to the method; high-quality programs are showing that good services can attract clients; and publicity for vasectomy has aroused men’s interest. Thus old presumptions about vasectomy are being discredited, and the way is clearing for new opportunities.

No-Scalpel Vasectomy

A refined and improved technique of vasectomy is making doctors, family planning program managers, and potential clients take a new look at male sterilization. Known as no-scalpel vasectomy, the new procedure substitutes a small puncture for one or two small incisions in the scrotum. It reduces pain, complications, and operating time. Thus it improves a minor procedure that, even with the conventional technique, causes little pain, has few complications, and takes just minutes to perform. By attracting the interest of doctors, providers, and clients and by reducing the already infrequent vasectomy complications, the no-scalpel technique promises to increase the popularity of male sterilization.

In the conventional vasectomy procedure the doctor makes one or two incisions of 1 to 2 cm in the scrotal skin to expose the vas deferens—the tube that carries sperm from each testis to the urethra. Each vas deferens is then blocked, usually by ligation (tying), cautery (heat), or, less commonly, clips to prevent sperm from passing into the ejaculate. Vasectomy

The new no-scalpel technique makes a safe and simple procedure even safer and easier. In Bangkok a client registers at the Non-Scalpel Vasectomy Centre of the Population and Community Development Association (1), discusses vasectomy with a counselor (2), is given anesthetic (3), undergoes the simple, quick procedure (4), and less than an hour later rides home on his motorcycle (5). Most vasectomies take only minutes to perform.
complications are uncommon and rarely serious. Still, the surgical incision accounts for most of the complications, in particular bleeding, hematoma (collection of blood under the skin), and infection.

The no-scalpel technique reaches the vas with a tiny puncture in the skin rather than the conventional incision. After administering local anesthetic, the provider uses a special instrument to make a tiny puncture—less than 1 mm in diameter—in the loose skin of the scrotum (see Figure 1). The provider then stretches the skin open slightly with a special forceps to reveal the vas deferens. Each vas is drawn through the stretched opening, blocked by the same methods used with conventional vasectomy, and then allowed to slip back into the scrotum. Sutures are not needed to close the small puncture in the scrotum.

A special anesthesia technique used with no-scalpel vasectomy also helps lessen pain and bleeding. The anesthetic technique, which involves only a single needle puncture, blocks pain throughout the vas. By comparison, conventional anesthesia techniques require at least two injections and anesthetize only the area around the incision site (9, 96).

The no-scalpel technique was developed in China by Li Shunqiang of the Chongqing Family Planning Scientific Research Institute in Sichuan Province. With Li’s technique, more than 9,000,000 no-scalpel vasectomies have been performed in China since 1974 (62). Li also developed the two special instruments needed to perform the procedure—the extracutaneous vas deferens fixing clamp and the vas deferens dissecting clamp. Most of the world’s health care providers trained in the technique are in Sichuan Province, and approximately 90% of all no-scalpel vasectomies are performed there. Li also has trained doctors from other Chinese provinces.

Advantages of No-Scalpel Vasectomy

While only a few studies so far have compared the no-scalpel technique and conventional vasectomy, all show advantages to the no-scalpel technique. For the doctor the new technique is a more refined procedure, minimizing bleeding and tissue trauma. For the vasectomy client the no-scalpel technique means less pain and quick recovery. For the clinic administrator it can mean lower costs and greater staff productivity.

Research in the US, Asia, and Latin America confirms that the no-scalpel technique involves even fewer complications than conventional vasectomy technique (7, 49, 50, 68, 71, 73, 97, 133, 134, 161). Preliminary results from a randomized clinical trial involving almost 1,000 men in five countries show significantly fewer complications and complaints with the no-scalpel technique compared with the conventional single-incision method (49). Most importantly, potentially serious complications—infecction and hematoma—were far fewer. For example, none of the men who had no-scalpel vasectomies experienced infection compared with over 2% of men who had conventional one-incision vasectomies. In addition, in follow-up visits within two weeks of the procedure, clients who had had no-scalpel vasectomies reported less pain, scrotal bruising, and backache than men who had undergone conventional vasectomies (49).

Similar advantages with the no-scalpel technique are reported in a study of over 1,200 men in Thailand served by the Population and Community Development Association
Policy Implications

What can family planning policy-makers and providers do to make vasectomy services more available and more appealing?

Policy-makers can:
- Direct public programs to make voluntary sterilization equally available to men and women.
- Change any laws that limit access to vasectomy.
- Offer public testimonials if they themselves have had vasectomies.
- Assume that cost is no barrier to men seeking vasectomies.
- Assume that medical schools and other teaching programs for family planning providers include vasectomy in their curricula and that they train motivated providers to perform vasectomy.

Program managers can:
- Make vasectomy services a part of all family planning programs but with special accommodation to make services convenient and comfortable for men.
- Emphasize quality of care—well-trained, skilled providers and thorough, accurate, respectful, and empathetic information and counseling services provided in a congenial environment.
- Make sure clients understand that vasectomy is only for men who are sure that they want no more children.
- Remove barriers to access such as rigid eligibility requirements and requirements for multiple visits, lab tests, and spousal consent.
- Arrange special orientation and training in vasectomy for all family planning staff to ensure that staff at every level know about the procedure and respond to clients’ inquiries and concerns.
- Begin the process of changing negative attitudes about vasectomy with providers themselves, through training and discussion.
- Offer services at times and places convenient to the male population.
- Involve men who have had vasectomies as counselors, outreach workers, and promoters.

Trainers can:
- Teach providers the no-scalpel technique.
- Include counseling skills as part of training.
- Give trainees plenty of opportunities for supervised practice.
- Visit trained providers to monitor quality of care.
- Provide refresher training.

Communication managers can:
- Publicize vasectomy equally with other family planning methods to overcome its status as the least known contraceptive method.
- Include vasectomy in any communication that covers all family planning methods.
- Use all means of communication to publicize vasectomy—the mass media, community outreach, and individual discussion and counseling.
- Address both men and women.
- As no-scalpel vasectomy becomes available, publicize this technique as an even easier, simpler new approach. Find a term for it that appeals to the public in the area.
- Use testimonials from satisfied clients.
- Make a special effort to overcome misconceptions about vasectomy and to promote male participation in family planning.

During the 1987 King’s Birthday Vasectomy Festival. There were only 0.4 complications per 100 no-scalpel vasectomies compared with 3.1 per 100 conventional procedures (134). Noncomparative trials in other countries also report very low complication rates. For example, only one hematoma occurred among the first 1,338 no-scalpel vasectomies performed outside China (71). In China the rate of hematoma was 0.08%—or one in every 1,250—among more than 120,000 procedures (68).

Once doctors have learned the technique, they often perform no-scalpel vasectomies more rapidly than the conventional procedures. During the one-day King’s Birthday Vasectomy Festival in Thailand, for example, doctors averaged 57 no-scalpel procedures each compared with 33 procedures each among doctors performing conventional vasectomies (134). In the 5-country study, however, doctors experienced in both techniques took slightly longer to perform no-scalpel vasectomies than conventional procedures (49).

Training for No-Scalpel Vasectomy

No-scalpel vasectomy is now practiced in more than 20 countries. So far, it has been extensively used only in China, but demand for training and services is growing (69). The Association for Voluntary Surgical Contraception (AVSC) has led efforts outside China to publicize the procedure and to train providers. Since 1985, when AVSC first endorsed the no-scalpel technique, AVSC has directly trained over 300 doctors in the US and developing countries (64). With few exceptions, doctors prefer the no-scalpel technique. For example, the highly regarded Promoção da Paternidade Responsável (PRO-PATER) program in Brazil, as well as the Population and Community Development Association program in Thailand, now use only the no-scalpel procedure, and both serve as international training centers to teach others the technique. In the US, AVSC has trained more than 200 doctors in the no-scalpel technique. Only two have not adopted it entirely in their daily practice (105).

Several important lessons have emerged from the training. The no-scalpel technique is harder to learn than conventional vasectomy. Providers who have performed many conventional vasectomies master the no-scalpel technique faster than less experienced providers (65). Nevertheless, even highly experienced surgeons must perform 15 to 20 procedures to become proficient (97, 130).

Identifying and fixing the vas through the scrotal skin and drawing the vas through the stretched puncture hole are the most difficult parts of the no-scalpel technique and require new skills. In the 5-country randomized trials, for example, doctors using the no-scalpel technique reported problems...
is isolating the vas in almost 10% of procedures compared with only 3% of vasectomies done with a conventional single-incision procedure. The overall rates of surgical difficulty were similar, however, because doctors performing conventional vasectomy occasionally had problems closing the scrotal incision (49).

### New Vas Occlusion Methods Studied

Researchers are looking for new and easier ways to block the vas. These methods—all in the experimental stage—involves injections or devices inserted directly through the skin and into the vas without pulling the vas out of the scrotum. Compared with conventional occlusion methods, these new techniques may cause less tissue damage and scarring. Thus they may decrease pain and complications and increase the chances for successful reversal. More research will be needed, however, to determine if the newer vas occlusion methods are as effective as conventional occlusion methods.

- **Vasoclude** is a new instrument for applying clips to the vas. The Vasoclude can be used to apply one or two metal clips to each vas. The clips can be inserted through the same type of puncture hole used in no-scalpel vasectomy, and the vas does not have to be pulled out of the scrotum. Tests in dogs show vasal occlusion in 96%. A new locking clip design should increase effectiveness to over 99% (59). The procedure is simple enough for nurses and physicians’ assistants to learn easily. The Population Council is negotiating with a US company to manufacture the device for widespread use. Preliminary trials in men are planned for 1992, and the product may be on the market by 1996 (181).

- **Injections of polyurethane or silicone** directly into the vas eliminate surgery entirely. The injected liquid polyurethane or silicone hardens within 10 minutes into solid plugs that block passage of sperm. Polyurethane plugs have been found to be 98% effective in over 100,000 men studied in China (163). Research is now focusing on silicone plugs, however, because polyurethane releases a chemical in the body that causes cancer in rats given extremely high doses. Silicone does not release this chemical, and tests in animals show great potential and very few side effects (190, 205). Still, there are problems. Preliminary research suggests that the plugs are not effective until four to nine months after injection (190). Also, administering percutaneous (through the skin) injections is much more difficult than performing conventional no-scalpel vasectomy, especially when the injected material must be delivered directly into the lumen (central space of the vas). Providers will need special training.

- **Contraceptive plugs** are surgically inserted in the vas to block the passage of sperm. One type, known as the Shug, consists of four solid silicone plugs—two for each vas—each attached to a nylon thread that lies outside the vas to anchor the plug. Preliminary clinical trials with men were completed in 1991, and the product is being redesigned before further clinical trials are conducted (178).

Despite the greater technical difficulty of the no-scalpel technique, most doctors have been able to learn it and, with experience, rapidly become proficient. During no-scalpel training programs in Asia, for example, the average operating time for the first 10 procedures was 10 minutes each. After 20 to 40 procedures the average time dropped to between 7 and 8 minutes per procedure (71).

The new technique is sparking interest in vasectomy services. In Mexico, for example, the Instituto Mexicano del Seguro Social (IMSS) sent five doctors to Brazil for no-scalpel training in 1989. On their return, these five trained others. Over a 12-month period in 1990 and early 1991, four IMSS centers performed 2,154 vasectomies, 80% of them with the no-scalpel technique. In 1991 IMSS began expanding no-scalpel vasectomy services to the entire nation, with support from AVSC and research assistance from the Population Council and Family Health International. By September 1991, 41 IMSS facilities offered no-scalpel vasectomy and had performed nearly 5,000 procedures in an 8-month period. Nationwide, IMSS performed more than 10,000 vasectomies in 1991, compared with about 5,600 in 1989 (194).

### Occlusion Techniques

While reaching the vas deferens may be the difficult part of vasectomy, blocking both of them is the step that ends fertility. New evidence is emerging about what helps to maintain the effectiveness of this occlusion and what does not. The same techniques of blocking the vas are used with equal ease in conventional vasectomy and in the no-scalpel technique.

**Is recanalization more frequent with ligation?** Of the three major occlusion methods—ligation, cautery, and clips—the most widely used is ligation (173, 197). But is it the most effective? Most large studies of vasectomy report low pregnancy rates—from 0 to 2.2%—with any occlusion method (see Population Reports, Vasectomy—Safe and Simple, D-4, November–December 1983). These rates are as low as for any contraceptive method. No carefully controlled studies have compared the different occlusion methods. While many clinical trials have compared tubal occlusion techniques in voluntary female sterilization (31), research on improving the effectiveness of vasectomy has been limited.

Preliminary research from the PRO-PATER program in Brazil now shows three times as many spontaneous recanalizations (rejoining of the separated ends of the vas) with ligation as with electrocoagulation (36). These recanalizations were identified by the presence of sperm in semen. Most were temporary and did not result in pregnancy; however, similar results have been reported elsewhere (47), but there have been no well-controlled clinical trials.

Recanalization is thought to occur after ligation because the ligated ends of the vas gradually slough away, and the stitches slip off one or both ends of the vas. Sperm leak out, causing a granuloma (a nonbacterial abscess). A granuloma can link the two ends of the vas, creating a passageway for sperm (17, 173). Still, recanalization is rare with any occlusion technique—occurring in well under 2% of cases in the PRO-PATER study—and may last only until scar tissue blocks the newly created passageway.

**Interposing tissue may help.** A simple procedure may reduce the rate of spontaneous recanalization with ligation and
other occlusion techniques. Some experts argue that covering one end of the vas either with the sheath (covering) tissue of the vas itself or with adjacent connective tissue prevents recanalization (35, 47, 173). The only two studies of this practice report conflicting results, however (47, 162). Nevertheless, because interposing tissue between the two ends of the vas is not harmful, takes little time, and may be beneficial, skilled vasectomy practitioners endorse the practice (17, 35, 173).

Does removing a bit of vas improve effectiveness? Another fairly common vasectomy practice—removing up to 1 cm of each vas—appears to provide no additional protection against pregnancy. The practice is common in developed countries as protection against malpractice lawsuits (17, 35, 160): the tissue sample can be sent to a laboratory for confirmation that the doctor operated on the vas and not other tissue. To prevent recanalization, however, a much larger piece of vas, at least 4 cm, would have to be removed. Removing such a large segment makes vasectomy reversal more difficult (173). (For a discussion of vasectomy reversal, see Population Reports, Vasectomy—Safe and Simple, D-4, November-December 1983.)

Open-ended vasectomy is controversial. A variation on vas occlusion techniques, leaving the testicular end of the vas unsealed, is controversial. Known as open-ended vasectomy, this practice allows sperm to flow out of the testicular end of the vas, minimizing pressure on and damage to the epididymis (coiled tubes between the testicles and vas deferens). Advocates contend that this reduces postoperative pain and facilitates reversal (44, 46, 119). There have been no comparative trials, however. Open-ended vasectomy may result in more recanalizations than blocking both ends of the vas, and few practitioners recommend it (11, 17, 35, 59).

Experience is most important. Because all major occlusion methods are very effective, large clinical trials would be needed to detect the small differences in the effectiveness of the various occlusion techniques. Good training and experience appear to be more important than the choice of occlusion method. Regardless of the occlusion technique used, experienced providers have fewer vasectomy failures than beginners (36, 149). In the PRO-PATER program, for example, the spontaneous recanalization rate was five times higher for trainees than for staff doctors. By comparison, choice of occlusion technique, as noted, made a threefold difference (36).

It is important to note that recanalization is not the main reason for pregnancies following vasectomy. Many of the pregnancies after vasectomy occur because couples do not use a back-up method for 20 ejaculations after the procedure. Sperm already in the reproductive tract before the vasectomy cause the pregnancies. Providing good counseling so that couples will use condoms or another method initially is the most effective way to reduce pregnancies after vasectomy.

### Long-Term Safety

Vasectomy is as safe in the long term as it is in the short term. An impressive record of epidemiologic research—over 15 major studies involving thousands of men—shows that men with vasectomies are not at greater risk of any chronic illnesses than men who have not undergone the procedure (6, 16, 26, 27, 107, 118, 144, 145, 146, 167, 175, 179, 180, 206). (See Population Reports, Vasectomy—Safe and Simple, D-4, November-December 1983, for discussion of studies published before 1984.)

Concerns about health risks from vasectomy first arose in the 1970s, when research showed increased atherosclerosis in vasectomized monkeys (5, 32, 33), and from other, hypothesized risks of anti-sperm antibodies, which often develop after vasectomy. Over the years vasectomy has been suspected of links with many other health conditions including an increased risk of heart disease, reduced or increased lipid levels, kidney disease, arthritis, multiple sclerosis, gout and other autoimmune diseases, musculoskeletal disorders, impotence, depression, and, most recently, cancer of the testicles and prostate.

Research in men, however, is reassuring. For example, in the largest cohort study to date, involving almost 22,000 men, vasectomized men had similar or lower rates of 98 diseases, including various cancers, autoimmune diseases, and heart disease, than controls who had not had vasectomies (107). The only long-term side effect of vasectomy that has been reliably documented is a 1½ to 2½ times greater risk of genitourinary tract infection or inflammation up to two years after the procedure (57, 107, 147, 191). These side effects are short-term, easily treated, and not dangerous.

Most recently, a few studies have reported slightly increased risks of prostate and testicular cancer in vasectomized men (24, 67, 113, 166). In the US, two hospital-based case-control studies reported that men with prostate cancer were two to three times more likely to have had vasectomies than men hospitalized for other illnesses (113, 166). In Scotland researchers found a higher than expected incidence of testicular cancer among 3,000 men who had had vasectomies compared with the incidence in the entire population of the region (24).

Like other reports linking diseases to vasectomy, these preliminary findings must be viewed cautiously (25). Other,

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Vasectomy is a very safe and effective contraceptive method. The minor procedure takes less than 10 minutes and provides completely effective and permanent contraception for 99% of men.
carefully designed research did not find any excess risk of prostate, testicular, other genital, or other cancers after vasectomy (56, 107, 118, 127, 148, 175, 179, 191, 206). Moreover, there are important methodologic limitations to the recent studies. Both reports on prostate cancer are exploratory case-control studies generated from routine surveillance systems. They were not designed to identify specific risk factors for prostate cancer. In such exploratory studies chance associations are common and often discredited by further research (63, 87, 208). Inconsistent findings in the two studies on prostate cancer also raise questions. For example, one study found increased risk of cancer with age and with time after vasectomy, which would reinforce the finding of an association (113); the other, however, found that age and time after vasectomy were not associated with risk (166).

While any possibility of adverse effects of vasectomy is cause for concern, the recent research is tentative and does not prove that vasectomy causes any kind of cancer. Researchers say that the findings should not discourage men from having vasectomies or alarm men who have already had them (126, 208). After reviewing all relevant epidemiologic and biologic data, a group of 23 experts convened by the World Health Organization in October 1991 concluded that there was no causal link between vasectomy and any type of cancer. The group recommended no change in existing family planning policies (88, 200).

## Making Services Available

If vasectomy services are available and men learn about them, more men will use them. Lack of services and information, not men’s attitudes, are often the biggest obstacles to wider use of the method. In many places family planning providers either do not offer vasectomy or fail to promote it because they assume that men are uninterested. And sometimes providers themselves are prejudiced against vasectomy because of lingering misperceptions about the procedure’s effects on health and sexual performance. As a result, providers often underestimate the potential demand for vasectomy (19, 48, 76, 81, 90, 91, 159, 172, 182, 193).

While vasectomy is available in most developed areas except Eastern Europe, in most developing countries finding services is often difficult. Some Asian countries, including China and India, offer the best access to vasectomy (76, 168). Experts surveyed by the Population Council estimate that vasectomy services are accessible to more than 75% of men in Bangladesh, Hong Kong, India, Singapore, South Korea, Taiwan, and Thailand and to just under 75% in Sri Lanka and to 31% of men in Indonesia (168). Vasectomy also is readily available in much of China. In Latin America, in contrast, only in Colombia may half of all men have ready access to vasectomy, while one-quarter to two-fifths may have ready access in Costa Rica, Ecuador, El Salvador, Guatemala, and Mexico. In most other countries vasectomy is even less accessible. In Brazil, despite the success of PRO-PATER in São Paulo, experts estimate that less than 5% of men have ready access to vasectomy (168). In many African and Near Eastern countries, vasectomy remains virtually unavailable (8, 120, 168).

Demographic and Health Surveys also suggest that vasectomy is more difficult to obtain than other major family planning methods. Data on the availability of vasectomy, gathered from community leaders and officials, are available for only a few countries. In every case but Thailand the percentage of married couples living within 15 km of a source of supply is smaller for vasectomy than for other methods—often much smaller (see Table 1). For example, in Ecuador only 1% of couples live within 15 km of vasectomy services compared with 32% within 15 km of voluntary female sterilization services and more than 90% within 15 km of condoms and oral contraceptives.

Change is beginning, however, even in Africa, where it was once thought that permanent contraception would never be acceptable. In Kenya, Madagascar, Nigeria, and Rwanda, providers are starting programs to increase male involvement in family planning and to offer vasectomy (76, 176). These fledgling efforts are demonstrating that some African men are interested in vasectomy, just as some African women are becoming interested in voluntary female sterilization (31). Kenya’s experience shows that providing services increases demand. In 1976 two vasectomies were performed at a private clinic in Nyeri, the only facility reporting that it offered services. By 1985, 13 clinics had performed a total of 55 vasectomies. Since 1986, 200 men have obtained vasectomies at 12 additional sites supported by the Association for Voluntary Surgical Contraception (79, 110, 140).

### Table 1

<table>
<thead>
<tr>
<th>Country</th>
<th>Date</th>
<th>Vasectomy</th>
<th>Female Sterilization</th>
<th>Pill</th>
<th>Condom</th>
<th>IUD</th>
<th>Injection</th>
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</thead>
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<tr>
<td>Colombia</td>
<td>1986</td>
<td>20</td>
<td>42</td>
<td>88</td>
<td>78</td>
<td>76</td>
<td>42</td>
</tr>
<tr>
<td>Dominican Rep.</td>
<td>1986</td>
<td>8</td>
<td>47</td>
<td>94</td>
<td>92</td>
<td>79</td>
<td>17</td>
</tr>
<tr>
<td>Ecuador</td>
<td>1987</td>
<td>1</td>
<td>32</td>
<td>92</td>
<td>90</td>
<td>54</td>
<td>35</td>
</tr>
<tr>
<td>Guatemala</td>
<td>1987</td>
<td>15</td>
<td>19</td>
<td>80</td>
<td>81</td>
<td>31</td>
<td>20</td>
</tr>
<tr>
<td>Thailand</td>
<td>1987</td>
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<td>65</td>
<td>92</td>
<td>91</td>
<td>72</td>
<td>90</td>
</tr>
<tr>
<td>Uganda</td>
<td>1980–89</td>
<td>7</td>
<td>17</td>
<td>27</td>
<td>25</td>
<td>22</td>
<td>23</td>
</tr>
</tbody>
</table>

Note: Information on distances came from community leaders and officials; on availability of methods, from personnel at service facilities.
Sources: Demographic and Health Surveys special tabulation; Wilkinson et al. (196).
Even without programs offering vasectomy, the method attracts interest when men become aware of the service. In Rwanda and Madagascar, where there are no vasectomy programs, a handful of independent doctors perform vasectomies. They have built their clientele by word of mouth: satisfied vasectomy clients talk to potential clients. Momentum is slowly building. One physician in Madagascar performed 64 vasectomies in a recent 5-month period compared with 70 in the two years preceding (176).

This pattern is familiar to more established vasectomy programs, such as some of those in Latin America. Services start with just a few clients, and for some time there appears to be little demand. Once program managers focus on offering accessible, high-quality, consumer-oriented vasectomy services, however, and making those services known, demand grows, and soon providers find themselves with a substantial flow of clients seeking information and services. The service records of Colombia’s Asociación Pro-Bienestar de la Familia (PROFAMILIA) demonstrate the gradual growth of a successful program (see Figure 2).

Surveys suggest potential demand for vasectomy in various countries. When asked directly about vasectomy, many men not only express approval of the procedure but also say that they will consider having vasectomies when their families are complete (82, 91, 93, 115, 123, 137, 172, 193, 195, 204). In rural Kenya and in Brazil and Honduras, for example, about one-quarter of men surveyed in the late 1980s expressed some interest in having vasectomies (93, 115, 193).

The Elements of Quality

To attract clients, family planning services must offer good quality. Vasectomy services that will attract clients must:
- Be convenient,
- Be designed for men,
- Employ well-trained providers,
- Provide good counseling,
- Offer good care after vasectomy, and
- Be well-publicized.

These elements of high-quality care, along with committed program leaders and services specifically designed to offer vasectomy separately from female sterilization, characterize the most successful vasectomy programs (76).

Convenience. Vasectomy is intrinsically a convenient procedure. Only local anesthesia is needed, most procedures take 10 minutes or less, and men can return home after resting for as little as 30 minutes (49, 197).

Also, because vasectomy is safe and simple to perform, it is easily offered in any medical facility, from a doctor’s office to a mobile clinic or a temporary site set up in a school, church, or workplace, as long as a referral system is in place to handle any complications. Mobile services have been used extensively in India, Indonesia, Nepal, and Thailand (90, 201). Thus vasectomy services can be brought to the clients. For further convenience providers can offer services after business hours and on weekends, when most men are not at work.

One aspect of vasectomy that is not convenient is that it is not immediately effective. Sperm already in the reproductive tract may appear in semen for as many as 20 ejaculations or two to three months. One way to reduce this inconvenience—a major cause of unwanted pregnancies in the wives of men who have had vasectomies—is to give each vasectomy client two dozen condoms. The condoms will provide the couple with the protection that they need. The condoms also will help them count ejaculations: by the time the condoms are used up, the vasectomy is effective.

Designed for men. Men will choose vasectomy when services are designed to meet their needs. Besides convenient locations and hours, this can mean hiring male staff. Also, some programs offer vasectomy in men-only clinics or else reserve certain hours for men’s services. Such arrangements are intended to avoid the discomfort that some men feel in conventional family planning clinics, where most clients are women (37, 90, 101, 136, 165).

Some centers that offer vasectomy also provide other services for men, including general medicine, urology, infertility treatment, testing for and treatment of sexually transmitted diseases, and counseling for sexual problems. In São Paulo, Brazil, for example, PRO-PATER offers medical counseling, and educational services for male contraception and sexual problems as well as providing vasectomy (84). Offering a variety of services draws a broader range of clients and in some cases helps to pay for vasectomy services (101, 125, 165, 182).

Employ well-trained providers. High-quality vasectomy services require well-trained and skilled providers. Such providers offer the best care. They also inspire clients to recommend services to others. Training must cover two areas: technical skills and communication skills.

Any well-trained doctor can perform both conventional and no-scalpel vasectomies. In developed countries urologists and general surgeons perform most vasectomies. In develop-
Systemic Methods for Men Investigated

Several promising new contraceptives for men are on the horizon, but none is likely to be available before the end of the decade. Almost all of the new methods are long-acting injectibles.

Why are there not more methods available for men now? Historically, most research efforts and funds have focused on methods for women—both because female reproductive processes seemed easier to influence and because it was assumed that women cared more about preventing unwanted pregnancy (74). In addition, developing systemic contraceptives for men faces unique challenges:

- Many drugs that prevent sperm development also diminish sexual desire (libido) and sexual performance. Androgens (drugs that boost masculine sexual characteristics) must be included in the regimen to avoid these side effects.
- To date, very few regimens have completely stopped sperm production in all men. Research is underway to determine whether complete sperm suppression is necessary to prevent pregnancy or, if not, what level of sperm count is too low to cause pregnancy.
- No systemic methods are effective immediately because they do not stop sperm already in production—a process that takes 60 to 72 days—or destroy sperm already produced. Similarly, after vasectomy sperm in the vas above the occlusion site can still cause pregnancy. Thus men may remain fertile for two months or more. A backup method must be used during this time.

Despite these difficulties, research continues. Some methods being tested are only prototypes for further development. Research on various drugs and delivery systems is needed to develop the most effective and convenient systemic contraceptives for men.

Steroid hormones have been studied for many years. Several regimens suppress sperm production, but their effectiveness varies in different ethnic groups (190). Most of the most promising new possibilities combine an androgen (usually a synthetic form of testosterone) to maintain sexual function with a drug that blocks sperm production. Another approach is evaluating whether natural or synthetic testosterone alone, delivered in steady, continuous doses, can stop sperm production.

- A new long-acting synthetic testosterone ester, 20 AET 1, now called testosterone bucillate, may be useful for maintaining libido and potency. After injection, this hormone forms a depot in the muscle, gradually releasing testosterone over three months. Thus testosterone bucillate may substitute for testosterone enanthate, which requires weekly injections. Preliminary clinical trials of testosterone bucillate combined with the long-acting levonorgestrel ester HRP 002 are scheduled for 1992. Additional clinical trials are planned for Indonesia and China.
- Injections of 250 mg depot medroxyprogesterone acetate (DMPA) combined with either 200 mg 19-nortestosterone hexylxyphenyl propionate (Anadur) or various levels of testosterone enanthate stopped sperm production in 97% of Indonesian men participating in clinical trials (141, 190). This combination, however, requires weekly injections of the androgen for the first six weeks followed by injections every three weeks, and injections of DMPA every six weeks.
- An injection of natural testosterone microspheres, a blend of different-sized polymer particles filled with hormone, releases a fairly constant dose of testosterone into the bloodstream for two to three months. The microspheres will be studied for several uses: (1) to replace testosterone in men with abnormally low hormone levels (20); (2) used alone to suppress sperm production (studies are now underway in normal men (178)); and (3) used in combination with another hormone for contraception.

Analogs of luteinizing-hormone releasing hormone (LHRH) suppress natural production of follicle-stimulating hormone (FSH) and thus LHRH, testosterone, and, ultimately, sperm. They are always combined with an androgen to maintain sexual desire and potency. The Population Council has developed one product consisting of two nonbiodegradable implants, one filled with the LHRH agonist LHRH 13, the other with the androgen 7 alpha methyl-19-nortestosterone (MENT). The implants are designed to prevent pregnancy for one year. Animal trials show complete contraceptive effectiveness and no side effects. The Population Council is collaborating with a US company to manufacture the implants. Clinical trials in men are expected to begin in 1992 (181). Several other new analogs effectively suppress sperm production, but some cause skin reactions at the injection site, and almost all compounds synthesized to date are too expensive for widespread use.

LHRH vaccines temporarily stimulate an immune response to LHRH. By blocking LHRH, the vaccine interferes with release of testosterone and thus the production of sperm. This product is designed both as a contraceptive and as treatment for prostate cancer. For contraceptive purposes the vaccine is combined with the long-acting androgen MENT. In animals this combination suppressed sperm production completely while maintaining sexual behavior. Sperm production resumed in all animals once injections stopped. Clinical trials in men started in late 1991 (181). For these trials, the vaccine will be administered in three monthly injections followed by a booster injection six months later.

Chemicals that interfere with sperm production are being studied in China. In collaboration with the World Health Organization, scientists from China and Thailand are conducting pharmacological and toxicological studies on *tripterigium wilfordii*, an herbal medicine used to treat skin conditions, which was discovered to cause infertility (202). Animal studies show promising results. Research is now underway to identify which chemical compounds in the herbal medicine provide the contraceptive effect and to ensure that they are safe for long-term use by men (178).
oping countries, however, these specialists may have too little time to do minor surgical procedures (197). General practitioners can easily learn the no-scalpel technique, although they may need more training than experienced surgeons (64).

Nurses and physicians' assistants also have learned to perform conventional vasectomies (23, 55, 61, 143), just as they have learned to perform mini-laparotomies (31). To date, training programs for no-scalpel vasectomy have involved only doctors. As programs expand, however, other clinicians also may be trained.

No-scalpel vasectomy training programs are underway in many countries (see p. 5). For both no-scalpel and conventional vasectomy techniques, hands-on practice is essential. Generally, trainees should observe and assist in at least 20 cases and perform a minimum of 5 unassisted procedures under direct supervision (130, 197, 198, 201). Trainees learning no-scalpel technique also perform a few incisions so that they can use the conventional approach if scar tissue or fatty scrotal tissue makes the no-scalpel approach difficult (153).

Training in counseling skills and other interpersonal communication skills also is important for all providers. Good training prepares providers to recognize appropriate vasectomy candidates and to counsel them. To help ensure that clients make well-informed, voluntary decisions, training for counseling also should teach providers to discuss all available family planning methods and the option of not using contraception (34, 91, 124, 159, 182). One effective training method is role-playing, in which trainees take the roles of both counselors and clients. This gives one trainee the opportunity to see counseling through the client's eyes while the other practices counseling skills. Trainees also should have an opportunity to counsel actual clients under direct supervision (124).

Some family planning experts recommend refresher training. In addition to updating providers' knowledge, refresher training can re-energize the program and help make community residents aware of services. For example, after field educators in a family planning program in the Chogoria region of Kenya received refresher training, the percentage of men in the community who knew of vasectomy rose from 36% to 48%, and the percentage interested in considering vasectomy rose from 28% to 37% (91). For medical staff, refresher training is especially important where there are few vasectomy clients, where services are provided sporadically by mobile clinics, or where providers were initially trained informally (21, 83).

Training for all family planning providers must cover vasectomy. Often available services go unused because providers fail to mention vasectomy as a contraceptive choice. In Kenya, for example, a 1989 assessment found that only 2 of 48 new family planning clients at Ministry of Health clinics had been told of vasectomy (114). Also, providers who are not directly involved in vasectomy services need repeated reminders to keep the method in mind when they talk with clients and the public.

Wherever possible, vasectomy programs should involve men who have had vasectomies to serve as counselors, outreach workers, and promoters, whether as paid staff or as volunteers (37, 90, 91, 92, 106). The man who has had a vasectomy is the most credible source of information for his peers and for potential clients (see p. 12). In several studies most vasectomy users said that, before deciding on the procedure, they had spoken with at least one man who had had vasectomy, and that person had strongly influenced the decision (121, 122, 189). Most men who have had vasectomies recommend the procedure to others (41, 106, 136).

Conversely, vasectomy services may have trouble getting started when there are no users to talk with potential clients. Health care workers and men from the community in Chogoria, Kenya, cited this problem in focus-group discussions. As one man said, "If there was anybody who has had this operation done to him...I would ask him how it feels, and how he felt afterwards. And then I might go and have it done, too" (91).

Good counseling. Good counseling helps a man decide if vasectomy is right for him. In other words, good counseling enables a client to make an informed choice about vasectomy (34, 124, 199). "Informed" means that the client's decision is based on his accurate understanding of vasectomy, its benefits, its disadvantages, and its permanence, and of the alternatives to vasectomy. "Choice" means that each client's decision is his own, based on his needs and his family's, and not made under pressure or coercion from anyone else (34). Good counseling aids both aspects of the decision by (1) giving the client understandable, relevant information about vasectomy and other family planning methods and (2) helping him become aware of his own feelings, wants, and concerns (see Population Reports, Counseling Makes a Difference, J-35, November 1987).

When counseling potential vasectomy clients, providers should remember that many men are not used to being family planning clients. As with female clients, providers should make every effort to put men at ease and to ensure their privacy (37, 101, 165). Anecdotal evidence suggests that men are more satisfied after vasectomy when good counseling has dispelled fears and corrected misperceptions (122).

Although vasectomy is a male procedure, women also should be told about vasectomy whenever they are counseled about family planning. This is important because (1) some women can influence their partners' contraceptive decisions; (2) women, like men, can be misinformed about vasectomy and therefore need accurate information; and (3)
He Did It For His Wife

When it comes to vasectomy, one of Kenya’s most effective communicators is John Maina. John Maina had a vasectomy in 1986. Recently, he has been featured in national and regional newspaper articles and radio, explaining what vasectomy is like and why he decided to have one. Until now, the few Kenyan men who have had vasectomies have been reluctant to talk about their experience. John Maina is one of the first men to come forward.

Maina and his wife decided to have no more children after the birth of their fifth child. Unaware of vasectomy, they relied on condoms. But that method failed, and they had a sixth child. Maina, who works as a driver for the Christian Health Association of Kenya (CHAK), learned about vasectomy at CHAK’s family planning seminars.

Then Maina talked with a doctor, who assured him that vasectomy would not affect his manhood and that the operation is not painful, requiring only local anesthetic. Maina consulted his wife, who agreed that he should go ahead. John told the newspapers that the reason he decided on vasectomy was to spare his wife any further burden of contraception.

In all, it took John Maina about one year to make his decision. The procedure itself took only a few minutes, and he left the clinic in about 45 minutes.

Both Maina and his wife are very pleased with the vasectomy. Their sex life is more relaxed, he says (183).

Based on his own experience, Maina says information is the most important element in encouraging vasectomy.

There is large potential demand for effective contraception in Kenya. For example, in the 1989 Kenya Demographic and Health Survey, 49% of husbands said they wanted no more children, but fewer than 1% have had a vasectomy or plan to have one (82). In a 1989 study only 2 of 48 people visiting Ministry of Health family planning clinics were told about vasectomy (114).

Since Maina’s vasectomy many men have asked him about the procedure. “Most of the men I have been talking to tend to think that vasectomy is castration,” he says. “So they are finding my experience to be very interesting and very useful to them.”

Talking with Maina, many men change their minds about vasectomy. “Some say it is a good decision and would like to think about it, and maybe in future come out with the same,” he reports (183).

Maina points out that much fear of vasectomy is based on misunderstanding. Therefore, he says, people need to be properly educated “to know the functioning of the body, before the operation how the body has been working, and after the operation what happens. Then people can be quite happy with the messages.”

One way to ensure that is for many more men like John Maina to share their experiences (29, 79, 102, 110, 183).
in many societies men make the ultimate decisions about whether a couple will use family planning and what method; men can learn from their wives that they, as men, can take responsibility for family planning. Providers often may leave out vasectomy, however, when counseling women. They may forget vasectomy, or they may assume that women's husbands would not be interested. But all clients should be told of all methods. Even if they do not want sterilization now, clients should know about the method so that they can consider it later.

Good counseling is especially crucial with sterilization, male or female, because the procedures should be considered permanent. Vasectomy reversal, although feasible, is difficult to obtain, involves riskier surgery than vasectomy itself, is expensive, and often does not succeed in restoring fertility (124, 195).

In counseling, therefore, the provider makes sure that the client understands the permanence of vasectomy. The provider also helps the client recognize whether he might regret his vasectomy in the future. Regret is most likely if a man remarries or if one of his children dies (124). The provider should ask the client to consider these possibilities. Men also may regret sterilization for other reasons. Some of the signs that providers watch for are:

- Youth or immaturity,
- Only one or two children,
- Single or in an unstable relationship,
- Pressure from others to have the vasectomy,
- Sexual problems or the belief that vasectomy will improve sex life,
- A wife who opposes the procedure (122, 124).

If a provider notes any of these factors, he or she should discuss them thoroughly with the client to determine if vasectomy really is the best choice for him.

Also because sterilization is permanent, many programs require a signed consent for male or female sterilization. The signed consent form documents that the client understands the risks and the permanence of the procedure and has chosen it freely, without pressure or coercion from others. A signed document does not guarantee informed consent, however; the form is valid only if consent truly is informed and freely given.

As extra assurance that a decision is well-considered, some programs schedule the procedure several days after counseling, if that is convenient for the client. In every case, just before performing the vasectomy, the provider should ask the client again whether he is sure of his decision (124, 197).

Good care after vasectomy. Although complications after vasectomy are uncommon, they are most likely to occur during the first 48 hours after surgery. Therefore it is important to have providers on call to advise or treat clients who report problems (10). On a longer-term basis, a good program will provide follow-up consultation and, if possible, sperm-count testing of semen (10, 197, 201). Because vasectomy is not effective immediately, clients must use another method of birth control for 20 ejaculations, two to three months, or until tests of semen find no sperm.

Programs must be well-publicized. Even where vasectomy is available and services are high-quality, men cannot use them if they do not know about them (see p. 15). Also, publicity starts men thinking—and talking—about vasectomy. In one study of US men, it was found that deciding for vasectomy usually takes at least six months and can take 2 to 10 years (121). Providers cannot be expected to take full responsibility for informing men over such a long period. Furthermore, most men find it helpful to discuss vasectomy with their spouses, family, friends, and other men even before asking health personnel about it and certainly before making their final decisions. Publicity, especially through the mass media, stimulates such discussion (38, 121, 122).

Successful Programs

Outside South Korea, India, and China, where vasectomy has been a major part of government family planning programs, private voluntary organizations have often taken the lead in developing vasectomy services. Two small but successful programs, built on the elements of quality, are run by Colombia’s PROFAMILIA and Thailand’s Population and Community Development Association (PDA).

Colombia. In 1985 PROFAMILIA, an affiliate of the International Planned Parenthood Federation, established men-only clinics in Bogota and Medellin. In 1986 these two clinics performed more than 1,000 vasectomies, 77% more than the number performed in all of PROFAMILIA’s clinics in 1985 (58, 182, 189).

In 1988 and 1989, to expand services without building new facilities, PROFAMILIA tested a new program. At four of its conventional, women-oriented family planning clinics, PROFAMILIA hired special personnel and set up men’s services, which were promoted through the mass media and by field workers. Procedures were scheduled when no male clients were being seen, but at two of these clinics PROFAMILIA took the additional step of setting aside consultation times for men only. As a group, the four experimental clinics performed 501 vasectomies in 12 months, more than twice the previous year’s total of 228. On a monthly basis each of these clinics performed an average of 10.3 vasectomies, nearly double the average of 5.2 done at two conventional PROFAMILIA clinics used as controls (188, 189).

Among the four experimental clinics, those with men-only hours performed more vasectomies than those with mixed hours, but the difference was not significant. This suggests
Table 2

Men's Awareness of Vasectomy

<table>
<thead>
<tr>
<th>Place &amp; Date (Ref. No.)</th>
<th>Description of Respondents</th>
<th>Percentage of Men Who Have Heard of:*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil, Salvador 1988 (115)</td>
<td>515 randomly selected ever-married men age 25–49</td>
<td>Vasectomy 86, Female Sterilization 97, Pill 97, Condom 98, IUD 86, Injection 66, Diaphragm 46, Spermicide NA</td>
</tr>
<tr>
<td>The Gambia 1990 (15)</td>
<td>200 randomly selected married and unmarried men age 18–64 in a rural area</td>
<td>Vasectomy 53, Female Sterilization 82, Pill 80, Condom 85, IUD 55, Injection 86, Diaphragm 42, Spermicide 52</td>
</tr>
<tr>
<td>Haiti 1989 (13)</td>
<td>1,842 randomly selected married and unmarried men age 15–49</td>
<td>Vasectomy 8, Female Sterilization 25, Pill 60, Condom 80, IUD 18, Injection 33, Diaphragm 2, Spermicide NA</td>
</tr>
<tr>
<td>Jamaica 1987 (158)</td>
<td>2,188 randomly selected married and unmarried men age 14–24</td>
<td>Vasectomy 21, Female Sterilization 11, Pill 85, Condom 88, IUD 16, Injection 34, Diaphragm 39, Spermicide 30</td>
</tr>
<tr>
<td>Kenya 1989 (82)</td>
<td>1,116 husbands of respondents to Demographic and Health Survey</td>
<td>Vasectomy 35, Female Sterilization 83, Pill 87, Condom 81, IUD 67, Injection 80, Diaphragm 29, Spermicide NA</td>
</tr>
<tr>
<td>Kenya, Chogoria 1988 (91)</td>
<td>327 randomly selected married men age 30–50</td>
<td>Vasectomy 36, Female Sterilization 69, Pill 97, Condom 94, IUD 93, Injection 88, Diaphragm 58, Spermicide NA</td>
</tr>
<tr>
<td>Nigeria, Benin City and Udo 1986 (137)</td>
<td>1,783 ever- and never-married men age 18–60</td>
<td>Vasectomy 18, Female Sterilization 65, Pill 74, Condom 56, IUD 33, Injection 52, Diaphragm 26, Spermicide NA</td>
</tr>
<tr>
<td>Zimbabwe 1989 (157)</td>
<td>229 married and unmarried men in urban and rural areas</td>
<td>Vasectomy 35, Female Sterilization 55, Pill 98, Condom 97, IUD 38, Injection 62, Diaphragm 19, Spermicide 18</td>
</tr>
</tbody>
</table>

NA = Not asked
*Prompted responses
b Described to respondents variously as "vasectomy," "male sterilization," or "an operation for men that prevents pregnancy"
imately 3,000 vasectomies annually, limited not by demand but by its financial ability to support services (132). In 1987, when the latest family planning survey was taken, almost 6% of married couples relied on vasectomy (170).

PDA emphasizes high-quality, accessible service. Vasectomies are available on a walk-in basis (see photo, p. 3), often free of charge, and the doctor remains on call for 24 hours after the procedure is done (128, 174). In 1987 doctors began using the no-scalpel technique, and PDA now uses that technique exclusively. Its no-scalpel vasectomy center in Bangkok averages 200 walk-in clients per month. The site is also an international training center for the no-scalpel technique. To date PDA has trained 50 physicians from 23 countries (131, 135).

One important feature of Thailand’s vasectomy programs has been effective publicity and communication. Outreach efforts offer information and counseling weeks before mobile-team visits and before festivals. PDA began the first vasectomy promotion, using commercial marketing techniques and professionally produced materials in a wide variety of mass media. For example, PDA adopted the theme that vasectomy is “happy, easy, and fun” and has used humor to dispel myths. An example is the slogan “My Pigeon Flies High After Vasectomy” on T-shirts. To reinforce a positive image of vasectomy, PDA formed a club for vasectomy clients. Its members receive discounts in restaurants, hospitals, and shops (75, 90, 128, 129, 174). Now the number of satisfied users has grown, and word-of-mouth brings in as many clients as PDA can serve. Organized promotion is now limited to announcing the availability of services at the festivals (131).

PDA’s experience suggests that growing public familiarity with vasectomy helps men consider vasectomy. In 1982 only 20% of the men having vasectomies at the King’s Birthday Festival had decided on vasectomy before coming to PDA. At the 1988 Festival 85% of the clients had already thought out their decisions and came in knowing that they wanted vasectomy (128). Apparently, now that vasectomy is better known, more men start thinking about vasectomy before they see a provider.

Publicizing Vasectomy

Vasectomy is the least publicized of all modern family planning methods. Not surprisingly, it is thus one of the least known methods. When women were asked to list contraceptive methods in Demographic and Health Surveys taken in 25 countries between 1986 and 1989, male sterilization was the least familiar modern method in all but the 3 Asian countries surveyed—Indonesia, Sri Lanka, and Thailand—where spermicides and diaphragms were less well known (170). In fact, only in Sri Lanka and Thailand did more than 10% of married women mention vasectomy spontaneously. In just 12 of the 25 countries more than 20% of respondents knew vasectomy when asked about it specifically. Surveys of men report similar results (see Table 2).

Also, vasectomy is poorly understood. Many men still mistakenly equate vasectomy with castration. They are afraid that it will affect their sexual performance. In a mid-1980s survey in South Africa, for example, 46% of mineworkers said that they would no longer be men after vasectomy (60); other surveys show similar findings. These misconceptions—and the fact that men who have had vasectomies cannot father children—lead men to fear that they would lose respect in their communities (18, 60, 172, 177, 195). In a Honduran survey 31% of men surveyed cited this fear (193), as did 53% of men surveyed in Chogoria, Kenya (91). Such fears can be self-reinforcing. For example, in Kenya men who want vasectomies often go to facilities far from home so that their neighbors and relatives will not find out (94). The result, of course, when men keep quiet about their vasectomies, is that other men do not find out the truth about vasectomy from those who know best.

What should be done about this problem? The answer is publicity and promotion—directed to men and their wives—that tells the truth about vasectomy, corrects misperceptions, and portrays the man who chooses vasectomy with a positive image. When vasectomy is publicized, both in the mass media and person-to-person, more couples learn about vasectomy, and more may choose the method (19, 85, 106, 128, 157). For example:

- In Kenya in 1991 advertisements in major daily newspapers and in magazines told where vasectomy services were available. The ads invited readers to send in a coupon for more information. Within two months nearly 700 men had done so (103, 192).
- In 1983 and 1984 the Asociación ProBienestar de la Familia (APROFAM) of Guatemala tested vasectomy promotion using radio broadcasts and two male promoters; 209 vasectomies were performed in a 12-month period. Only 107 had been expected based on service statistics from previous years (19).
- When Promoção da Paternidade Responsável (PROPATER) ran a multimedia promotional campaign in São Paulo, Brazil, in 1989, monthly calls and visits to its clinic jumped from 529 to 1,911 during a 6-week period (84) (see p. 16).
- At PROFAMILIA in Colombia, clinics that promoted male services through the mass media and outreach workers performed twice as many vasectomies as clinics that did no special promotion (189) (see p. 13).

Mass-Media Publicity

Mass-media publicity can increase contraceptive use (31, 78). Although efforts to publicize vasectomy through the mass media have been few and far between, their effects suggest that demand for vasectomy, like demand for other methods, can respond to publicity. Advertisements in newspapers, magazines, radio, and television can present the benefits of vasectomy in ways that win attention and make their point (14, 30, 85, 189). Local ads that give the addresses and telephone numbers of vasectomy services can actually bring clients to the door (14, 41).

Often the first step is overcoming providers’ own reluctance to publicize vasectomy. They may fear adverse reaction from influential groups. They may assume that men would not be interested. They may harbor prejudices and misconceptions of their own against the method. A cautious approach may be the way to start. In Kenya, for example, the service providers promote male involvement in family planning. Encouraging vasectomy is a secondary aim (43).

The next hurdle may be getting the messages into print or on the air. “Gatekeepers” of the mass media—those who control
After messages are created, they should be pre-tested with potential audience members and then shown to policy-makers and other gatekeepers. Then any materials that are not effective and acceptable can be withdrawn or else revised and retested. In Mexico, for example, Promotoría de Planificación Familiar (PROFAM) considered promoting vasectomy with a magazine ad showing a pregnant man. Although a similar ad had been very successful in Brazil (53), in Mexico both men and women interviewed thought it tasteless and offensive. PROFAM did not use it (41).

Impact. In the developing world the case of Promoção da Paternidade Responsável (PRO-PATER) in Brazil offers the best-documented evidence of the impact that promotion can have. PRO-PATER first demonstrated the potential of mass-media publicity in December 1983, when a 3-minute television news report about the PRO-PATER men's clinic in São Paulo immediately doubled clinic attendance. Even more important, attendance remained 54% higher for the following year (53). Then in 1985 PRO-PATER ran a 3-month advertising campaign in magazines. An advertising agency had designed the ads and pre-tested them in PRO-PATER's waiting room. During the campaign the daily number of telephone inquiries doubled. Nearly all of the new calls were inspired by the magazine ads. At the same time, the average number of vasectomies performed daily increased by 76%. Even a year after the campaign, 10% of callers mentioned the ads. PRO-PATER estimated that the campaign generated an additional 1,500 vasectomies (40, 53, 156).

PRO-PATER launched a second, more ambitious campaign in April and May 1989. This time, in addition to print advertisements, PRO-PATER used radio and television spots and, in São Paulo, an electronic billboard for a 6-week period. The campaign theme, "Vasectomy is an act of love," was personified by a pair of snuggling hearts featured in all promotions including an animated television spot that won several awards (84). The main campaign in the spring was followed by rebroadcast of the TV spots for 10 days in the fall and a "minicampaign" in January through early March 1990 involving a magazine advertisement, a mailing to magazine subscribers, and the electronic billboard but without radio or television.

During the April-May 1989 campaign the number of vasectomies performed daily at PRO-PATER jumped 80%, from a mean of 15.2 to 27.5. The number peaked at more than 30 per day toward the end of this campaign. The impact was less clear in other cities at two much smaller clinics operated by other agencies that also participated in the campaign. After the campaign the number of vasectomies performed at PRO-PATER remained high. In the six months after the campaign, the daily number of vasectomies was still 55% higher than the daily number before the campaign (84). Before the campaign the number of vasectomies performed each month had been gradually increasing; if that trend is projected into the postcampaign period, the actual postcampaign daily number of vasectomies performed is still 45% higher.

Telephone inquiries and clinic visits increased markedly in all three cities, and television replaced friends and relatives as the main source of referral. In the six months after the April-May 1989 campaign, friends and relatives again became the most popular referral source, but 34% of callers continued to cite television. By the end of 1989 the average

Imaginative promotion gives men the information that they need to choose vasectomy. In Brazil PRO-PATER launched a 6-week mass-media campaign in 1989 that included television advertisements and this electronic billboard in São Paulo. Vasectomies at PRO-PATER's São Paulo clinic rose by 80% during the campaign.
monthly number of calls and visits in São Paulo had risen from 529 to 679.

While the promotional effort produced a prolonged and perhaps sustained increase in the daily number of vasectomies performed by PRO-PATER, researchers suggest that mass-media promotion will continue to be needed. With vasectomy prevalence at less than 1% of married couples of reproductive age in Brazil as of 1986, word-of-mouth communication is not yet sufficient to maintain the flow of clients (84).

Cost-effectiveness. Mass-media promotion can be a major part of a program budget. In the case of Colombia’s PROFAMILIA, which used radio and newspaper, promotional costs amounted to one-third of the organization’s budget for the 12 months from June 1988 to May 1989 (see p. 13). Because of the first-time expense of launching new services, the total cost per couple-year of protection (CYP) at the experimental clinics, for services plus promotion, was more than US$9, well above that in PROFAMILIA’s separate male clinics, which was $3.82, both based on the assumption that vasectomy provides an average of 12.5 years of contraception (188, 189). Both these figures are low, however, when compared with costs per CYP in various other programs.

Television is the most expensive mass medium, but, where TV receivers are common, it can have the greatest impact. The PRO-PATER campaign using television produced a projected 2,136 additional vasectomies in the first year compared with the precampaign period, at a cost of about US$558 per additional client, or about $5.80 per CYP if 10 years is assumed to be the average protection provided by each vasectomy. If, instead, the number of vasectomies expected in the absence of the campaign is projected from the precampaign upward trend, the campaign would produce a projected 1,754 additional vasectomies in the first year, at $70 per additional client, or $7 per CYP (84). PRO-PATER’s 1985 magazine campaign generated an estimated 1,500 additional vasectomies in one year at a cost of $39 per client (53). Assuming that the impact lasted longer than one year would lower estimated costs per additional client, of course.

Mass-media promotion becomes more cost-effective as the size of the audience grows. In APROFAM’s vasectomy communication research in three Guatemalan communities, an enthusiastic male promoter, who organized community meetings and advised potential clients, appeared to be the most economical on a local basis, costing about US$39 per additional procedure compared with $148 for radio promotion alone (19). If the fact that radio can reach a wider area were considered, however, radio undoubtedly would be more cost-effective for a widespread campaign (150). PROFAMILIA, for example, already offered vasectomy in at least 23 clinics in Colombia at the time of its radio and print promotion (188, 189).

Estimates of the true cost-effectiveness of mass-media publicity should consider the number of potential clients reached as well as the number of vasectomies performed in the short run. Mass-media publicity can continue to generate interest for at least a year after a campaign ends; magazines, for example, continue to circulate long after the ads in them have been paid for, and word-of-mouth extends the impact of all media. Therefore, when gauging the cost-effectiveness of promotion, programs should assume impact over a long period (41, 157, 189). Also, it is important to remember that, by increasing knowledge or starting a man thinking, public-ity may ultimately inspire a decision years later, which cannot be clearly credited to the campaign.

Another cost-effective use of the mass media is through public relations—that is, gaining media coverage as news or a special event without paying for space or air time. Where advertising vasectomy is new, the advertising itself often attracts attention and can generate news coverage, which is essentially free publicity. Also, in news interviews on television and radio and in newspapers, doctors, other clinic staff, and men who have had vasectomies can offer testimony to the ease and safety of the procedure. Indeed, such appearances by satisfied users can reinforce the impact of face-to-face meetings with potential clients (37, 72, 189).

Expense need not always be a barrier to mass-media promotion. Sometimes media agencies will donate advertising time or space to family planning programs. This dramatically reduces overall costs (30). In any case, promotion is vital since vasectomy is the least-known contraceptive method and men need time to make decisions (19, 34).

Person-to-Person Communication

Interpersonal communication is a crucial element in promoting vasectomy. To increase awareness and use, family planning workers distribute printed material and give talks to community gatherings, at clinics, and when visiting homes and workplaces.

Outreach. Where the mass media have not been used, many people may get their family planning information from field workers. Field workers can see potential clients repeatedly, which may be important to a lengthy decision-making process. Besides making home visits and leading community discussions, field workers often accompany clients going to have their vasectomies (80, 124, 154).

Although female field workers can discuss vasectomy and should do so with women, many men seem to be more comfortable with other men. Therefore it is often best to employ male outreach workers who focus on largely male audiences such as labor unions, political groups, factory and farm workers, and the military (14, 51, 92, 104, 154).
The New Zealand male is a complex character. For years the popular image has been the rugby-playing, beer-swilling macho man. But the real New Zealand male cares about much more than beer and rugby. Figures showing he is more likely to choose vasectomy than men in other countries back this up. The most recent survey, in 1983-86, found that 23% of married men had had vasectomies. Vasectomy accounted for almost one-third of family planning among surveyed married couples (142). And the figures may be up since then.

Dr. Margaret Sparrow, one of the most experienced practitioners of vasectomies in New Zealand, says men are beginning to take more responsibility for contraception. Many men cite vasectomy as “the part I can play.” For these men there is satisfaction in being able to do something for their wives or partners.

Dr. Sparrow believes this increase in male responsibility has a lot to do with their experience in the birth process. Since the late 1960s men have been able to attend the birth of their children. Today it rates for a woman in New Zealand to give birth without the support and attendance of her partner. This experience has had a marked impact on men, and Dr. Sparrow thinks many men now opting for vasectomy see the decision as their contribution to family life.

**Popular for Many Reasons**

The reasons that New Zealand has the highest rate of vasectomy in the world are many and varied, however. Male sterilization is the cheapest, least complicated, and most convenient form of contraception. If a man wants to have a vasectomy, it is a relatively simple procedure, much simpler than a woman having a tubal ligation.

By international standards New Zealanders have good access to modern and efficient medical services. There are no legal barriers, and a variety of providers offer voluntary sterilization. Tubal ligations and vasectomies are available through the public health system. Not all hospitals do them, however, and waiting lists can be daunting. Both procedures are carried out in the private sector, with vasectomy being the cheaper option. The rate of men, per 100,000, attending private hospitals for vasectomies between 1978 and 1988 declined by 80%. However, the major reason for this decline was cost. Some general practitioners in private practice offer vasectomies as well.

The services provided by the larger clinics of the New Zealand Family Planning Association (NZFPA) offer the best alternative for many men. Recent figures show an 18% increase between 1989 and 1991 in the number of men attending the clinics for vasectomies. Confidential pre-vasectomy counseling and checkups as well as NZFPA’s reputation as the leading professionals in the field of sexuality education and contraception make it the first choice for many men seeking permanent contraception. From a financial point of view, NZFPA’s NZS200 (US$110) for a vasectomy is lower compared with the cost of an unplanned pregnancy or a private hospital fee for vasectomy. Waiting lists are not a problem at NZFPA.

New Zealanders are high users of contraception. In the past they were high users of the contraceptive pill, but publicity about possible adverse long-term effects of the pill and the experience of side effects have led to a decrease in its use. There is a similar disillusionment with intrauterine devices and other contraceptive methods. Also, although prescription charges for these methods are lower than other prescription charges, cost is still a barrier for many. Doctors’ fees are another disincentive.

Condoms, promoted for safer sex, have not been popular as a regular form of male contraception. In recent years, however, as more men practice sexual responsibility, condoms have become more popular.

Recently, vasectomy may be getting a push from plans to reform health care funding. Moves towards “user-pays” health and education services, and a fear of how far these charges will go, are causing more people to think of permanent contraception.

Publicity has helped, too. A higher public profile for NZFPA’s clinics and education services has helped raise awareness of vasectomy. Through radio, television, and the print media, NZFPA is telling New Zealanders that vasectomy is a viable contraceptive choice.

Last year two radio stations became involved in a competition where the winners received a free vasectomy and pre-vasectomy counseling. One promotion was the initiative of two radio personalities who had had vasectomies, and the other was part of a local NZFPA awareness campaign. The prizes went to the men who gave the best reason for wanting a vasectomy. Both promotions stimulated radio discussions, and one winner was announced on national television.

**Who Has a Vasectomy?**

A profile of 3,000 vasectomy cases in NZFPA’s Wellington clinic, compiled by Dr. Sparrow, shows that 65% of men having vasectomies are in their 30s. But the ages ranged from 20 to 62. The older men all had younger wives, and the two 20-year-olds were referred to the clinic by their general practitioners. One has since had the operation reversed.

Nearly 77% of the 3,000 men had fathered two or three children, and about 7% had one child. A spouse’s consent is not required for sterilization. This means childless, single men can and do opt for vasectomy. Just 5% of the 3,000 men had no children, however.

Men of European ancestry are the main vasectomy clients. Provisional 1991 census figures show that 74% of the New Zealand population is of European ancestry, 10% Maori, 4% Polynesian, and 13% other. In comparison, at the Wellington clinic 95% of men having vasectomies were of European ancestry, 3% Maori, 3% Asian, and 1% Polynesian. Similarly, Health Department figures show that public facilities non-Maori men are more likely to have vasectomies than Maori men.

For many reasons, vasectomies are popular with the New Zealand male. Whether it is a result of a more caring approach from our men, increased publicity, preference over other methods of contraception, or the advent of “user-pays” health care, it looks like a trend that is here to stay.
Workplace promotion. A logical way to reach potential vasectomy clients is through programs at factories and other worksites. The workplace can be a good place for men to meet and talk with men who have had vasectomies. A workplace program also can be convenient for workers who are not free during family-planning clinic hours. For example, during its first three years of operation, largely through educational presentations at factories PRO-PATER attracted more than 4,000 men seeking vasectomy. The agency held regular sessions at workplaces, usually with groups of 20 to 60 men (39, 165). Diminished funding recently has forced PRO-PATER to abandon workplace promotion, however.

Promoting vasectomy in the workplace is most effective in companies with a substantial number of older male employees, who are more likely to have all the children they want. Also, it works best when family planning representatives give talks and answer questions in addition to handing out printed material (171). A workplace program conducted by the Centro de Investigación sobre Fertilidad y Esterilidad (CIFE) in Mexico City led to very few vasectomies because 71% of the workforce was ineligible (too young, too old, female, unmarried, or with fewer than two children) and only 19% of the 867 companies approached permitted on-site talks (3, 106, 136).

Successful workplace promotion of any contraceptive method requires early and strong commitment on the part of management, knowledge of workforce characteristics, and thorough training for clinic staff and in-plant volunteers. The Philippines Population Center Foundation, with John Snow Inc. and Johns Hopkins Population Communication Services, developed consultation programs for 21 companies, all of which had or else established on-site health facilities. Although vasectomy was not specifically promoted, workers' perceptions of vasectomy became more accurate: For example, the percentage of workers who equated vasectomy with castration dropped from 48% in 1988 to 21% in 1990. No increase in the use of vasectomy was seen, however (98, 155, 164).

**Still Not Widely Used**

The new no-scalpel technique, more attention to accessible, high-quality services, and more publicity and promotion for vasectomy offer a threefold approach to changing the underutilization of vasectomy. Worldwide, vasectomy currently protects an estimated 41.5 million couples from unwanted pregnancy (see Table 3). This number is 8.5 million more than in 1983 (99). About 5% of all married couples of reproductive age rely on vasectomy; this is about the same percentage as in 1983. In other words, the number of vasectomies has kept pace with population growth, but the method has not grown more popular. These estimates are based primarily on findings from surveys of married women of reproductive age. Only a few national surveys have questioned men directly about their use of contraceptive methods.

Worldwide, vasectomy lags behind female sterilization, IUDs, oral contraceptives, and condoms. Compared with the 41.5 million married couples relying on vasectomy, almost 140 million couples rely on female sterilization (31), 100 million women use IUDs, 65 million use oral contraceptives, and 45 million use condoms.

World numbers hide the very low levels of use in most countries. About three-fifths of all couples relying on vasectomy are in China and India. Vasectomy remains rare in the rest of the developing world and especially in sub-Saharan Africa, North Africa, and the Near East. Among developed countries vasectomy is popular only in Australia, Canada, Great Britain, the Netherlands, New Zealand, and the United States (see Table 4).

In contrast to most of the world, substantial increases in vasectomy use have occurred recently in a few countries (see Figure 3). Indeed, in a few countries vasectomy use has been increasing as fast as use of female sterilization.

### Asia

Although not nearly as popular as female sterilization, vasectomy is a major family planning method in several Asian countries—South Korea, China, India, and Thailand. **South Korea** has the highest recorded vasectomy prevalence in the developing world. In 1988, the year of the last available survey, 11% of married women of reproductive age, or 14% of contraceptors, reported that their husbands had had vasectomies. More than three times as many, however, relied on female sterilization. Sterilization, both male and female, has accounted for an increasing proportion of all Korean...

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**Table 3**

<table>
<thead>
<tr>
<th>Region</th>
<th>% of Couples Relying on Vasectomy</th>
<th>Number of Couples Relying on Vasectomy (in thousands)</th>
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<tbody>
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<td><strong>DEVELOPING AREAS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asia</td>
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</tr>
<tr>
<td>China</td>
<td>8</td>
<td>18,100</td>
</tr>
<tr>
<td>India</td>
<td>7</td>
<td>13,000</td>
</tr>
<tr>
<td>Other Asia &amp; Pacific</td>
<td>1</td>
<td>800</td>
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</tr>
<tr>
<td>Near East &amp; North Africa</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>All developing areas</td>
<td>5</td>
<td>32,300</td>
</tr>
<tr>
<td><strong>DEVELOPED AREAS</strong></td>
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<td></td>
</tr>
<tr>
<td>Australia &amp; New Zealand</td>
<td>13</td>
<td>400</td>
</tr>
<tr>
<td>Europe (includes Eastern Europe and former USSR)</td>
<td>3</td>
<td>3,000</td>
</tr>
<tr>
<td>North America</td>
<td>13</td>
<td>5,200</td>
</tr>
<tr>
<td>Other developed</td>
<td>2</td>
<td>600</td>
</tr>
<tr>
<td>All developed areas</td>
<td>5</td>
<td>9,200</td>
</tr>
<tr>
<td>WORLD</td>
<td>5</td>
<td>41,500</td>
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</table>
Table 4
Percentage of Married Women of Reproductive Age Relying on Vasectomy

<table>
<thead>
<tr>
<th>Region &amp; Country</th>
<th>Ref. No.</th>
<th>Year</th>
<th>% Using Any Method</th>
<th>% Vasectomy</th>
<th>% of Contraceptors Using Vasectomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASIA &amp; PACIFIC</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Bangladesh</td>
<td>185</td>
<td>1985</td>
<td>25</td>
<td>2</td>
<td>6</td>
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<tr>
<td>China</td>
<td>186</td>
<td>1988</td>
<td>72</td>
<td>8</td>
<td>11</td>
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<tr>
<td>Hong Kong</td>
<td>186</td>
<td>1987</td>
<td>81</td>
<td>1</td>
<td>4</td>
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<tr>
<td>Korea, Rep. of.</td>
<td>185</td>
<td>1985</td>
<td>70</td>
<td>9</td>
<td>13</td>
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<tr>
<td>Nepal</td>
<td>86</td>
<td>1988</td>
<td>77</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>170</td>
<td>1987</td>
<td>62</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Thailand</td>
<td>170</td>
<td>1987</td>
<td>66</td>
<td>6</td>
<td>9</td>
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<tr>
<td>LATIN AMERICA</td>
<td></td>
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<tr>
<td>Brazil</td>
<td>170</td>
<td>1986</td>
<td>66</td>
<td>1</td>
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<td>Mexico</td>
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<td>1987</td>
<td>53</td>
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<tr>
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<td>1986</td>
<td>76</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Great Britain</td>
<td>170</td>
<td>1989</td>
<td>72</td>
<td>12</td>
<td>17</td>
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<tr>
<td>New Zealand</td>
<td>142</td>
<td>1983-86</td>
<td>74</td>
<td>23</td>
<td>31</td>
</tr>
<tr>
<td>Netherlands</td>
<td>186</td>
<td>1988</td>
<td>71</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>Norway</td>
<td>186</td>
<td>1988</td>
<td>84</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>United States</td>
<td>117</td>
<td>1987</td>
<td>74</td>
<td>13</td>
<td>17</td>
</tr>
</tbody>
</table>

Note: This table lists only countries where one survey since 1985 showed that 1% or more of married women of reproductive age relied on vasectomy.

family planning in recent years. Since the mid-1980s the Korean national family planning program has vigorously promoted vasectomy. Several government ministries also have been involved. For example, a Defense Ministry program provides information on vasectomy to all new recruits in the armed forces reserves (203).

For almost three decades South Korean government policy has strongly emphasized family planning. During this time an unprecedented decline in fertility has taken place. In 1960 the total fertility rate—approximately the average number of births per woman—was six. By 1970 the total fertility rate had fallen to about four births per woman, and by 1987, to 1.6—a level lower than the low fertility in European countries such as Sweden, Norway, and France. As a result, the Korean government has changed its emphasis from government family planning programs to delivery through private organizations and national medical insurance. In this context annual national sterilization goals have been reduced from 300,000 new clients annually in 1986 to 60,000 in 1991 (66).

In China about 18 million married couples rely on vasectomy. Over half of these—10 million—are in the province of Sichuan, where the ratio of vasectomy to female sterilization is 4.6 to 1 (45). Chinese couples using vasectomy account for over 40% of all couples relying on vasectomy worldwide and about 8% of Chinese couples of reproductive age. By comparison about 28% of Chinese couples rely on female sterilization, according to a 1988 survey. The IUD, used by 30% of married couples, remains the most popular method in China. Overall contraceptive use is very high in China. In 1988, 72% of married couples used some method of contraception (186). The no-scalpel vasectomy technique is being adopted in China. More than 9 million no-scalpel procedures have been performed, primarily in Sichuan Province, where the technique was first developed, is widely available, and is actively promoted (202) (see p. 4). Since 1982 the prevalence of vasectomy has increased by 10%, while reliance on female sterilization has increased by two-thirds, and IUD use has changed very little.

In India an estimated 13 million couples—about 7%—rely on vasectomy. These 13 million amount to over 30% of all vasectomy users worldwide. Use of vasectomy has been growing in India, now up one million from the 1983 estimate. Its use has not grown as fast as that of other methods, however. In particular, female sterilization—the most widely used method in India—has increased rapidly. About 80 million Indian couples use some form of contraception, or about 45% of all couples of reproductive age (108). Of these couples, about 39 million women, or 22%, are now protected by female sterilization, compared with about 16% protected by vasectomy.

Recently, female sterilization has continued to increase rapidly in India while the number of vasectomies has leveled off (31, 109). Indian national family planning program officials attribute the greater popularity of female sterilization to the introduction of laparoscopy, which physicians and clients prefer to the previously used laparotomy. It is also possible that the Indian men willing to be sterilized already have been or that the field worker-based system for recruiting clients is more likely to reach women than men (22).

In Thailand vasectomy use has been increasing steadily since the 1970s but has consistently lagged far behind female sterilization. In 1987, 6% of Thai married couples of reproductive age relied on vasectomy, compared with 23% relying on female sterilization. From the mid-1970s to the early 1980s, the proportion of couples relying on vasectomy doubled, while the proportion relying on female sterilization tripled. Since 1984 the prevalence of both vasectomy and female sterilization has changed little (170, 185). Analysis of data from the 1987 Demographic and Health Survey suggests that sterilization may have reached a saturation point in Thailand. Over one-third of women with two children and half of those with three children are protected by either male or female sterilization (152).

In China, South Korea, and Thailand, energetic national family planning program efforts to make vasectomy widely available have contributed to its increasing use. The spread of the no-scalpel technique also has played a role in the increased popularity of vasectomy in China and Thailand. In South Korea economic development and accompanying changes in the status of women have probably contributed to the increased popularity of vasectomy. As rapid urbaniza-
tion has brought large numbers of Korean women into the paid labor force, choosing a family planning method has increasingly become an important household decision, and couples may be more likely to discuss vasectomy as a family planning choice (100, 203).

Other Developing Countries

Vasectomy is rare in Latin America, and even more so in Africa and the Near East. Although pilot and small-scale programs operate successfully in a few countries (see p. 8), no surveys in these regions have found more than 1% of couples of reproductive age protected by vasectomy. Where services are available and promoted, however, vasectomy prevalence often increases. In Mexico, for example, where no-scalpel vasectomy services are expanding from Mexico City to the rest of the country through the social security system, vasectomies performed by the social security system have doubled in two years (194) (see p. 6).

Developed Countries

In the United States 4.6 million couples rely on vasectomy, accounting for more than 10% of all vasectomy users worldwide. These couples make up about 13% of US married couples of reproductive age and 17% of couples using contraception. Vasectomy is the third most popular method among married couples, after female sterilization and oral contraceptives. Vasectomy has been widely used in the US for almost 30 years. Its popularity soared in the late 1960s and early 1970s, and for a time vasectomy prevalence exceeded that of female sterilization. Thereafter, as female sterilization became more available and better known, the relative popularity of vasectomy began declining. National surveys, conducted in 1973 and 1976, showed male and female sterilization to be about equally prevalent, but by 1982 female sterilization had clearly surpassed vasectomy (52, 70, 99, 116). Vasectomy is still gaining popularity faster than most other methods, however. For example, since 1982 the use of vasectomy has grown somewhat slower than use of female sterilization but still about three times faster than oral contraceptive use.

New Zealand has the highest vasectomy prevalence in the world. Widely used since the 1970s, vasectomy appears to grow ever more popular. The most recent national survey, conducted from 1983 to 1986, showed that 23% of all married couples of reproductive age, or 31% of those using contraception, relied on vasectomy. By comparison, 19% of couples, or 26% of contraceptors, relied on female sterilization (see box, p. 18).

In Australia 10% of married women of reproductive age rely on vasectomy and 28% on female sterilization (186). Both vasectomy and female sterilization have been steadily increasing in popularity since the early 1970s, when the Australian Medical Association dropped its opposition to the procedures (207).

Figure 3. Changes in Prevalence of Vasectomy
As Reported in Surveys of Married Women of Reproductive Age, 1975-1989

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<thead>
<tr>
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<tbody>
<tr>
<td>China</td>
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<td>South Korea</td>
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Sources: Paul et al. (142), UN (186)

Vasectomy also is popular in Great Britain and Canada. In both countries national health insurance usually covers the cost of voluntary surgical contraception. In Great Britain an estimated one million couples rely on vasectomy. Since 1983 the proportions of couples relying on vasectomy and female sterilization have been about equal. In 1983, 10% of married women age 18 to 44 relied on vasectomy and 11%, on female sterilization. By 1989 the proportion relying on vasectomy had increased slightly, to 12%, while the proportion relying on female sterilization had not changed (184). In Canada a 1984 survey found 13% of couples relying on vasectomy and 31% relying on female sterilization (185). A recent study of health insurance data, however, shows that from 1976 to 1986 the annual number of vasectomies per 1,000 men age 20 to 49 increased, while the number of tubal ligations per 1,000 women age 15 to 44 decreased (4).

Vasectomy is not an important method in most other developed countries. In continental Europe recent survey data are limited, but surveys conducted in the 1970s and early 1980s found that in most countries less than 5% of married couples relied on vasectomy (70). A notable exception is the Netherlands, where 1982 and 1988 surveys found that more than 10% of married couples relied on vasectomy (186, 187). Neither male nor female sterilization is popular in Japan. The prevalence of the two methods combined is no more than 5% of married couples (185).

Quick Guide to Vasectomy Counseling Available Free

Health care personnel in developing countries may order additional free copies of the Quick Guide to Vasectomy Counseling included with this issue of Population Reports; write to the Population Information Program, Center for Communication Programs, The Johns Hopkins University, 527 St. Paul Place, Baltimore, MD 21202, USA (Fax: 410-659-6266). In developed countries, five copies for US$1.
An asterisk (*) denotes an item that was particularly useful in the preparation of this issue of Population Reports.

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