TABLE 1

Impact of Spermicide-Coated Condoms and Other Factors on UTI Risk: Data from U.S. Case-Control Study

	Odds Ratio†	95% Confidence Interval
Use of N-9 coated condoms††		
>2 times/week	5.65	1.56-20.42
>1-2 times/week	3.34	1.21-9.21
<1 time/week	1.59	0.81-3.08
Use of uncoated condoms††		
>2 times/week	2.36	0.80-6.96
>1-2 times/week	0.91	0.38-2.19
<1 time/week	0.91	0.53-1.56
Frequency of intercourse (times/week)▯	1.14	1.06-1.23
History of UTI	2.64	2.00-3.50

† Adjusted for relevant known risk factors, including frequency of intercourse, history of UTI, and diaphragm/spermicide use.
†† Within previous month.
▯ Odds ratio represents incremental increase in risk with each episode of intercourse (times per week).
Source: Fihn et al., 1996.[3]

How should family planning programs respond to this information? Clearly, condoms and other barrier methods are an important contraceptive choice and play a key role in STD/HIV prevention. At the same time, since UTI is a common health problem among all sexually active women, family planning providers should be aware of the symptoms of UTI and be able to provide advice and referral or treatment to women with UTI. Where condoms or diaphragms plus spermicide or spermicides alone are made available, providers should be aware of the increased risk of UTI among users of these products. Providers also should inform women of the signs and symptoms of UTI and what to do should they acquire a UTI. Furthermore, it is important to continue research and development of new spermicides/microbicides that destroy sperm cells and organisms that cause STDs but do not affect the normal vaginal flora or vaginal epithelium.

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SAFETY

Barrier Methods and UTI

Urinary tract infections (UTIs) are an important women's health concern worldwide. In the United States, it has been estimated that over six million medical visits each year are because of acute UTI. The most common cause of UTI is infection with *Escherichia coli* originating from a woman's digestive tract; the most common UTI symptoms are painful, frequent, and/or urgent urination. Some 20 percent of women with a UTI experience frequent recurrences of infection following the initial infection; in about four percent of women requesting UTI treatment, the infection has spread to one or both kidneys.[1]

It has long been known that diaphragm/spermicide use increases the risk of UTI in women by as much as threefold. Increasing evidence has suggested that this risk is linked to the impact of spermicide, specifically nonoxynol-9 (N-9), on vaginal flora rather than to any obstruction caused by the diaphragm's rim. While other independent factors, including recent sexual intercourse and a history of UTI, clearly increase risk, recent studies show that use of a diaphragm or condom in conjunction with spermicide can predispose women to UTI.

In a recent U.S. prospective study of risk factors for UTI, 796 women age 18 to 40 at two study sites were monitored for symptomatic UTI.[2] During the six-month study period, 180 UTIs occurred among the women being followed. The study found that recent diaphragm/spermicide use, recent intercourse, and a history of UTI were independent risk factors for UTI. Spermicide use alone was associated with a threefold increased risk of UTI at one of the study sites. At both sites, the relative risks of UTI increased with increased diaphragm/spermicide use: at the site with younger, more sexually active women, the relative risks associated with diaphragm/spermicide use within the previous week were 1.9 for one use, 3.8 for two uses, 7.3 for three uses, and 14.1 for four uses ($P<0.001$).

A U.S. retrospective case-control study also found increased risks for UTI among women whose partners used spermicide-coated condoms.[3] This study involved analysis of data from 604 UTI cases and 629 controls (all women age 18 to 40). Overall, the study found that the unadjusted odds ratio for having an acute UTI was 1.24 (95% confidence interval 0.94-1.63) among women who had used any type of condom during the previous month and 1.72 (95% confidence interval 1.08-2.75) among women who had used an N-9 coated condom during the previous month. Risks of UTI were higher among women who used spermicide-coated condoms more frequently (see Table 1).

Together, these and other data provide strong evidence that use of spermicide in conjunction with other barrier methods, and possibly alone, increases a women's risk of UTI. Several studies have shown that diaphragm/spermicide use and condom/spermicide use are associated with marked changes in the vaginal flora, characterized by an increase in *E. coli* and a decrease in normal vaginal flora, including vaginal lactobacilli and anaerobic organisms that help maintain a normal vaginal environment.[4, 5] Changes in urine flow in diaphragm users (often thought to be a cause of UTI) seem to be relatively small.[4]

TABLE 3

Contraception for Women Age 35 and Older

Method	Advantages	Restrictions on Use†	Counseling Issues
Sterilization	• Highly effective. • May protect against ovarian cancer.	• Not appropriate if woman is uncertain about desire for future pregnancy.	• Sterilization is very effective, although recent studies indicate higher failure rates than previously thought with some techniques.[18, 19] • If pregnancy is suspected, be alert for ectopic risk. • No protection against STD.
Hormonal Contraception Combined OC or Injectable	• Highly effective. • Provides estrogen replacement and good cycle control.	• Not appropriate for women over age 35 who smoke, have other CVD risk factors, or current breast cancer.	• Importance of consistent and correct use. • Importance of recognizing CVD-related symptoms. • No protection against STD.
Progestin-only contraception (mini-pill, injectable, NORPLANT®)	• Highly effective. • Progestin source for women receiving estrogen therapy.	• Not appropriate for women with unexplained vaginal bleeding or breast cancer.	• Importance of consistent and correct use. • Delay in return to fertility with injectables. • No protection against STD. • Breakthrough bleeding common.
IUDs Copper-releasing IUD	• Highly effective. • Requires little follow-up care unless problems occur. • Effective for up to 10 years (Copper T 380A).	• Not appropriate for women with cervical, endometrial, or ovarian cancer; or if gynecological abnormalities make IUD insertion difficult.	• If pregnancy is suspected, be alert for ectopic risk. • No protection against STD.
Hormone-releasing IUD††	• Effective for up to 5 years. • Reduces blood loss. Fewer removals for bleeding and pain. • Possible progestin source for women receiving estrogen therapy.	• Same as for copper IUD.	• Same as for copper IUD.
Barrier Methods Male or female condom	• Under user's control. • Condoms protect against STD.	• Requires high motivation to use consistently and correctly.	• Importance of consistent and correct use.
Diaphragm, spermicide	• Diaphragm/spermicide offer some protection against STD. • Spermicide may help with vaginal dryness.	• Same as for male or female condom.	• Importance of consistent and correct use. • Use of diaphragm/spermicide may increase risk of urinary tract infection.
Periodic abstinence	• Older couples may be better able to follow instructions and comply with abstinence.	• Not appropriate for couples who cannot comply with abstinence requirements.	• Importance of consistent and correct use. • Use may be complicated by irregular cycle lengths and hormone levels. • No protection against STD.

† For a full description of eligibility criteria for contraceptive use, see *Outlook*, Volume 13, Number 4 and Volume 14, Number 1.

†† Hormone-releasing IUDs are more expensive and less available than copper-releasing IUDs.

Hormone Replacement Therapy

Hormone replacement can provide short-term relief from uncomfortable menopausal symptoms and also can offer long-term protection from menopause-related conditions such as cardiovascular disease and osteoporosis. Estrogen alone is prescribed for women who have had a hysterectomy. Women whose uterus is still present generally are advised to take progestin as well, since taking estrogen alone increases a woman's risk of endometrial cancer. For many women low-dose oral contraceptives can be taken for hormone replacement therapy.[14, 15]

Short-term therapy. Potential benefits of short-term hormone therapy in perimenopausal women include fewer bleeding irregularities, fewer vasomotor symptoms, better vaginal lubrication and healthier vaginal tissue, and improved urinary function. In contrast, unpleasant side effects can occur such as breast tenderness, weight gain, fluid retention, and pelvic pain. The need for regular medication and visits to a provider, as well as the fear of possible cancer risk, can detract from the possible benefits for some women.

Long-term therapy. Many studies suggest that long-term use of estrogen by postmenopausal women reduces mortality, primarily due to reduced risk of CVD. The benefit of estrogen use appears to increase with increased duration of use and continue for several years after discontinuing treatment. The amount of protection conferred by hormone therapy depends on a woman's individual risk factors for heart disease. Three studies have estimated an overall reduced risk of almost 50 percent for women who had at any time received estrogen therapy.[2] Current users had a lower risk for coronary heart disease mortality compared with past users.[16] Estrogen therapy either alone or in combination with a progestin also can reduce the calcium loss that occurs primarily in the early postmenopausal years and may help to prevent later fractures.[2] While these results are encouraging, they continue to be debated: use of different hormonal preparations among studies and methodological issues make results difficult to interpret. Furthermore, few analyses have been carried out in developing countries where CVD generally is less common than in developed countries.

Health concerns. A key concern about estrogen therapy in postmenopausal women is its possible association with an increased risk of breast cancer. In many studies, women who used estrogen for 10 to 15 years had an increased risk of breast cancer—up to 50 percent or more compared to non-users.[17] Risk is affected by many factors, including the incidence of breast cancer in a specific region; the specific doses, formulations, and duration of estrogen use; and a woman's personal risk factors.

Contraception for Women in the Middle Years

Although many women have achieved their desired family size by the time they reach 30, women remain fertile until menopause. Contraception is recommended until one year after menses cease. Access to appropriate and acceptable contraception for women in their later reproductive years is important because pregnancy after age 35 carries increased health risks for both a woman and her child. A woman's choice and use of contraceptives during this period is influenced by whether she may want more children, as well as factors such as existing disease conditions (diabetes, hypertension, obesity, anemia, genital tract disorders), previous experience with contraceptives, and smoking status. For women who are experiencing menopausal symptoms, estrogen-containing hormonal methods may be good choices as they can alleviate some symptoms.

Because older women are more likely to have pre-existing conditions, family planning programs should provide careful screening and counseling for these women when providing contraception. Table 3 provides a summary of methods and issues for women aged 35 and older. (For detailed information on eligibility criteria for using contraceptives see *Outlook*, Volume 13, Number 4 and Volume 14, Number 1.)

Program Implications

The population of women in their middle years and beyond is growing, especially in many developing regions. Programs that address the health needs of these women need to be strengthened. An initial step is to provide training to health care personnel on the reproductive health problems associated with menopause and aging. Strategies also should be developed to promote good health behavior in older women. Appropriate educational messages about the long-range value of proper diet and exercise, and the need to seek medical help if specific health problems or concerns arise need to be developed and disseminated. Carefully targeted programs for hypertension and cervical cancer screening also should be considered.

A key challenge will be reaching women who no longer interact with the health care system. In many settings, it may be feasible to use primary health care networks to provide basic services. Community women's organizations may be a particularly appropriate means to communicate with women about the need for and availability of services. To support all of these efforts, community health messages that present the health of middle-aged and older women as important to the whole community are critical.

susceptible to urinary tract infections, including decreased bladder tone, incomplete voiding, genital prolapse, and, in some cases, reduced immune function. Prolapse also can compound reproductive tract infections (vaginitis, cervicitis, PID). In the study of morbidity among women in rural Egypt, women with vaginal prolapse had three times greater risk of reproductive tract infection compared with women not suffering from prolapse.[7] Little is known about women's relative risk of sexually transmitted disease (STD) as they age, but the vaginal changes (thin, dry epithelium and altered pH) likely make women more susceptible to STD infection.[12]

Health Interventions

Educational and emotional support during menopause also is important in helping women deal with symptoms and share concerns. Good health at menopause and beyond is most influenced by a woman's overall health. For example, the best way to prevent CVD is to eat an appropriate diet, get regular exercise, and abstain from smoking. To prevent osteoporosis, it is important to have an adequate diet (including sufficient calcium) throughout life, regular exercise, and to abstain from cigarette smoking and excessive alcohol use.

Health education. Health education about the importance of a proper diet and the risks of smoking is particularly important for menopausal women since they often are not aware of the possible long-term effects of menopause. Among 200 perimenopausal women in Hong Kong and Southern China, none was aware of the problem of osteoporosis or cardiovascular disease in postmenopausal women.[13]

Techniques to reduce urogenital discomfort. Some effects of menopause and aging can be alleviated by specific strategies. For example, continuing to participate in sexual activity may protect women against vaginal atrophy; use of a vaginal lubricant can alleviate discomfort due to vaginal dryness. Regular Kegel exercises (voluntary contraction of the pelvic and urovaginal muscles) can help strengthen the pelvic floor and relieve some forms of incontinence and pelvic discomfort (see box). Pessaries are an option for treating prolapse in some women. A pessary is a simple device inserted in the vagina that helps support the pelvic and vaginal muscles. Pessaries come in a variety of shapes and sizes and must be fitted by a clinician.

Appropriate screening. For some health problems associated with aging, regular health screening and appropriate interventions can help reduce morbidity and mortality. For example, routine blood pressure screening can help identify and monitor women at risk for hypertension and related CVD, so that changes in diet and exercise patterns or medication can be recommended if necessary.

Kegel Exercises

Kegel exercises are voluntary contractions of the pelvic and urovaginal muscles that can help strengthen the pelvic floor and relieve some forms of incontinence and pelvic discomfort. To do Kegel exercises, a woman squeezes the muscles of her vagina as she would to stop a stream of urine. She squeezes for a count of five, then relaxes for a count of five. A variation of this exercise is for a woman to squeeze and relax five times as rapidly as she can, gradually repeating the exercises until she is able to repeat 50-100 times daily.

Early detection of cervical cancer and breast cancer through screening can be an effective intervention. Prevention of cervical cancer through effective Pap smear screening programs has reduced mortality from cervical cancer by as much as 80 percent in some countries.[6] Few developing countries have successful cervical cancer screening programs due to barriers such as lack of infrastructure to support Pap smear screening, lack of treatment services, and lack of awareness about prevention among at-risk women and their providers. Feasible and cost-effective screening programs could be designed that target women 35 years and older, screen relatively infrequently, treat only severe dysplasia, and use relatively inexpensive outpatient treatments such as cryotherapy and loop electrosurgical excision procedures to treat cervical lesions. Screening based on visual inspection of the cervix and other approaches are being investigated in settings where cytology screening programs are not feasible.

Breast cancer also can be detected early. Early detection combined with surgical and associated treatment can reduce mortality in women older than 50 by as much as 30 percent. Breast cancer screening and treatment programs are more expensive and less effective than cervical cancer screening, however. Screening programs include physical examination of the breast by trained health workers, self-examination, and mammography where resources allow. The risks and benefits of these approaches continue to be debated, however.

Hormone therapy. Hormone replacement can be provided (1) on a short-term basis (taken during the menopausal transition) for relief from uncomfortable symptoms associated with menopause or (2) on a long-term basis (10 to 15 years) to protect against risk of CVD and osteoporosis. A woman considering hormone therapy should clearly understand the difference between these two approaches. The risks and benefits of hormone replacement vary depending upon a woman's health, family history, and ethnicity (see box, page 5).

estrogen. Lack of calcium in the diet, inadequate exposure to sunlight, and inactivity also affect bone density. Other risk factors include short stature, being underweight, alcoholism, and cigarette smoking.

Globally, osteoporosis is estimated to occur in about 10 percent of women over the age of 60. Prevalence varies by region and population. It is rare in African countries, frequent in India, and becoming more prevalent in Asian countries.[2] Its incidence is not well documented in Latin America. Earlier age at menopause may be linked to younger age at hip fracture. Data from Pakistan (where the mean age of menopause was 47 years) found that the mean age of hip fracture in women was considerably lower than reported from other parts of the world.[5]

Other Common Reproductive Health Disorders Associated with Aging

Cancers. Reproductive tissue cancers (breast, ovary, endometrium, vulva, cervix) all can be influenced over time by exposure to estrogens and progestins, whether produced by a woman's body or taken therapeutically. The two most frequent cancers among postmenopausal women are breast cancer and cervical cancer.

Breast cancer is the most common cancer among women in all developed countries (excluding Japan) and in Northern Africa, South America, and Western Asia. Since breast cancer is influenced by exposure to estrogen, risks increase with later age at first pregnancy, earlier age at menarche, and later age at menopause. Obesity in postmenopausal women also increases risk of breast cancer.

Cervical cancer is the most frequent cancer among developing country women and the second most frequent cancer in women worldwide. About 500,000 new cases of cervical cancer occur annually worldwide—80 percent of these are in developing countries. Poorer countries and poorer groups of women within countries are at highest risk. Southern Africa and parts of Latin America have a particularly high incidence. Cervical cancer can be controlled through screening at-risk women and treating women with precancerous and cancerous lesions; cervical dysplasia (precancer) can be successfully treated on an outpatient basis.[6]

Genital prolapse. Repeated pregnancies and obstetric trauma can lead to genital prolapse, a painful, debilitating condition. Genital prolapse can involve the vaginal wall or uterus descending below their normal positions. It also can involve protrusion of part of the bladder or rectum from the vagina. A study of gynecological morbidity in rural Egypt found that more than half of women surveyed were suffering from different types of genital prolapse.[7]

Urinary and reproductive tract infections (RTIs). As women age, various factors make them more

Menopausal Experience Varies by Culture

Menopause is experienced differently by women in different cultures. For example, although 85 percent of European and North American women report experiencing hot flushes, they are reported by only 17 percent of Japanese women and about 5 percent of Mayan women from Central America.[8] Experience of hot flushes seems to be related to prior occurrence of premenstrual or menstrual symptoms and general health status. Air temperature also affects frequency of hot flushes. Some researchers suggest that women in warm climates may be less aware of hot flushes because the ambient temperature is generally warm, and they may already wear loose clothing. A high intake of dietary phytoestrogens (from soy products) has been suggested as a possible explanation of the lower frequency of hot flushes in Japanese as compared to Caucasian women.[2]

A woman's experience of menopause also may be influenced by how her culture views aging. North American researchers have tended to focus on the negative aspects of menopause related to disease, aging, and loss of status in society. Descriptions of menopausal women in developing countries tend to emphasize the positive aspects, such as freeing women from the burdens of childbearing and from the cultural restrictions sometimes imposed on younger women who still menstruate.[2] In some societies women are said to appreciate the renewed freedom and influence in their families and communities that come with menopause, and not to regret reduced sexual activity.

In most developing countries, women tend not to seek treatment for menopausal symptoms; when they do, they often are treated for psychological rather than physical symptoms. Among village women in Northern Thailand, menopause is seen as a natural part of the aging process. Although women experienced symptoms and may have visited a practitioner for relief of symptoms, especially psychological symptoms, they did not view themselves as "sick."[9] In Malaysia, 80 percent of 400 women interviewed saw no need to consult a doctor about their menopausal symptoms.[10] In an urban area in Indonesia, only 36 percent of women who experienced menopausal symptoms had seen a doctor about these symptoms.[11] Most women reported they were given tranquilizers for psychological symptoms related to menopausal complaints. The painful intercourse and urine leakage (which had been reported by 29 percent and 18 percent of women respectively) generally were not treated. Some practitioners may overtreat psychological symptoms with tranquilizers and undertreat or ignore other symptoms that could be addressed by diet, exercise, hormonal therapy, or other interventions.

TABLE 1

Women Aged 50 and Older (as a percent of total population) by Region

	1990	2020	Total Increase 1990-2020
Asia	15%	24%	316 million
Latin America and Caribbean	14%	24%	53 million
Africa	10%	12%	49 million

Source: Young, 1994.[1]

reviewed menopause research, and made recommendations for research and clinical practice.[2] Most of the research on menopause comes from developed countries; it is important to generate more data on menopause-related health problems and interventions from developing countries.

The Physiology of Menopause and Related Symptoms

As a woman approaches menopause, the hormone levels in her body start to shift. Estrogen and progesterone levels decline sharply, stabilizing a few years after the final menstrual period. Levels of the two pituitary hormones, follicle stimulating hormone (FSH) and luteinizing hormone (LH), become variable during the menopausal transition, but increase over time.

In addition to irregular bleeding patterns and declining fertility, menopausal women may experience vasomotor symptoms (hot flushes, night sweats), urogenital problems, and psychological symptoms (see Table 2). Not all women experience or report all these symptoms (see box, page 3). Also, some symptoms are experienced more commonly before and during menopause and others after. In a study of almost 3,000 women (aged 40-60) in seven Southeast Asian countries, complaints of vasomotor symptoms and urinary incontinence were largely associated with the menopausal transition through to the first year after menopause, while psychological symptoms largely occurred after menopause.[3] Menopausal symptoms are usually less severe in women who experience natural menopause compared to those in whom menopause is induced by removal of their ovaries or cessation of ovarian function due to chemotherapy or radiation.

Declining estrogen levels lead to urogenital atrophy (decreased vaginal and bladder muscle tone), a thinner vaginal epithelium, and vaginal dryness, which can make intercourse painful. Urinary problems—urgency of urination, pain on urinating, and incontinence (leaking urine)—are reported to affect 25-50 percent of postmenopausal women. Pelvic floor muscles that have been damaged from repeated pregnancies further compound the problem of urinary incontinence.

Health Consequences of Menopause

Certain health risks, including cardiovascular diseases and osteoporosis, increase after menopause.

Cardiovascular diseases. In almost all parts of the world, cardiovascular disease (CVD) is one of the most common causes of death in older women. While various environmental and genetic factors contribute to CVD (diabetes, cigarette smoking, family history of heart disease, and hypertension), data from developed countries indicate that postmenopausal women have a twofold to threefold increase in CVD compared to premenopausal women of the same age.

The risk of CVD increases after menopause due to hormonally influenced changes in blood lipid profiles. Postmenopausal women have higher cholesterol levels (including total cholesterol, very-low-density lipoprotein cholesterol, and low-density lipoprotein cholesterol) than premenopausal women. Other conditions linked to CVD also may be associated with menopause. A recent study in Argentina that assessed risk factors for CVD found that menopause was associated with psychosocial risk factors for CVD (insomnia, depression, irritability), as well as hormonally influenced blood lipid changes.[4]

Osteoporosis. Menopause also triggers a process of reduction in bone mass that can result in pain, disability, and increased risk of fractures (particularly hip and spine fractures in women aged 60-80). The link between osteoporosis and menopause is related to decreasing ovarian hormone levels, particularly

TABLE 2

Symptoms and Consequences of Menopause

Vasomotor	Urogenital	Psychological	Other	Long-term Health Consequences
Hot flushes	Irregular bleeding	Anxiety	Insomnia	Increased risk of heart disease
Sweating	Incontinence	Irritability	Backache	Declining bone mass,
Palpitations	Bladder infections		Headache	increased bone fragility
Dizziness	Vaginal infections		Fluid retention	
	Pain during intercourse			

INSIDE

Barrier Methods and UTI. 7

FEATURE ARTICLE

Reproductive Health: Women in Their Middle Years and Beyond

The health of women during their middle and older years is beginning to be recognized as important in many countries. Women age 35 years and older are an important force in the social, cultural, and economic spheres in their community, yet their health needs often are overlooked. Furthermore, the population of older women (age 50 and beyond) is increasing everywhere, particularly in developing regions (see Table 1). As women age, their health is influenced by many factors: their living conditions, reproductive history, work and home life demands, diet, exposure to infectious and chemical agents, and availability of health care. Certain conditions—some influenced by menopause and others by aging—also affect older women's health and well-being. In many developing countries older women have limited access to health care services, which tend to focus on younger women and their children.

Although definitions vary regarding what constitutes "the middle years," this article looks at reproductive health issues affecting women between the ages of 35-55—before, during, and after menopause. Menopause is defined as the permanent cessation of menstruation, which generally occurs between the ages of 45-55 (in some women menstruation stops abruptly, in most many months of irregular bleeding precede the final menstrual period). The median age of menopause is 50-52 in industrialized countries and about one to two years younger in developing countries. Cigarette smoking is associated with earlier age at menopause. The menopausal transition—the period before menopause when hormonal and clinical changes occur—lasts about four years. Reported physical symptoms associated with the menopausal transition vary among different cultures. Specific diseases associated with the hormonal changes accompanying menopause—circulatory diseases and osteoporosis—also vary in incidence somewhat among different regions.

Much of the information presented here is summarized in a report of a World Health Organization 1994 Scientific Group meeting that updated a 1980 report,

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