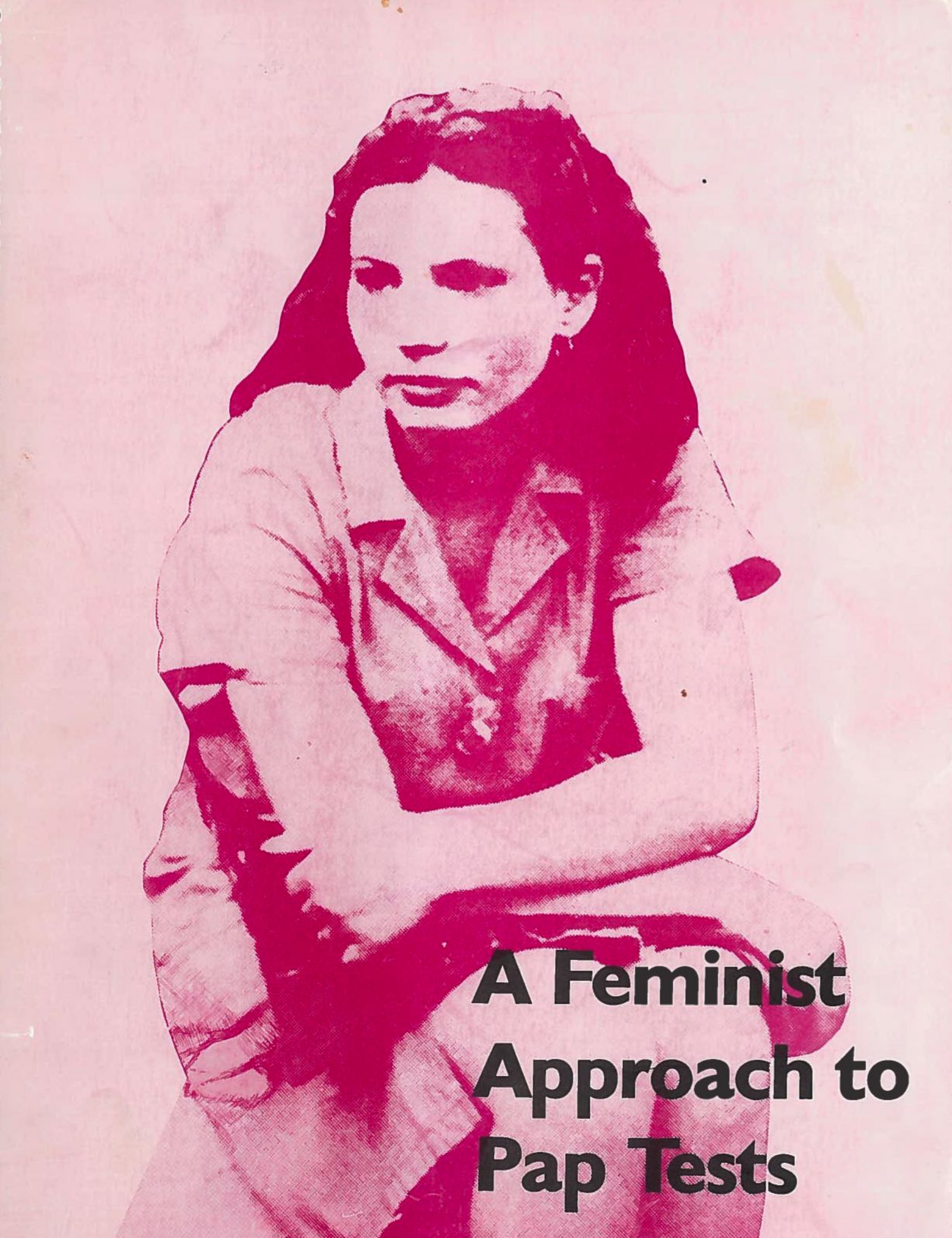


A Feminist Approach to Pap Tests

DESIGN: Robin Barnett

TYPESETTING: Baseline Type & Graphics Cooperative

PRINTING: Press Gang

Some of this material was originally published as a supplement in the February, 1983, issue of *Kinesis*.

GRAPHICS CREDITS:

Cover
Second Class, Working Class
People's Translation Service, Oakland, CA, 1979

Page 3
Michel Hébert
A Book About Sexually Transmitted Diseases
Montreal Health Press, 1984 (used with permission)

Page 4
A New View of a Woman's Body
The Federation of Feminist Women's Health Centers, 1981 (used with permission)

Page 5
A New View of a Woman's Body
(used with permission)

Page 6 (slide preparation)
Diagnosis, July/August, 1979

Page 6 (slide fixing)
Sexually Transmitted Diseases
King Holmes, et al., McGraw Hill, NY, 1984

Page 8
A Book About Sexually Transmitted Diseases
(used with permission)

Page 13
Women's News Service, Australia

Page 15
Bülbül

Page 16
Women in The Struggle for Liberation
World Student Christian Federation, 1975

Page 17
Science for the People
Nov/Dec, 1982

Page 18
San Francisco Women's Yellow Pages, 1981-2

Page 19
Nicole Hollander

Page 21
unkown

Page 23
ISIS

Page 24
Down There, Onlywomen Press, London, 1981

Page 25 (punch biopsy)
A New View of a Woman's Body
(used with permission)

Page 25 (biopsy site)
Medical Self-Care, Fall, 1983

Page 26
Medical Self-Care, Fall, 1983

Page 27
Canadian Lung Association

Page 28
Tee Corinne
Women: A Journal of Liberation, Vol. 8, No. 3

Page 30
Patrice Snopkowski

Page 31
A New View of a Woman's Body
(used with permission)

Page 32
unknown

Page 33
San Francisco Women's Yellow Pages, 1981-2

Canadian Cataloguing in Publication Data

Barnett, Robin, 1944-
A feminist approach to Pap tests
Bibliography: p.
ISBN 0-921497-00-8
1. Pap test. I. Fox, Rebecca, 1950-
II. Vancouver Women's Health Collective.
III. Title.
RG107.5.P3B3 1986 618.1'507582 C86-091564-6

Vancouver Women's Health Collective
La Collective de Santé des Femmes de Vancouver
888 Burrard Street • Vancouver, B.C. • V6Z 1X9 • Canada

A Feminist Approach to Pap Tests

(revised edition)

by Robin Barnett and Rebecca Fox
with Mary Doug Wright, research and editing
Fay Raymont, research
Barbara Mintzes, DES sections

THE VANCOUVER WOMEN'S HEALTH COLLECTIVE

The publishing of this booklet was made possible by a grant from
The Ministry of Health, Province of British Columbia.
The views expressed herein are solely those of the authors and
do not necessarily represent the official policy of the
Ministry of Health, Province of British Columbia.

Table of Contents

Introduction

In view of how common Pap tests are for women, we are concerned about the lack of good information and the abundance of surgical procedures surrounding the existence of abnormal Pap results. Several of us have been faced with abnormal test results ourselves and see our work to heal our cervices as part of our ongoing struggle to stay healthy.

Our aim is to pass on the information we have collected through library research, discussion with health care personnel and healers, listening to and reading about other women's experiences. We also want to express some of the opinions we have formed during this process.

Learning that you have an abnormal Pap test and of its possible connection with cervical cancer can result in a myriad of emotions and thoughts. Disbelief, fear, a sense of vulnerability, exhaustion, anger and many more emotions can emerge. Certainly everyone feels the impact in some stressful way: the stress of dealing with our fears around cancer and infertility, and the stress of the medical/surgical maze of procedures and treatments that may lie ahead of us.

We hope that the information we are presenting will help to relieve some of these stresses by providing easily understood explanations, connecting women's common experiences, and by supplying women with information to make thoroughly informed decisions. When we truly understand a situation, we can proceed in a more powerful and purposeful manner, overcoming some of our fears and voicing our deepest concerns.

Emotional concerns

This booklet is written for women with abnormal Pap smear results and for health care workers who see women with abnormal Paps.

Some women may be upset and unable to concentrate on reading this booklet thoroughly. A major point to stress is that an abnormal Pap smear result usually does not mean cancer. Abnormal Pap smear results are not a life threatening situation unless the smear reading reports invasive cancer. As we shall see later in this booklet, abnormal growth takes time to occur. Women have time to assess their own treatment possibilities and feel comfortable about their decisions. A matter of months will probably not significantly change an abnormal result for the worse.

Women with abnormal results may feel pressure from doctors and nurses to undergo treatment as soon as possible. When these health care workers train in schools and hospitals, it is usually women with late symptoms of cervical cancer whom they see as examples of the disease. These are the women who end up in hospital cancer sections. The images of women with gross tumours disfiguring their bodies or dying stay with these health care workers throughout their years of practice. Their training also focuses on relieving symptoms or cutting away abnormal growth so that prevention or possible reversal are not necessarily within their experience. For some of these workers, it is the fear of women proceeding to a late stage of cancer that motivates them to urge their patients to undergo medical and surgical treatments as quickly as possible, even if the existence of cancer is unproven or remote.

Visits with doctors are usually quite short. If a woman is worrying about an abnormal Pap result, it might be difficult to remember to ask every question one has or to remember the answers. It is advisable to try to take someone along who can help with questions and take notes. If a practitioner is not comfortable answering questions or does not give satisfactory answers, then it is best to find another doctor who will answer questions or give a second opinion. It is a woman's right to be fully informed about her own health care.

In many areas doctors train with one another and standards of treatment may be set. There may not actually be any differences of opinion among them, so it may be difficult to find someone sympathetic to the ideas and suggestions for treatment in this booklet. We believe that it is important to know what options exist world-wide, so that an individual can put her suggestions for treatment in perspective and know the best possible options for her care. Unfortunately, in many areas, once a woman has an abnormal Pap smear, she usually begins a path through a pre-set series of procedures. These procedures are based on statistical predictions, rather than individual women's particular needs or good health care practices. Some or all of them may be unnecessary. One physician, Dr. Gusberg, used the term "battered womb syndrome" to describe the effects of investigating an abnormal smear on the emotional, physical and financial well-being of an otherwise healthy woman.

In this booklet, both conventional medical procedures and alternative actions will be presented. While it is true that many alternative practices have not been scientifically proven via large and expensive studies, there are likewise many disputed medical and surgical practices, and controversial issues surrounding con-

ventional cervical cancer management. We are hoping that, better informed of all the options, women will proceed in a course best for them.

A larger perspective

True prevention consists of eliminating or reducing factors that are harmful to us in order to allow our natural body defences to work. It is not safe to assume that because you go for a Pap test, you will not get cervical cancer. Pap tests may aid in the discovery, possible reversal or surgical elimination of a more serious process continuing. However, Pap tests detect an abnormal process already begun. This distinction is subtle, but overall it is a major issue.

True preventive actions in our lives necessitate accurate health information, direction and personal effort. Healthful lifestyles are easier for some of us to obtain, depending on our finances, care of our children, emotional support, etc. Some of us have learned bad health habits at an early age and have practised them for a long time. Some of us have had negative experiences with the health care system and distrust that system. Practising preventive health is related to our efforts to change our lives and work toward a more positive self-image.

In 1985, cervical cancer was the third most commonly occurring reproductive cancer in women in Canada (breast cancer being the most common). The Pap test, developed by Dr. George Papanicalaou over 50 years ago, has greatly contributed to detecting early signs of the disease. As well as testing for cervical cancer in its early stages, the Pap smear can also provide useful indications of the health of the cervix (the base of the uterus that extends into the vagina) and hormonal information.

Pap statistics

In the province of British Columbia there has been a Pap screening program to detect cervical cancer since 1949, but it wasn't until 1960 that large numbers of Pap tests were done. Over the years, the particular women on whom Pap tests were done and the purpose of the program greatly changed.

For the first ten years, Pap tests were done on women with a diagnosis of cervical cancer, as well as on women who attended VD clinics and women in prisons. In the early 1960s with the help of advertisements by the Canadian Cancer Society, women without symptoms were encouraged to get Pap tests through their private physicians. Thus, the Cytology Laboratory (where Pap tests are examined) began to provide a "well woman" service. At the same time, many women began using birth control pills and IUDs (intrauterine devices) and these women were encouraged to have and also requested annual Pap tests. In addition, the population of British Columbia was growing rapidly and the number of tests performed increased.

In 1985, there were 53 cases of invasive cancer and 40 cases of micro-invasive cancer in British Columbia. Approximately 30 to 40% of these are attributed to immigrant women with no previous screening. 30% were Native women and 30% had no previous screenings for a variety of reasons. More specific information regarding facts such as occupation or geography are not available. Some of these women probably live in rural areas. A study by the Immigrant Women's Centre in Toronto found that women in immigrant communities who work in semi-skilled and unskilled jobs are more at risk for having undetected cervical dysplasia than other women.

It is disturbing that after years of a screening program, 34 women died of cervical cancer last year in British Columbia. A small percentage of deaths occur in both older and younger women who may have had regular Pap tests, but who nevertheless get a rapidly developing disease which does not respond well to standard treatments when diagnosed at an advanced stage.

Cancer screening

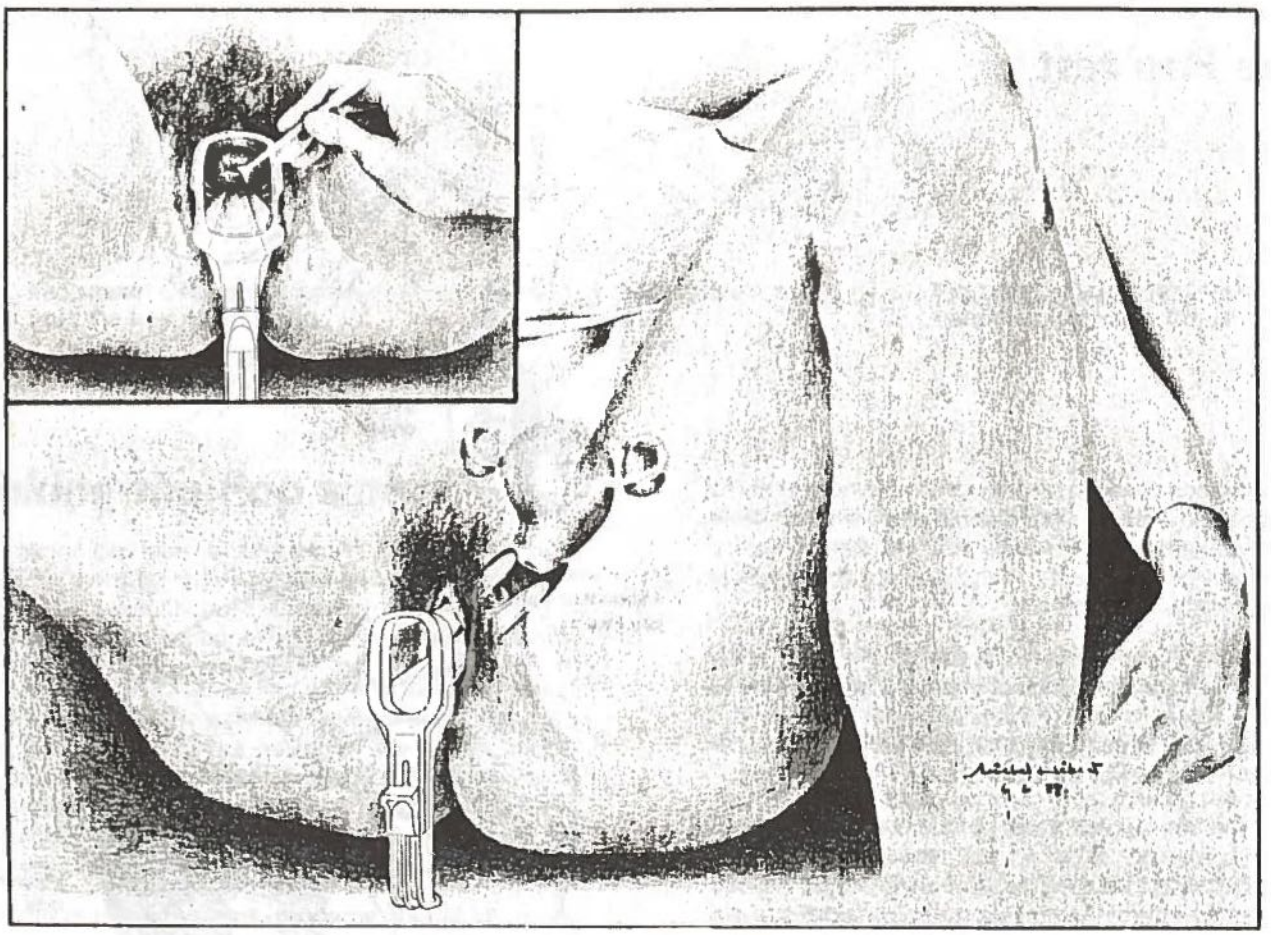
The purpose of mass screening programs is to identify people with undetected disease, or those who are at high risk for a particular condition, in order to decrease illness and deaths. Yet the merits of screening programs are often weighed against the costs of the program and whether statistics justify it. This means that some diseases, like Chlamydia, the most common sexually transmitted disease and one which has reached epidemic numbers, is not part of a screening program because it is too costly.

Unfortunately, no provision was made years ago for a rigorous test of the efficacy of the Pap smear through a random clinical trial (i.e. one group of women having Paps and being followed, the other group of women just being followed). Now, because of the Pap test's widespread acceptance as a diagnostic tool, it is no longer possible to do a random clinical trial.

In fact, the similarity between the trend in mortality (death rate) from cervical cancer in British Columbia, where mass screening has reached large numbers of women, and the corresponding trend in Ontario (1950-1971), where such a program was not conducted, has led many to question the effect of cytological screening on mortality.

Not only did a Pap screening program appear to have little influence on the number of women who died from cancer of the cervix, but a decline in cervical cancer deaths was noted *before* Pap screening programs were introduced in North America. There are a number of explanations offered for the decline in cervical cancer death rates, ranging from the high rate of hysterectomies already performed (therefore no cervix present) to improved hygiene standards as more people gained access to indoor plumbing. Fifteen to twenty years from now, how many women will there be who cannot go on to get cervical cancer simply because they have no cervix or have only part of it intact?

Practical ideas around how the cervical cancer death rate could decline immediately include special projects within immigrant communities to educate women about regular health care and about Pap tests in particular. Visiting well-women clinics in rural areas, such as one established in northern Vancouver Island, also make Pap tests more accessible to women who do not have medical care within a reasonable distance or who do not seek the one doctor in town for gynecological exams. Educational programs for Native women in rural areas, as well as within Native organizations in cities, might also help to cut down on the higher rate of cervical cancer among Native women.



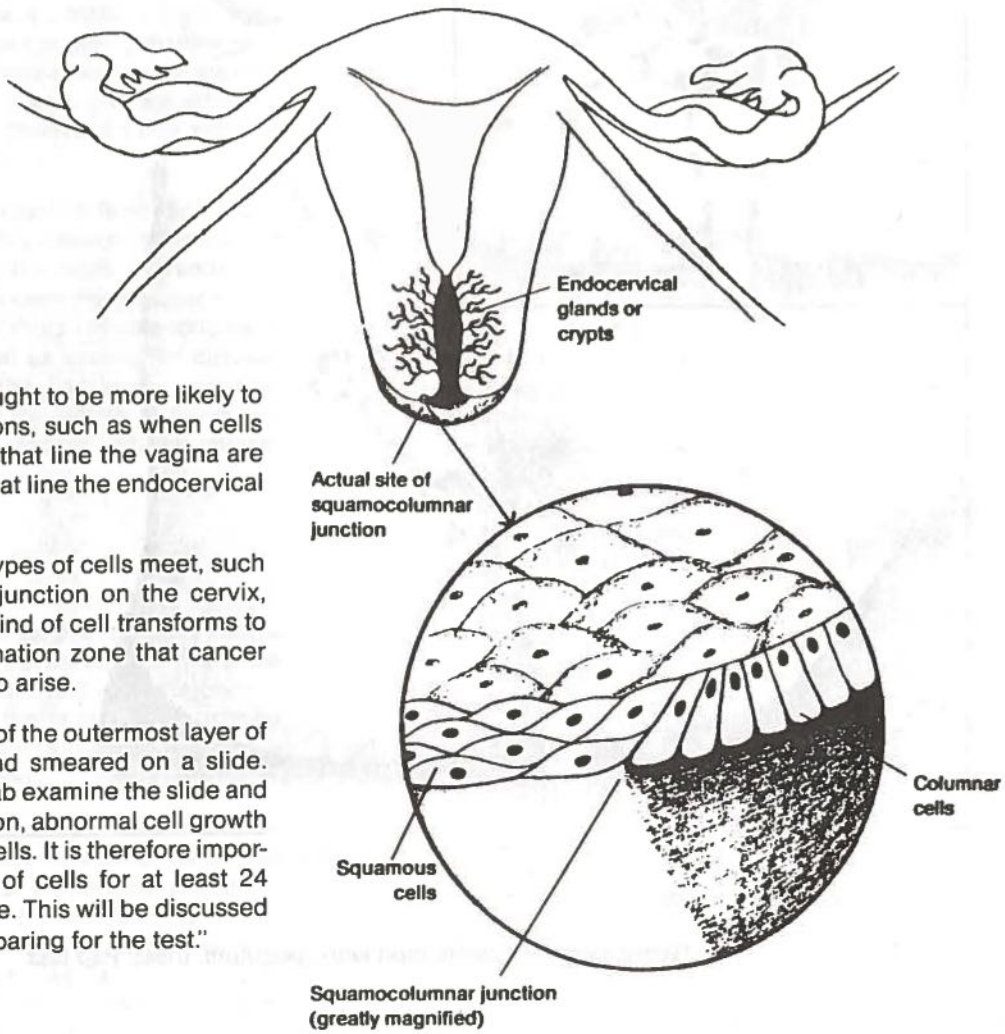
Gynecological examination with speculum. Inset: Pap test

British Columbia statistics

Of the 1.2 million women in British Columbia today, 500,000 of these usually have Pap smears examined and processed each year by the central lab in Vancouver. Approximately 10% of the smears are abnormal. About 3% show dysplasia; about .5% show carcinoma *in situ* (about 1800 cases). The remaining majority of abnormal smears are abnormal (Class II) because of non-cancerous cell changes and infections.

Fifteen years ago, the peak age for carcinoma *in situ* was 35. Today the peak age for this condition is 28, with the average age of onset of dysplasia being a few years younger. Between 1960 and 1967, the incidence of carcinoma *in situ* doubled. An advantage of the centralized laboratory system is that striking trends like these can be recognized.

The Pap test



Cancerous changes are thought to be more likely to happen under certain conditions, such as when cells are dividing rapidly. The cells that line the vagina are squamous cells, while those that line the endocervical canal are columnar cells.

In an area where different types of cells meet, such as in this squamo-columnar junction on the cervix, there is a zone in which one kind of cell transforms to another. It is in this transformation zone that cancer cells are sometimes thought to arise.

For the Pap test, a scraping of the outermost layer of cells in this area is taken and smeared on a slide. Technicians at the Cytology Lab examine the slide and report any signs of inflammation, abnormal cell growth or cancerous changes in the cells. It is therefore important not to disturb the layer of cells for at least 24 hours before a Pap test is done. This will be discussed more fully in the section "Preparing for the test."

Pap smear: Cells being taken from the face of the cervix

Pap smear: Cells being taken from the vagina

Pap smear: Cells being taken from the opening of the cervix

Taking the Pap smear

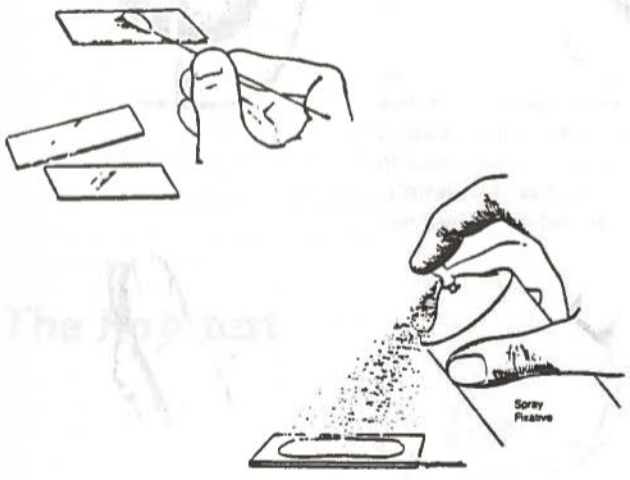
Anyone can learn to take good Pap smears. A concern for thoroughness seems to be the best quality to look for in a practitioner. Of course, proper labelling of the slide and/or container and lab slips is important.

The best time to take a Pap smear is just before or at ovulation, when the estrogen level is high. The cells are flatter and therefore easier for the lab technician to read. This is not a reason to restrict having Pap tests done at other times, but it seems worthwhile to try to arrange the timing if a repeat or follow-up smear is required.

Extra mucus or vaginal discharge should be gently swabbed away before a smear is taken. The Pap should be done before a bimanual exam is performed. (This exam is done to feel the cervix, uterus and ovaries, with one hand on top on the abdomen and the other inside the vagina).

There are many different techniques for taking a Pap smear. Techniques which yield the most accurate results from a Pap test are: getting the whole cervix in view through the speculum; taking a full 360 degree circular sweep of the squamo-columnar junction with a wooden spatula without folding over the cells by repeating the already scraped area; making two slides from the single scraping; and making another slide containing swabbed cells from the os. Some advise using a sterile Q-tip moistened with sterile saline to enter the os. There is also an aspiration technique, which uses a small pipette or tube to suck out some of the fluid and cells from the os.

The quality of the slide is also dependent upon how quickly a fixative (alcohol in a waxy solution) is sprayed onto the slide: the faster the better. Cells are ruined by air drying. They flatten against the slide and the nuclei appear larger. When viewed under the microscope in a cytology lab the details are not as finely delineated. The cells look more like fried eggs rather than circular boiled eggs.



Spread specimens on slides and fix immediately.

In British Columbia, the slides are not fixed by practitioners. The central lab uses this method because it is difficult to get uniform, well-fixed slides from all the doctors in the province. They state that they have carefully reviewed the technique and think it works without fixative. Only when endometrial cancer is suspected do they require the smear to be sprayed with fixative. When slides reach the central Cytology Lab they are soaked in a glycerine solution to "recondition" the smears so that they look comparable to spray fixed slides. To our knowledge this is the only lab in Canada to use this method.

Pap smears after hysterectomy

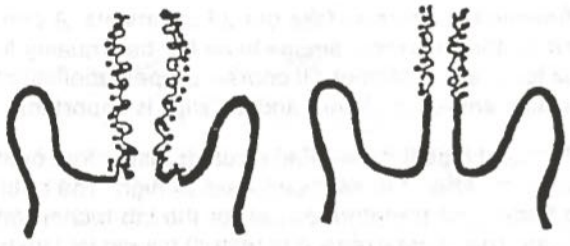
If the cervix has remained intact after a hysterectomy, a Pap test should be done as usual. If the cervix has been removed and a cuff (flap of skin) is left at the back of the vagina, a scraping of the cells that line this vaginal vault, as well as those lining the upper third of the lateral vaginal wall, should be taken.

Vulnerability

The times when a women's cervical cells are most vulnerable to abnormal cell growth are at puberty, during first pregnancy, a few weeks following the birth of a child and possibly while a woman is using oral contraceptives. Regeneration of new populations of cervical cells is a response to hormonal fluctuation. Some practitioners believe that cervical cells might go through this regeneration during each menstrual cycle in response to monthly hormonal fluctuations.

The reason for the increased vulnerability has to do with the position of the squamo-columnar junction in relation to the vagina and uterus. At these vulnerable times, the squamo-columnar junction extends further out into the vagina, possibly making the columnar cells more susceptible to carcinogens. Otherwise, it retreats up toward the uterus via the os.

Premenarchal (before menses) **First pregnancy**



Non pregnant, Premenopausal **Postmenopausal**

COMMON CHANGES IN THE TRANSFORMATION ZONE

Post menopausal

Because of the decreased levels of estrogen produced by the ovaries, the cervix as well as the vagina becomes drier and less stretchy after menopause. For some post-menopausal women, this means that the cervical opening (os) becomes much smaller; it also moves further from the vagina up the cervical canal, so that the transformation zone may be more difficult to see. This may mean that it is more difficult for a health practitioner to get a good smear from the transformation zone and also that fewer cells slough off because of the changes in the cervix. (Due to lower hormone levels, the cells do not grow as fast.) Therefore, it might be useful for these women to include a third slide containing swabbed cells from the vaginal pool.

Because estrogen levels can be evaluated from Pap smears, it is possible for a post-menopausal woman to check these levels. After menopause some estrogen is still produced in the ovaries. Several other hormones are produced in the ovaries and converted to estrogen by fat cells and other organs. The more fat cells a woman has, the more estrogen is produced. The adrenal glands also continue to produce estrogen and androgen (which can be converted to estrogen), as well as progesterone.

Some post menopausal women may have large amounts of estrogen. This could indicate that they are on estrogen treatment or that there is an imbalance of estrogen in their bodies. This should be thoroughly investigated, because it could indicate the presence of asymptomatic cervical cancer or endometrial cancer (cancer of the lining of the uterus, the second most common reproductive cancer in women in Canada). Women might want to begin looking at their estrogen levels one year past menopause.

Hormonal evaluation from Pap smears (maturation index)

The vaginal mucosa, the age of cells in the epithelium, the pH of the vagina, and the bacterial flora of the vagina are all extremely sensitive to variations in the levels of a woman's own hormones, particularly estrogen and progesterone. By obtaining a smear from the upper one-third of the lateral vaginal wall, cells can be evaluated for hormonal levels. Smears should be obtained at one week intervals through a woman's cycle. Hormonal levels of each smear and the pattern of the smears should then be checked against established normal ranges. A variety of hormone dependent conditions can be identified by this means.

When evaluating a smear for hormone levels, the proportions of three different cell types present in the smear are expressed as a ratio known as the maturation index, or M.I. The three cell types are superficial cells (fully mature), intermediate cells, and parabasals cells (immature). High estrogen levels cause a shift to the left. A reading of 80:20:0 represents 80% superficials, 20% intermediates, and 0% parabasals. This would be a normal M.I. at the time of ovulation or for a woman on estrogen replacement therapy. High progesterone levels, as during pregnancy or in a woman showing an androgen (male hormone) effect (as in some post-menopausal women) give an M.I. of 10:80:10. An absence of estrogen, progesterone and androgens gives a M.I. of 10:20:70 known as a "shift to the right," as in most post-menopausal women and in women with moderate to severe vaginal infections. If a normal fluctuation is not evident, then possibly ovulation is not occurring. If a woman has no periods then another pattern can be observed.

Preparation for Pap smears

Douching will disturb the cells. Swimming, bathing and intercourse are fine as far as we know. The use of medications, herbal remedies and spermicides may or may not muck up the slide and interfere with the technician's ability to see the cells. Since the lubricants usually used in routine pelvic exams are not used when a Pap test is taken, this seems to indicate that the fewer chemical and other ingredients immediately in the area, the better the sample.

When the health care practitioner takes your Pap smear, ask to see your cervix. S/he probably has a mirror handy so that you can see what it looks like. Perhaps they can point out particular areas, like the transformation zone, or any inflammation to you. The cervix changes throughout the month with your menstrual cycle. If you check it regularly, you may be able to notice changes. The appearance of the cervix is not necessarily related to whether the Pap smear is normal. Your cervix can look healthy to the eye, but have microscopic abnormal growth. A useful way to think of the cervix is that, like the skin, it can be an indicator of our general state of health.

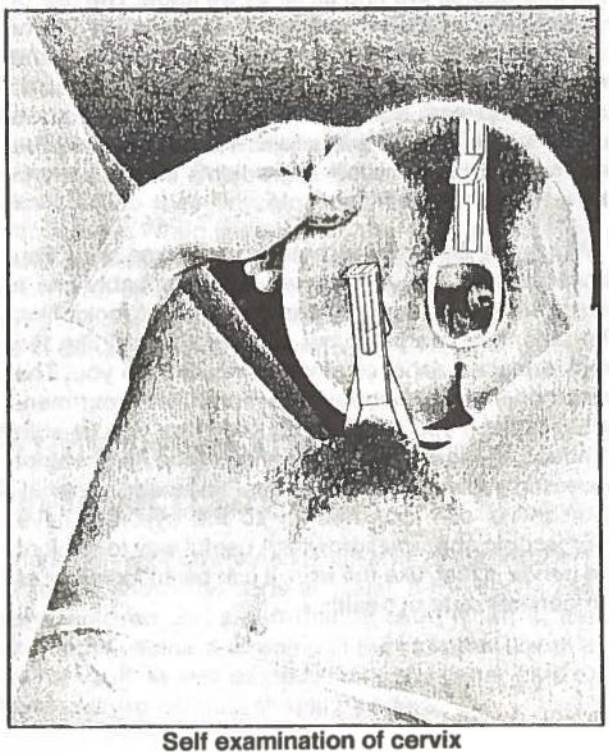
Menstruation

Because blood interferes with the reading of the cells, Pap tests are not worth doing during menstruation. Immediately following menstruation there can be too many endometrial cells present. These cells from the lining of the uterus are different from cervical cells. They are washed down through the cervix during menstruation, making it difficult to read the cervical cells. Therefore, it is inadvisable to have a Pap test taken during menstruation and for a few days after.

Cervical self exam

Learning to do cervical self-exam with a speculum is an important part of the process of women beginning to take control of and responsibility for our own bodies. Just looking at your cervix regularly with a plastic speculum, mirror and flashlight is useful even from a conventional medical point of view: you will learn to spot changes and early signs of infection.

Self-exam is also, for many women, an important emotional experience. Having a good look at our external and internal genitals is a very good way to start to change any fears and hatred for our female bodies which this male-dominated culture has taught us. We need to learn what our own individual bodies look like. Every woman is different. There is no way to define normal. Each of us is unique. *Down There* and the Vancouver Women's Health Collective Cervical/Vaginal Health Packet contain more detailed information about cervical self-exam, what to do and what to look for.



Self examination of cervix

Post procedure

Cells collected for a Pap smear are dead surface cells. Growing cells from underlying layers of the cervix move closer to the surface as they age. Cells probably regenerate to the surface of the cervix about once a week. One opinion we have heard is that it takes three months for this process to occur. Three months is also the shortest interval at which the Provincial Cytology Laboratory requests a repeat smear. This time interval is considered immediate follow-up.

After any procedure which disturbs the cells on the cervix, it is unwise to repeat the Pap before the new layer of cells has reached the surface. Otherwise, a false reading may result. (All the remaining abnormal cells which are still developing may not have reached the surface.) Wait a minimum of one to three months before repeating the test.

IUDs can cause cells to mimic abnormal cancerous cells. This is probably the result of the inflammation caused by their strings hanging down through the cervical os into the vagina. Pap tests should only be done more than a month after the IUD is removed.

What the test results mean

When Pap smear reports are returned to the doctor or clinic that submitted them, they should include the following information:

- a class number between I and IV,
- a written cytological interpretation of the cells labelled mild, moderate or marked (severe).
- a possible diagnosis, in some cases, and
- a recommendation for further investigation, in some cases, for example, repeat Pap in 4 months or colposcopy, (microscope examination of the cervix).

In understanding the results, the written interpretation of the smear is more important and accurate than the class number. The meanings of the reports are as follows:

Class X: Insufficient cells seen. This means either there were not enough cells on the slide or they were too dry or too thickly spread or there was too much blood or inflammation.

Class I: No abnormal cells seen. Sometimes this will be qualified by stating that there were not enough or no endocervical cells seen.

Class II: Abnormal cells present. Inflammation may be seen (from infection, for example.) Dysplasia occurs when there is disorganized cell growth. There are different degrees of dysplasia classified as mild, moderate or severe.

Dyskariotic cells have an abnormally large or irregular nucleus. Metaplasia indicates that squamous cells are replacing columnar cells in the zone of transformation. There may also be a comment on the state of maturation (stage of cell growth).

Most abnormalities occur in squamous cells, though some arise in columnar cells. This may be denoted as abnormal gland cell growth because columnar cells line the glands and are in the endocervical canal.

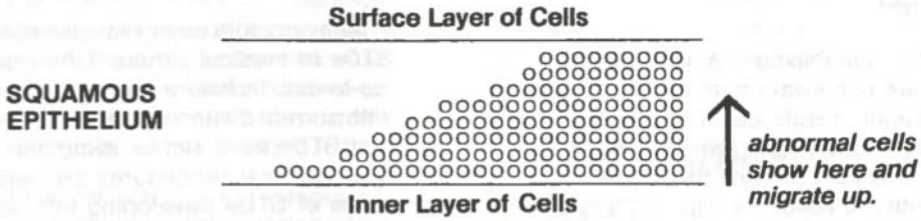
Class III: This category shows very abnormal growth with evidence of severe dysplasia or carcinoma *in situ* (cancer cells contained in a localized surface area).

Class IV: This smear contains cells that may be similar to Class III, but with evidence that cancer could have spread beyond and deeper than the local area.

In some other provinces and countries, including the Provincial Cytology Lab and Cross Cancer Institute in Edmonton, Alberta, a different reporting system is used called the Cervical Intraepithelial Neoplasia Classification or C.I.N.:

C.I.N. I: mild dysplasia
C.I.N. II: moderate dysplasia
C.I.N. III: severe dysplasia or carcinoma *in situ.*

This replaces Class II and III in the Papanicolaou system.



The usual growth pattern of cells begins in the inner layer of the epithelium. Cells then move outward as they die.

Dysplastic abnormal (young) cells develop in the inner layer and move upward also. They may develop toward more normal (mature) cell characteristics. The amount of development is described as mild, moderate or severe, depending on how abnormal the cells still look on the surface. Cells which look as abnormal in the outer epithelium as in the inner layer are classified as carcinoma *in situ.*

Erosion and eversion

Two cervical conditions, erosion and eversion, are often confused and debated. The women's health movement has learned much about these two conditions and has clarified what they are. Eversions, which are ring-shaped, occur when the red columnar cells, which are normally inside the os, are pushed to the outside. Usually we see only squamous cells, which are pink like the vaginal walls. The difference is as striking as that between the lip and facial skin: the junction of the types of cells is quite definite. DES daughters are more likely to have eversion than other women. Other possible causes include injury during abortion or childbirth.

Erosion is quite different from eversion. It indicates that possible trauma has occurred to damage the cervix. The lesion is clearly visible as a pink-red spot on the cervix. There will not be a definite border of the redness; it will be just like a graze or sore appears on the outside of the skin. An erosion may cause a runny, white discharge (leukorrhea). IUD strings, friction from intercourse, injury from childbirth, infection and the use of tampons are possible causes of erosion.

Another frequent sign of erosion is a "friable" (easy to bleed) cervix. This is particularly evident after a wooden spatula is used to take a Pap test. Painful intercourse followed by a friable cervix on exam, or spotting after intercourse is reason to get cultures and a Pap test done.

If the Pap test and cultures are negative, it is becoming more common practice to leave an erosion untreated to see if it resolves itself. Cauterization and cryosurgery are possible treatments for erosion. The elimination of birth control pills, IUDs and tampons might heal erosion. Some women's centres suggest using herbal poultices, increasing potassium in the diet (good for healing mucus membranes), and inserting vitamin E capsules near the cervix for healing erosions.

The relationship between erosion, eversion and abnormal cells is not known. It seems that the conditions are not related. It used to be a more popular idea that chronic irritation or inflammation like cervicitis could lead to cancerous cell changes. There is no proof of this.

Erosion and eversion do not necessarily indicate abnormal cells. Often the cervix can look pink and healthy when abnormal cells are present. Abnormal cells are detected only through microscopic investigation.

Infection

Cervical cells that rest in an environment of chronic inflammation from infection or overgrowth of organisms in the vagina can look abnormal and even pre-cancerous. If you know you have an infection, wait until it clears before getting a Pap test. Make sure that your sexual partners are also treated so that you do not become re-infected. Cultures and slides for organisms (yeast, Gardnerella [hemophilus], gonorrhea and trichomonas) should be taken before or at the same time as a Pap smear. Cervical infections which are more difficult to culture and require more specialized collection material (such as Herpes Simplex Virus and *Chlamydia trachomatis*) may also influence the result of a particular Pap test.

Unfortunately, when the Pap comes back abnormal, the culture results are not always noted by the health workers. Because culture results can return from a lab at different time intervals than the Pap smear results, the doctor or clinic may not correlate the results of an abnormal culture with the abnormal Pap.

Another problem is that overgrowth of yeast and Gardnerella may not be treated unless a woman has symptoms (itching or smelly, copious vaginal discharge). The doctor's office may not notify a woman of a small overgrowth unless she has complained of these kinds of symptoms. Lab reports may indicate the degree of growth as I, II, or III. III means heavy growth.

Venereal warts may be treated or overlooked without associating their presence with an abnormal Pap test.

We recommend that any evidence of infection at the time of a Pap test be treated and/or resolved **before an additional Pap test or further investigation is undertaken.** Many times abnormal Pap smears will return to normal once the cervix is in a more balanced environment and organisms that cause inflammation and discharge are gone.

There are alternatives to the usual antibiotics and other medications used to clear up vaginal infections. Some infections (like Gardnerella) can be very difficult to eradicate. It may be important to try some alternative treatments before using Flagyl, the drug commonly prescribed to treat Gardnerella and trichomonas. If you do use Flagyl, check to be sure that you have been prescribed the current, recommended dosage for your particular infection. Also make sure that your partner(s) is treated so that you cannot be re-infected. Some studies have shown Flagyl to be carcinogenic in laboratory animals.

Cervical cancer—A sexually transmitted disease?

Some researchers categorize cervical cancer as a sexually transmitted disease (STD). Some of us may have read about the risk of cervical abnormalities for women who are "promiscuous" or who have multiple partners; some researchers emphasize the effect of partners who have multiple partners. Does this lead to anxiety about sexual activity? Anti-sex attitudes prevail in many areas of our society, including the medical profession. The notion that one should have sex with one person only is being put forth more and more in media reports.

Many doctors do not receive specific training about STDs in medical school. Often doctors do not read up-to-date literature and, consequently, are unfamiliar with current diagnostic techniques or treatments. Several STDs have similar symptoms. misdiagnosis and poor medical procedures are responsible for many cases of STDs developing into worse problems. An approach which would help reduce STDs would be to have fuller services for education about sexuality and transmission of disease, better testing facilities for both men and women, and additional services for the treatment of STDs other than VD clinics, with their attached stigma. Sexual activity does not mean that STDs are inevitable.

Hygiene may play an important role in the transmission and development of STDs. Traditional health education does not usually include information about cleanliness before and after sexual activity. In the Third World, there is not enough water for people to wash with in many areas. Consequently, STDs can flourish and be passed on, instead of being killed easily or washed away with soap and water. This lack of water may contribute to the high rates of cervical cancer in the Third World. Hygiene may also be an important preventive measure in North America and Europe.

In the last few years, cancer research has focused on isolating a single virus as a major factor in the development of cancer. It is no surprise, therefore, that STDs like Herpes Simplex Virus and venereal warts receive much publicity for their possible roles in cervical cancer. Older studies associated trichomonas, gonorrhea and syphilis with cervical cancer. While the incidence of trichomonas and syphilis has diminished, the number of cases of cervical dysplasia has increased. One researcher says that the trends of high incidence of sexually transmitted infections in younger women correlate with later trends of mortality from cervical cancer when those same women were older. These theories of the cause of cervical cancer often

rely heavily on the sexist image of the "promiscuous" female. Cervical cancer is virtually absent in adult women who have never had intercourse. One of the earliest references to this point was made over a century ago by Rigoni-Stern, who reported a low incidence of cervical cancer among Catholic nuns in Verona, Italy. A 1950s study reported that no cases of cervical cancer had been found in a population of 13,000 nuns during a period of twenty years.

No one is sure what the connection between the presence of certain infections and abnormal Pap smear results means. Nor is it clear what is meant by multiple partners—how many and when? Could undetected infections in men be initiating cancerous changes in women? Maybe a woman has a lack of resistance in the cervical area. This could be caused by many factors. The presence of one infection may irritate and weaken an area so that other infections and abnormal cells can proliferate. Perhaps a woman with a chronic infection has been misdiagnosed or has not seen a doctor.

STD clinics might be valuable places for regular Pap screening. There, infections would automatically be checked and treated. Some women who go for routine STD check-ups might then receive a Pap test that they would otherwise not request.

Some factors which can contribute to vulnerability in the cervical-vaginal area are generally overlooked by medical researchers. Poor nutrition, lack of personal hygiene, smoking, stress, types of birth control, and lack of education about STDs and birth control should all be considered when discussing causes and prevention of disease.

Herpes

It is not certain that Herpes Simplex virus type 2 (the type of herpes virus most often isolated from genital herpes) is either necessary or sufficient to cause cancer of the cervix. The evidence associating herpes with cervical cancer is that a large number of women with cervical abnormalities have antibodies against herpes. These antibodies show that the women have been exposed to the virus or have had an active infection at some time. Researchers have also found the herpes virus in tissue biopsy cells from women with both abnormal and cancerous cervical cells. Herpes does produce abnormal looking epithelial cell changes, but they are different from pre-cancerous changes. The virus also seems to be a significant risk factor in the transformation of normal cells into defective ones. The risk of cervical cancer for women with genital herpes is six times greater than for the general population.

Women usually have recurrences of herpes sores on the labia, but during or for a while after a woman's first (primary) herpes infection, a culture from the cervix may be positive for the herpes virus. Sometimes it may be positive because there is actually a herpetic sore on the cervix, but probably more frequently the woman is just "shedding virus." Although many people with herpes do not remember or do not experience the classical severe primary outbreak, there is a high presence of virus in the genital area at this time that may last for a few weeks or months.

Although there is no data on the correlation between first herpes infections and abnormal Pap tests, it seems wise to delay the Pap test until the virus is no longer present on the cervix. There does not seem to be any reason to avoid getting a Pap test during a recurrent, external herpes infection.

Papillomavirus or venereal warts

Another related theory points to the Human Papillomavirus (HPV) as the key culprit in abnormal Pap results. HPV, of which there are many types, is the virus family that produces venereal warts. The first person to describe cells from these warts was Papanicolaou in 1960.

Researchers find evidence of active HPV in as high as 80% of women reported with mild dysplasia. There is also some connection between genital warts and cancer of the penis. As many as 33% of men with penile cancer may have evidence of warts.

Since 1976, some pathologists have described a manifestation of the virus other than the usual raised warts (condylomata). This one has flat and inverted cells and may possibly be a forerunner of the raised warts. When a Pap test reports "koilocytotic" cells (spoon-shaped or halo cells), this is evidence of active HPV.

A woman who may have been treated for external warts in the past, or who may never have had external warts, may still carry the virus in her body. Actual raised warts on the cervix are unusual. Some say that HPV can be latent in the body for years and reappear when the body is at a low point. It can reappear anywhere, not necessarily on the cervix. The only absolute test for active HPV at this time is by identifying cells through an electron microscope.

If you have a history of genital warts, it is possible you may have active HPV on your cervix. Or, if you have an abnormal Pap and external warts, the virus may be affecting your cervix. Get rid of the warts and

then repeat the Pap smear. Sometimes cervical abnormalities will disappear.

If you have a small wart on your cervix, it may be eradicated by a biopsy (removal of a small plug of tissue or the wart), by laser therapy, or by cryosurgery (freezing method of cauterization). You could also have your doctor paint the wart area with Podophyllin. This method is not feasible, however, for large warty areas, because the cervix would absorb too much of the Podophyllin, which is toxic. Interferon may be available as treatment in the next few years. Do not leave warts untreated. If your partner has them, have that person get rid of them too.

A Quebec pathologist, Alexander Meisels, researches HPV and cervical cancer. He and his coworkers report that samples of abnormal cervical cells with evidence of active HPV are open to errors of interpretation. The atypical cells produced by HPV are difficult to diagnose because they mimic dysplasia, carcinoma *in situ*, or even invasive cancer. This is true for both smears and colposcopy. It would seem that some abnormal Pap smears are really a result of active HPV. "It has been estimated that 1% of all smears and 2.5% of smears in women under 30 years old show evidence of active HPV changes." Meisels wants to see the flat wart condition added as a stage in the progression of cervical cancer before dysplasia.

Researchers suggest that the very high incidence of dysplasia and carcinoma *in situ* among young women can be accounted for by the presence of HPV. Reid reports that the virus was seven times more prevalent in these women. No one knows whether HPV is responsible for or contributes to abnormal cell growth. The majority of HPV infections regress spontaneously within a year. If screenings were done for active HPV, it might be possible to identify women at risk for cervical changes.

Chlamydia trachomatis

Chlamydia, a sexually transmitted disease unknown to many people, is now receiving widespread publicity as the most common sexually transmitted disease. Although chlamydia (pronounced kluh-mid-ee-uh) is a bacteria, it is unlike most other bacteria which attack cells. It is much smaller and lives inside cells like a virus. It can remain in cells for many years without necessarily provoking any symptoms. This behaviour is more common in women than in men, but can happen in anyone. Because of this characteristic, many people say that chlamydia is a bacteria which "acts like a virus." However, because it is a bacteria, it is usually easily treated with antibiotics when diagnosed early.

In women, the most common manifestation of chlamydia is an infection of the cervix, an erosion on the cervix, or the presence of a yellowish vaginal or cervical discharge. Women can also have an infection of the urethra and experience a burning sensation during urination and a feeling of needing to urinate frequently. If there are symptoms, they usually appear gradually 10 to 20 days after contact with an infected person.

Women who have chlamydia without symptoms may recognize an infection only at the point of painful and serious consequences, such as Pelvic Inflammatory Disease (PID). Both heterosexual and lesbian women are at risk.

Chlamydia infection in the eyes has been associated with cellular changes similar to mild dysplasia. It is therefore not surprising that chlamydia can have a similar effect on cells of the cervix. A number of studies have shown that chlamydia can be found on the cervices of a high percentage of women with abnormal Pap smear results. Many women who are treated for chlamydia experience normal Pap smear results when the infection has been cleared.

Some clinics and practitioners regularly test women with abnormal Pap smear results for chlamydia. Women with abnormal Pap test results which range from mild dysplasia to carcinoma *in situ* should consider having a chlamydia test if none was done. If a doctor is not familiar with the test, the local VD clinic should have facilities to do it.

Other infectious agents

Actinomyces is a rare infection of the cervix by a fungus-like bacteria. It can cause pelvic pain and often a chronic discharge. it is often associated with IUD use. Treatment is usually by prolonged penicillin therapy or tetracycline.

Two other organisms, mycoplasma and cytomegalovirus (CMV), infect the cervix. Neither necessarily causes symptoms nor are they routinely cultured. They have been associated with cervical cell changes and require further investigation.

The importance of regular testing

Pap tests have become a yearly ritual for many North American and British women who seek regular health care. During these times of soaring health care costs, the reasoning and justification for annual testing has been questioned. Some practitioners now recommend testing every three years once a woman reaches 35 and has a history of normal smears. In Britain, the National Health Service recommends a smear every five years for women with consistently normal smears and more often as indicated by abnormal results or by more than three pregnancies.

The rationale for less frequent testing is that precancerous changes may peak by certain ages and that cervical cancer and precancerous changes are generally slow in development. This does not take into account faster growing types of cancer nor does it account for those few women who have histories of normal smears and then develop moderate to severe abnormal smears in less than two years.

It is interesting to note that the American College of Obstetricians and Gynecologists, a group which directly profits from annual fees for exams, supports the annual test. We also need to be wary of government agencies, concerned about medical cutbacks, reassuring us that Pap tests less often are equally safe.

The *Walton Report* of 1982 states that "In general, Canadian women aged 35 years or more who have regularly participated in screening programs and who have had at least two screening tests without significant atypia (abnormality), should require screening no more often than every five years." The report also states that women over 60 are not at risk if their "previous screening tests have been continuously without significant atypia." Also considered "not at risk" are women who have had a hysterectomy and complete removal of cervical tissue.

We suggest that women get yearly Pap smears beginning the first year they have sexual contact. Some women should have them more frequently (between six months and a year) depending on their history. If a woman has had a history of abnormal Paps, she should probably be tested more frequently than once a year, depending upon the class of her Pap results and whether the abnormal results have been within the last two to three years. If she has normal results for several years, returning to once a year is probably fine. If a woman has had a recent infection or a history of a virus, she might also want to get a test every six months, when free of the infection or virus.

It is a good idea to keep your own record of Pap results so that you can see trends or know when to get retested.

We have questions about the *Walton report* recommendations regarding women 60 and over. There is a type of cervical cancer, usually affecting older women, which seems to develop very quickly and would not be found, even if previous smears were normal. This could still be detected with regular Pap smears after age 60.

Is there a "natural" development of cervical cancer?

Unlike other internal parts of our bodies, the cervix can be easily observed via the speculum. Doctors have described various types of abnormal cell growth on the cervix, but these descriptions do not result from what can be seen by the naked eye. Diagnosis depends upon microscopic examination of Pap smears and biopsies (tissue samples).

A Pap smear can contain as few as a dozen cells. The lab technician or pathologist makes decisions based upon their own experience and technical abilities; these are not always scientific. They can depend on the quality of the sample, what area of the cervix the cells came from and how well the slide was prepared both at the time it was taken and later in the lab.

"One man's dysplasia is another man's carcinoma *in situ*"

Sometimes it is difficult to determine which category abnormal cells fit into. "One man's dysplasia is another man's carcinoma *in situ*." Nevertheless, lab reports become the decisive judgements for women's experiences.

The medical profession cannot explain why or how abnormal changes occur; that knowledge could give them a cure for cancer. So far there are only theories and observations. Pap smears are part of a detection system that is based on the expectation that dysplasia will become carcinoma *in situ*, which in turn will become invasive cancer. This is called the natural progression or history of cervical cancer.

In some places, dysplasia and carcinoma *in situ* have been lumped together under the term C.I.N. because of these beliefs. C.I.N. is a broad term used to encompass the spectrum of lesions that many clinicians in Canada prefer to designate more specifically as mild, moderate and severe dysplasia and carcinoma *in situ*. C.I.N. categories mean that women with severe dysplasia are treated exactly the same as women with carcinoma *in situ*.

Even though the C.I.N. system is not used in British Columbia, a large centralized screening program in the province means that uniform treatment is suggested on computerized records. Women with moderate and severe dysplasia may be treated in the same manner as those with carcinoma *in situ*.

There are medical disagreements about an inevitable progression of C.I.N. toward cancer. Statistics show that many women with invasive cancer have progressed from dysplasia and carcinoma *in situ*, but only a small percentage of women with dysplasia or carcinoma *in situ* will ever develop invasive cancer. Not all women follow that progression. There is no way to determine which women will develop invasive cancer and which will not. In fact, there is disagreement about whether cancer *in situ* is really a cancer or just an abnormality which may precede cancer. Medical treatment has been developed in a mass practice for all of us who have abnormal Pap smears because of what happens to a small percentage of women.

Of course, there are risks involved in trying to decide whether a particular woman will develop invasive cancer. We are presenting many facts which we consider important for making a decision on a course of treatment for abnormal smear results. We hope women can use this information to make judgements about how to treat themselves or what treatment to accept, rather than just accepting current mass programs.

Generally, the medical literature states that it takes from ten to twenty years to develop invasive cancer. The average age of women with carcinoma *in situ* is usually thought to be at least ten years younger than women with invasive cancer. However, there are exceptions to this, so the estimates range from one to twenty years for development. A study in England and Wales found that it took sixteen years for carcinoma *in situ* to develop into invasive cancer.

Estimates of the percentage of women developing invasive cancer from carcinoma *in situ* range from 10 to 20%, although some medical opinions see it as much higher. In B. C. this progression is estimated at between 40 and 90% for carcinoma *in situ* and between 30 and 60% for dysplasia.

Other figures suggest that 50 to 70% of dysplasia cases regress (return to normal). Hence, dysplasia seems to play little part in a progressive natural history, regression being the rule rather than the exception. Regression rates for carcinoma *in situ* have been estimated between 25 and 30%. However, it seems that the earlier the dysplasia, the better chance for regression.

Besides progression to invasive cancer and regression back to normal cells, some abnormalities remain unchanged for years. In the case of dysplasia, 35 to 40% can remain the same. Unfortunately, some cases of invasive cancer develop directly from dysplasia without ever being classified as carcinoma *in situ*. This type can develop in less than three years. Other evidence shows that invasive cancer can develop quickly in women over 40 or in poor women without going through any of the above stages. Overall, women with a history of abnormal Pap smear results run a higher risk of developing cervical cancer than the general population. One study states that the risk is six times greater.

Some doctors conclude that one third of treatments are unnecessary because the abnormality would have gone away without treatment. Many British doctors criticize doctors in North America for the over-use of surgery (cone biopsy). Our search for answers about cervical abnormalities shows there is still much to be learned, as well as conflicting views to be resolved, yet many doctors proceed as though they have a scientific basis for their treatment. We are often unaware of the bias of our physician.

Cancer prevention

In this society, we undergo a great deal of conditioning in many areas of our lives. We are taught, however subtly, to view certain things as fixed, unchanging, not open to question. Cervical cancer is one of the few cancers with a good "cure" rate—at least that is what we are told.

Because there are treatments and women generally survive after the discovery of abnormal cells, many of us have taken a fairly casual attitude toward abnormal Pap tests and their solutions. We are more likely, perhaps, to "leave it in their hands." As women are becoming more receptive to various options for treatments, some of this conditioning toward standard treatments is fading.

Most people are scared of cancer. Cancer can mean death and horrible treatments which cause people to lose their hair and to vomit. Mass publicity is aimed at changing people's lifestyles and eating habits to prevent cancer. This can have a negative effect on those diagnosed with cancer. Many blame themselves for the onset of the disease. They analyze what they eat or the stress in their lives and believe they caused themselves to be ill.

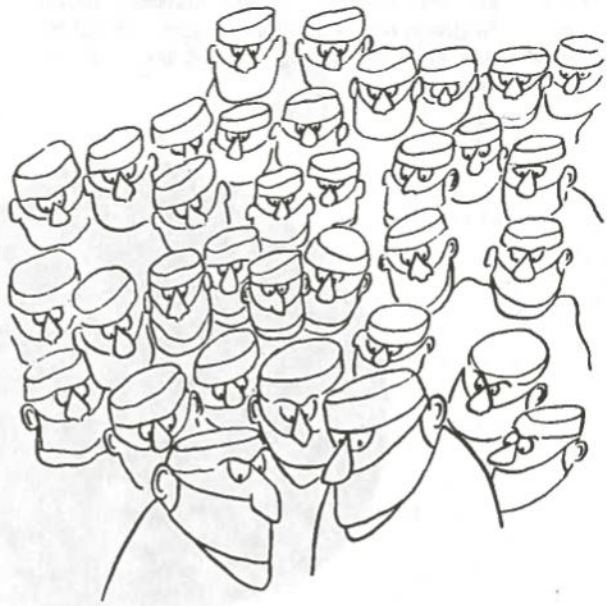
Cancer needs to be seen as preventable. The focus of research has been on searching for viral causes and developing new drug and radiation treatments. Many of them involve bad side effects and have poor survival rates. Vast amounts of money are spent on this type of research. Yet many people, however, believe that 80% of our cancers are related to our environment and workplaces. Why, then, is this money not spent on cleaning up the workplace and the environment? Large economic interests are obviously at stake. The clean-up would require standards set according to the needs of people and the planet, not of profit, which is the opposite of the present set-up.

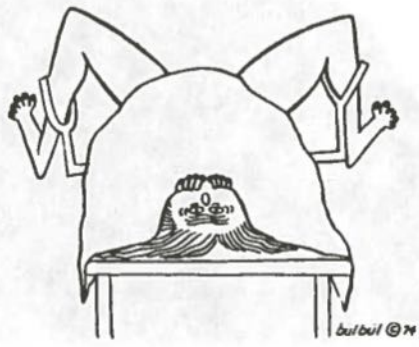
Historically, improved health has not so much resulted from great discoveries of medical science and technology as from changes in the social and economic patterns which create more healthful environments.

The decline in mortality from tuberculosis during the latter half of the 19th century occurred before microbiology and transmission of the infection were understood. Tuberculosis found a very fertile environment in the social and economic conditions in the industrial cities of the early 19th century. Long hours of exhausting work in damp, badly ventilated and unheated offices and factories were common. Living conditions were equally bleak, with overcrowding of tenements and dormitories, indadequate nourishment and deplorable sanitary conditions. In addition to physical hardship, the social fabric of people's lives was ripped apart by their uprooting from European rural areas and their relocation to the unhealthy environment of crowded city ghettos. Similar disease patterns still appear in Third World nations as they go through comparable stages of industrialization, despite medical advances of the last hundred years. Poverty and lack of water are their main problems.

This pattern is also evident in our own province. Native people both on the reserves and in the cities have the highest rate of tuberculosis. The lack of jobs and housing for aboriginal peoples, the destruction of their way of life and the imposition of European culture results in higher death rates from this treatable disease than are found in the general population.

Nobody needs to have tuberculosis. Likewise, no woman needs to be diagnosed with cervical cancer. Through education and better social and economic conditions both diseases could be prevented.





Influences on abnormal Pap results

As they do with other types of cancer, medical researchers often search for an individual organism or a single cause to explain cervical cancer. Opinions emphasizing the importance of individual lifestyles as a cause of the disease are also prominent. Individual differences in personal habits do affect health in all societies. However, lifestyle arguments obscure important sources of illness and put the burden of good health solely on the individual woman. They also do not acknowledge the limitations of modern medicine.

Rather than blaming women for cervical cancer, we have tried to gather data on the numerous theories accounting for cervical cancer and cervical abnormalities. We have also tried to fit these theories with the observations we have made about women's own experiences and the biases of the medical estabishment.

Cervical abnormalities and pre-cancers appear to result from many things. We cannot say to the reader that any one factor is *the* cause, as there seem to be many. There may be a number of factors affecting a woman at a given time (multiple factors). The interaction between specific factors may be what influences susceptibility or development of cell changes. Some of these factors are regarded as "initiators" (influences that can trigger cancer over a relatively short specific time period). Others are "promoters" (influences that make an environment more conducive to the development of cancer over a long period of time). An example is cigarette smoke. This chemical carcinogen, in the environment of another agent, like the herpes virus, can affect cells so that change can be activated. The cells can be transformed genetically so that cancerous changes occur.

It is up to each of us to study the material and decide which items are relevant to our particular lives. Cervical abnormalities seem to be different and have different ways of affecting individual women's lives.

The Pill

There has been much controversy about the effects of birth control pills on cervical cells. The Seamans, authors of *Women and the Crisis in Sex Hormones,* think it will be remarkable if the Pill, alone among estrogen products, fails to cause cancer in the same parts of the body in humans as it does in animals. Pro-pill studies range from those saying that the Pill has no influence (like the 1982 *Walton Report*) to those few controversial studies that say the Pill "protects" women from cancers.

A study of 86,000 Québécoises found a significant excess of cervical dysplasia in oral contraceptive users compared to the general population. According to the Seamans, "One in five Pill users develops a suspicious Pap after three or four years." Another study says that the risk is highest among women who have used them for ten years or longer.

There has also been some controversy about what the presence of abnormal cells means for Pill users. Some doctors believe this is a very early stage of cancer and they advocate surgery. Others think that it is benign—just a typical abnormality of the Pill. The epithelium of the cervix is a known target for hormones and is considerably altered by estrogen and progesterones. This is because the structure and function of the cervical mucosa is responsive to hormonal changes in the body.

Several studies suggest that the Pill may be a promoter rather than an initiator of cancer. They say that women who already have dysplasia and then take the Pill have an increased risk of cancer.

The Seamans say that the "abnormal cells found in the Pap smears of many Pill users much resemble those observed in patients with folate deficiency anemia." In other words, this condition could be a folic acid deficiency. There is also a case study of two women over 60 who were diagnosed with cervical cancer and found to have long-standing pernicious anemia (low iron in the blood because the body cannot absorb vitamin B12). They were treated with vitamin B12 and had normal cell growth in subsequent biopsies.

Depo-Provera

Depo-Provera (medroxyprogesterone) is a long-acting injectable contraceptive that makes women infertile for three to six months or longer. It acts on the hypothalamus and the pituitary gland to suppress ovulation and interferes with the normal pattern of hormonal changes of the menstrual cycle. It also acts on the ovaries and endometrial tissue. Depo-Provera is legally indicated for use in North America only for the treatment of endometrial cancer. Because the drug is therefore available, it has been used for birth control, especially on institutionalized women, and for the treatment of endometriosis.

Cervical cancer is the most common cancer among women in the Third World. Depo-Provera may be a factor for this occurrence. A 1971 study showed a link between the use of Depo-Provera and an increased susceptibility of the endometrium to tumors. Early information from an ongoing study by the World Heath Organization in Kenya, Thailand and Mexico shows an increase in cervical cancer with the use of Depo-Provera. Women in the Third World had used the drug for many years before its use in North America was partially sanctioned. Researchers suspect that the risk for cervical cancer increases with longterm use of the drug.

DES (diethylstilbestrol)

Exposure to the drug DES before birth is known to put women at risk of developing "clear cell adenocarcinoma," a rare type of cancer of the vagina or cervix. Fortunately, this type of cancer is rare even among the DES exposed. However, many DES daughters also have concerns about whether they are more likely than other women to develop the common type of cancer of the cervix.

DES daughters are probably somewhat more likely to develop cancer of the cervix than women who have not been exposed to DES. There has been a running controversy over whether DES daughters are or are not more likely to have abnormal Pap results than unexposed women. Additionally, DES related cell changes may be misdiagnosed as being abnormal or pre-cancerous when they are not. Surgery on the cervix can be risky for the fertility and future health of a DES exposed woman (see Medical treatments). Therefore, a DES-exposed woman facing an abnormal Pap smear result has additional issues to consider when deciding on treatment.

Early studies of DES daughters carried out by the large DESAD (National Cooperative Diethylstilbestrol Adenosis) project funded by the United States government have shown no higher rates of pre-cancerous cell changes in DES daughters than in unexposed women.

The latest study of DES daughters and abnormal Pap smears, published in December of 1984, has indicated a higher rate of abnormal Pap smears among DES daughters. This study involved a seven year follow-up of DES daughters enrolled in the DESAD project. The authors report twice the number of abnormal results from Pap smears and cervical biopsies in DES daughters compared with those of unexposed women. When the results of Pap smears alone are compared, DES daughters are still found to be one and three quarters times as likely to have abnormal cells than unexposed women.

A possible explanation for the increased risk of abnormal Pap smears appearing in this study and not in earlier DESAD studies is that the DES daughters being studied are growing older. It may be that as DES daughters reach their 30s and 40s there is an increased risk for abnormal Paps which did not occur when they were in their teens and early twenties. It should be pointed out that the increased risk for abnormal Pap smears reported in this study is not large. In addition, this increase was most frequently limited to mild dysplasia.

Several earlier studies of DES daughters showed much higher rates of abnormal Pap smears, ranging from 6 to 18%. These were all studies of a much smaller

number of women and the women were not compared to a "control" group of unexposed women of similar age and background. One explanation for these higher rates in small samples is that cell changes which were usual and common for DES daughters were being misdiagnosed as dysplasia.

Adenosis is the most common change DES daughters have in their vagina and on their cervix. Adenosis is a condition in which glandular (columnar) cells normally found up the endocervical canal are found on the vaginal wall and on the outside of the cervix. A DES daughter who has adenosis will find that as she grows older, the adenosis is gradually replaced with normal tissue. The process of replacement is complete around age 30. This replacement process is called squamous metaplasia and involves the gradual growth of a layer of squamous cells on the part of the vagina and cervix previously covered by adenosis. As this growth occurs, many of the new squamous cells will look different from squamous cells normally found on the surface of the cervix. Some of these differences will look similar to the cell changes a lab technician might recognize as dysplasia.

If the health worker taking the Pap smear and the lab technician do not know that a woman is a DES daughter, then they may be likely to confuse the changes on her cervix for dyslasia. It is also important that DES daughters know how up-to-date practitioners are in their knowledge of the effects of DES. Have a Pap smear taken as part of a regular DES exam with a practitioner who is knowledgeable about DES exposure.

Other drugs that may affect Pap smear results

- Cancer Therapy Drugs: primarily alkylating agents, also anti-metabolites and anti-biotics such as adriamycin.
- Plant Derivatives: colchicine (for gout) and podophyllin (for warts).
- Immunosuppressants: steroids for asthma or arthritis may hinder the ability of the body to fight abnormal cell growth.
- Chronic Use Drugs: allergy shots, thyroid drugs and kelp.
- Drugs Taken for Chronic Conditions: primarily digitalis (cells have estrogen-like appearance); also antihistamines, tetracycline, valium, and aspirin.

Male role

Other prominent theories of causes of abnormal cervical cells focus on the presence of carcinogens in the male ejaculate. Some say that sperm is a carrier for cancer causing substances. Others focus on sperm itself. These theories tend to take the blame from women and look at the "high risk" male.

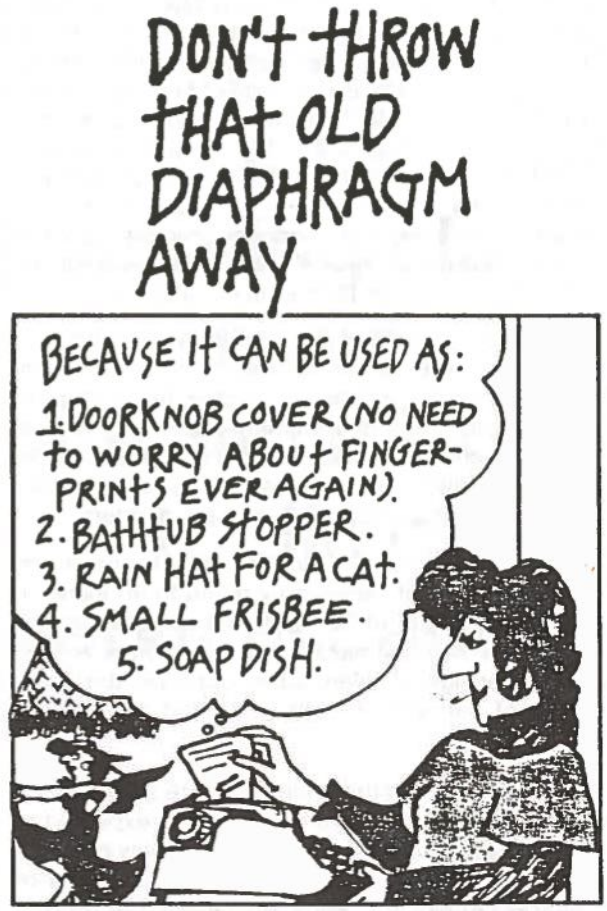
One theory is based on the fact that sperm contains an enzyme (a protein which breaks down large molecules into smaller ones) that can eat away at cell wall tissue. The premise is that the sperm cannot distinguish between cells that are eggs and cells of the cervix. When a population of cells is regenerating and the new cell walls are thin, this enzyme could get inside these cells. This may cause some to start dividing, resulting in abnormal cell growth.

Concurrent with the development of these sperm theories is an increase of testicular cancer in men. An article in *Mother Jones* (April, 1982) magazine blames carcinogens in the environment and workplace for the increase in testicular cancer and sterility in men, but never mentions the possible effects on their women partners. We know of several women who had abnormal Pap smears when their partners discovered they had testicular cancer.

A 1955 study in Britain suggested that the high mortality rate from cervical cancer of women in seaboard towns might be related to cancer of the scrotum in fishermen in the same region. A four year study by McMaster University's Occupational Health Program discovered a higher rate of prostate cancer among smelter workers than among the general population. No one seems to have studied possible effects on the female partners of those smelter workers.

There are many general articles about the role of sperm in abnormal Pap smears. Some say that fewer women who are partners of men with vasectomies have cervical cancer than women in the population as a whole. Others look at barrier methods of birth control. The most striking is a two year U.S. study of women with biopsy-proven dysplasia or carcinoma *in situ*. Rather than receiving surgical treatment, some of the women were advised to use condoms. *One hundred and thirty six of these 139 women showed complete regression to Class I Pap results within five months.*

Diaphragm users are also at significantly less risk in comparison with other contraceptive users. One study reasons that this is because women who use diaphragms are older than those using other methods. Some studies which looked at several barrier methods (diaphragms, and foam and condoms) have found the



risk of abnormal cells decreased with increasing years of use, especially among women developing severe dysplasia. In a study denying that oral contraceptives contributed a risk to cervical abnormality, statistics for British Columbia showed that a higher percentage of women using barrier methods were free of cervical abnormalities. Whether it is the absence of the pill, the decreased exposure of the cervix to ejaculate while using a barrier method, or a combination of the two that lowers women's risk for cervical abnormalities is not yet sorted out.

Sexual history

Statistics about risk can be useful in developing preventive health care programs, but if a woman does not fit into any of the "at risk" categories and develops cervical abnormalities, these statistics are meaningless. Statistics do not mean that any one woman will or will not develop cervical abnormalities. Many women with cervical abnormalities do not fit into statistical predictions.

There are studies which list early age of first intercourse as one of the factors contributing to cervical abnormalities. Many of these also list multiple partners as being as important as early age of first intercourse. They often point out that prostitutes have a higher rate of cervical cancer than is found in the general population. If there is a strong male role in cervical cancer, a woman's risks are statistically increased with many partners. However, our evidence suggests that a woman may develop cervical abnormalities even if she has had only one male partner in her lifetime.

In a study of women who work as prostitutes in Taiwan, the multiple partner theory is contradicted. These women did not have a higher percentage of cervical cancer than other women. Because of cultural customs, women in Taiwan do not have intercourse in their teens, which suggests that the age of first intercourse is more important than multiple partners.

A 1984 British study found that an early age of first intercourse did not necessarily relate to an increase of overall numbers of partners. Recent U.S. studies have shown that both black and working class women have earlier age of intercourse, but have the same number of partners as their white and more upper class peers.

Inuit women in northern Ontario were screened for the first time in the 1960s. Researchers expected to find dysplasia and carcinoma *in situ* not only because of lack of previous screening, but also because of cultural acceptance of early sexual intercourse and multiple partners. No instances were found.

One fascinating study says that the risk of developing cervical cancer is increased three times among partners of men whose past partners have developed cervical cancer. There is an English study of fourteen "marital clusters" in which two or three past wives of the same men have carcinoma *in situ* or a more serious abnormal condition of the cervix.

Teenage years

It is important to include sexually active young women in Pap screening programs and health education. The process of the squamo-columnar junction moving further into the more protected endocervical canal varies with the individual, and it may be that this more vulnerable area is still exposed during first sexual activity in some young women. Teenage women may be ill-informed about STDs and are more vulnerable to some of them, particularly chlamydia. The faster growing type of cervical cancer frequently targets younger women. Carcinoma *in situ* has been found in fifteen year olds. Birth control pills are made available to teenage women by birth control clinics. The use of barrier methods is not encouraged. Young women are the only group increasing their smoking habit.

Lesbians

There have been no studies of abnormal Pap smears and cervical cancer which denote the sexual preference of the women involved. Two 1981 studies of lesbian gynecology found that lesbians seem to have almost as great a percentage of abnormal smears as heterosexual women. Significantly, lesbians did not receive Pap smears as regularly as heterosexual women, the average from one study being every twenty months rather than yearly.

Lesbians we know with abnormal smears have been sexually active with a man or men previously, but most have not been active with men for a number of years. Other factors, such as infections or stress, may have influenced their abnormal results.

Smoking

In addition to these theories are many concerning environmental issues. What cancer discussion would be complete without a section about smoking?

In a study in rural Nova Scotia over a ten year period, researchers found that the most important risk factor in developing cervical cancer was having a husband who smoked. In that study, the woman's own smoking patterns had no significant effect on Pap smear results. However, there is other evidence linking a woman's smoking with a higher risk of dysplasia and carcinoma *in situ*. A 1980 study found that women smoking 20 or more cigarettes a day had 3 to 4 times the risk for abnormal cervical cells than non-smokers.

A 1982 study hypothesizes that "since the products of tobacco smoke are excreted in breast fluids of non-lactating women fifteen minutes after smoking a cigarette, it is possible that a carcinogen can be inhaled from cigarette smoke, transported through the blood system and secreted by the cervical surface cells where it may act as a promoter or co-carcinogen on cells already affected by a carcinogen." One study found that the association with smoking was strongest in younger (ages 20-29) women.

There are also articles evaluating whether the association between abnormal cervical cells and smoking is influenced by the intake of vitamin A or beta-carotene, a component of vitamin A. Recent research has shown a protective effect of this dietary factor for several types of squamous cell tumours. Columnar and squamous cells are found in the esophagus and lungs, as well as in the cervix. Studies in the U.S. suspect a beta-carotene deficiency in patients with lung, esophagus and larynx cancer. Many cases of these three cancers are linked to smoking.

Connections between beta-carotene deficiency and cervical cancer do exist. Wynder looks at the possible relationship between nutritional deficiency, in particular vitamin A, and cervical cancer. Various nutritional deficiencies may accompany low socio-economic status. In countries where the intake of vitamin A is relatively low, as in South America, cancer of the cervix is the number one cause of death for women. Wynder discusses how vitamin A plays a protective role against carcinogens in mucus-producing epithelium, such as the cervix. In rats, one of the first clinical manifestations of vitamin A deficiency is changes to the cervical epithelium.

A study from the Albert Einstein College of Medicine looked at the importance of beta-carotene to epithelial tissue of the cervix. They unexpectedly found vitamin C deficiency and intake of refined foods to be risk factors for severe dysplasia and carcinoma *in situ*. A daily vitamin C intake below 30 mg represented a ten-fold increase in risk of cervical dysplasia over women whose intake was above 30 mg. Some people say that smoking depletes the body of vitamin C.

Women's own suspicions

Although there is no evidence, other carcinogens which have been suggested to us by a number of women with histories of abnormal Pap smears are coal-tar douches and substances in tampons. Feminists suspect that tampons have contained carcinogens such as asbestos and talc fibers. Talc has been proven to cause ovarian cancer. Some health care workers in the U.S. are urging younger women, particularly teens, to avoid the use of vaginal deodorants and preparations, since their cervix may be quite vulnerable to irritating substances.

"Poor and working class women are most likely to die of cervical cancer."

Class

Medical literature occasionally mentions the relationship between economic status and disease. Higher income and education can mean better basic health education and safer work environments, as well as better diets, regular health care and early disease detection. There is agreement in most cervical cancer studies that poor and working class women are more likely to die of cervical cancer than middle and upper class women. One problem with these studies is that the class of a woman is determined by her husband's occupation if she is married, so there could be some inaccuracy.

In their reports about the role of sperm enzymes in cervical abnormalities, Reid, Singer and Coppleson make connections between the ratio of the several proteins in sperm and class standing. The lower the social class, the greater the proportion of one of the proteins (histone) which seem linked with cervical changes.

Several British studies focus on class differences. In one study of England and Wales, cervical cancer had the steepest class gradient of any cancer. Another study shows that the wives of professional men experience mortality rates only 35% as high as the rates for all married women. Wives of unskilled labourers experience rates 118% of those of all married women.

An analysis of the cytology records of almost 300,000 women in Manchester shows that the rates of abnormal findings are highly correlated with the rates of mortality from cancer of the cervix when both are distributed according to the occupation of husband. Wives of men who work underground (miners and quarrymen), fishermen, armed servicemen, and gas and chemical workers are most likely to die of cervical cancer.

These facts are echoed in other studies, including one which looks at the woman's father's occupation. It concludes that women of the highest economic status had a lower prevalence of C.I.N. than women whose fathers had low paying jobs. This same study also mentions education as a factor. The more education a woman has, the less chance she has of developing cervical cancer. In the United States, according to figures from the 1960s, black women had a rate of cervical cancer twice that of white women. A New York study looked at cervical cancer, low socio-economic status, multiple partners and nutritional deficiencies. Poor women, whose bodies went through many pregnancies and had fewer nutritional reserves, were found to have higher rates of dysplasia.

There are studies which emphasize cultural differences rather than class differences. Usually these studies focus on marriage patterns, but we do not think that you can look at cultural habits without looking at the underlying social and economic situations. It has been common to say that Jewish women get cervical cancer less often than other women. This has at times been related to male circumcision and at other times related to monogamous marriage traditions. While Jewish women may have experienced a lower incidence of cervical cancer years ago, cultural and sexual traditions among Jews have been changing with the times. Jewish women do get cervical abnormalities. A study in Israel shows that Oriental Israelis (from Africa and southern Europe), who are generally poorer, less educated and of a different cultural background than European Israelis, have a higher rate of cervical cancer than European Israelis.

Stress

The last of these socio-economic factors to discuss is the effect of stress on an individual woman's life. Many studies include references to difficult social situations for women with cervical cancer and abnormal Paps. Some of these studies compare women with cancer of the cervix with women who have cancer in other parts of the body, such as breast cancer. The range of assessments these articles make as characteristics of stress in women with cervical cancer include recent loss of family members, unhappy relationships, not liking the sexual relationship with the partner they are involved with and a tendency to reject the feminine role. One study even mentions evidence of homosexual conflict. The sexism and heterosexism of these articles make it difficult to decide whether there is any validity to the allegations. Observations are usually made by male researchers.

Much of current cancer mythology serves to blame the patient for being a "cancer personality" (someone who cannot handle stress well). Susan Sontag is one who has sought to challenge this concept in her book *Illness as Metaphor*. Psychological and social factors may be of importance for certain women or they may be a small part of a more complex situation for other women. "In some as yet unexplained manner this influence (attitudes, experiences) may include a tendency toward sensitizing or rendering more susceptible certain areas of the body to physical illness in times of stress or trauma. One end result of such chronic sensitization could be the appearance of cancer pathology, dependent *in addition* on the *necessary* combinations of 'physiological' and 'biochemical' factors present."

We have observed many women receiving abnormal test results at times of heavy stress in their lives. One human response to stress is to get ill! What we are able to extract from all the psychological articles and our experiences is that some women feel "hopeless" about their life or some part of their life, such as their job or personal relationships. One article states that "such a feeling was portrayed by a complete sense of frustration for which the individual woman felt there was no solution. In addition, the individual woman blamed herself for the frustration having occurred in the first place."

Studies claim that for some women this manifests itself as a sense of ambivalence and indecisiveness. They cannot make decisions about what to do with their lives, and for whatever reasons—self-image, guilt, societal expectations of women and the events in their lives—they think that events will never get better. These are difficult concepts to put into perspective, especially when a woman is faced with the stress and anxiety of an abnormal Pap smear result and pressure from doctors. We want to reiterate that these ideas are only one of a number of influences. Each woman has to decide what is important for her. There are many different ways to work on all the factors we have discussed. One does not have to fully understand why one is ill in order to get better.

What you can do

When you receive notice of an abnormal Pap smear, there can be many explanations for the result. Here are some suggestions about what to do when you hear the news.

1. Make sure that your doctor will help you take the cautious route. If s/he pushes you too much, maybe you should seek one who will help you approach this situation conservatively.

2. Ask for a copy of the Pap report so that you know exactly what it says. Sometimes the number classification is not as important as the written description.

3. Even if your smear report does not mention infection, check culture results. If none were done, do them. These should include Gardnerella, yeast, chlamydia and gonorrhea. Also remember that if you had an outbreak of herpes, warts or any other genital/vaginal disease at the time of the smear, you should clear that up too. Then get another culture taken to make sure the treatment worked. When you receive a normal culture result, repeat the Pap smear at mid-cycle.

4. If you are heterosexual, sexually active and using a non-barrier method of birth control, you might try switching to condoms (and foam) or a diaphragm (and spermicide) for three to twelve months. In the condom study we referred to, most women reversed an abnormal Pap to normal in 3 to 6 months, though there were several women for whom it took close to a year.

5. If you use oral contraceptives, then you should consider stopping. Folic acid deficiency is one of the many side effects of the Pill. If you want to use the Pill, or have just come off of it recently, then you might want to consider folic acid therapy. In a study completed in January of 1982, 10 mg of folic acid taken daily for three months helped some oral contraceptive users with dysplasia return to Class I, and seemed to stop any progression to carcinoma *in situ* for those who did not regress.

6. If you receive your first Class II or even repeated Class IIs, wait 3 to 6 months and repeat the Pap test and monitor the results.

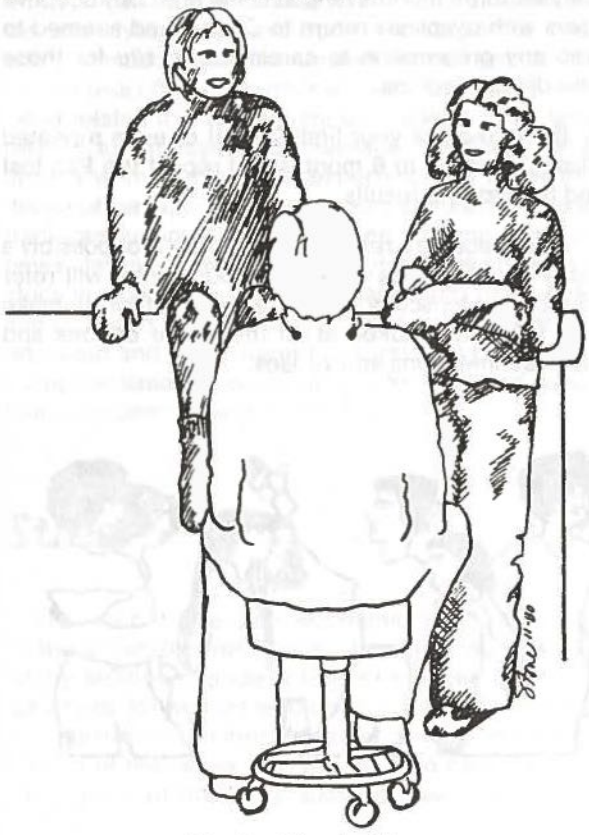
7. If you receive a result of Class III or IV, or possibly a Class II with severe dysplasia, your doctor will refer you for a colposcopy. If you have Class II or III, make sure you have looked at all the above options and resolved infections and viruses.

Colposcopy

Colposcopy is not a routine exam. A colposcope is a specially designed microscope with a very powerful lens. It looks like binoculars on a floor stand. The doctor will look through your vagina at your cervix with the aid of a speculum and a bright light. The colposcope may also be connected to a video camera, so that you will be able to see your magnified cervix on a large monitor or TV screen within view of the examining table. You will not be able to see the cervix as clearly as the doctor can through the colposcope.

The use of colposcopes can go beyond screening abnormal cells on the cervix. They are useful in assessing red spots on the cervix, cervicitis, eversion and erosion. In Boston, a gynecologist used one in his office to check the cervix of each woman he fitted with a cervical cap to determine whether the cap had any effect on the woman's cervix.

It seems unlikely that gynecologists in British Cclumbia could purchase a colposcope for their office and get paid for their services. There is an agreement between the B.C. Medical Association and the Cancer Control Agency of B.C. that colposcopy be centralized in hospitals, and there is no way for individual specialists to bill the Medical Services Plan for their use. Colposcopy requires extensive training and experience to accurately use it for diagnosis.



I took a friend with me.

Because hospitals and large clinic settings are intimidating and can be stressful, it is useful to do some planning before your appointment. Talk with your doctor about whether you want a friend to be with you when you have the colposcopy appointment. A friend could allay your fears, have a list of prepared questions, take notes for you and make the visit less imposing. Have your doctor arrange this in advance with the clinic or specialist. It is sometimes impossible to have a friend come with you if you mention it as you arrive for the appointment.

The current public relations in British Columbia surrounding colposcopy imply that it is "just like" a Pap smear and that it does not hurt. It *is* different from the Pap smear. Women who go in for colposcopy are usually afraid. They are worried that they might have a pre-cancerous or cancerous condition that will require further medical or surgical treatment. Thus, women are often under considerable stress when they appear for colposcopy.

Many women report that having a colposcopy is uncomfortable. The gynecologist inserts a speculum into your vagina. Once the speculum is centered on your cervix, s/he will then focus the colposcope on it. Your cervix will then be swabbed with an acetic acid (vinegar) solution, which washes away the mucus and shows up any abnormal areas more clearly.

There can be white areas of mucus or discharge on the cervix. It is only when these white areas (leukoplakia) cannot be wiped away with the swab that they are suspicious. Normal cells absorb the acetic acid solution, while abnormal ones (including inflamed cells) do not. These abnormal cell areas show up as white against the normal, pink cervix.

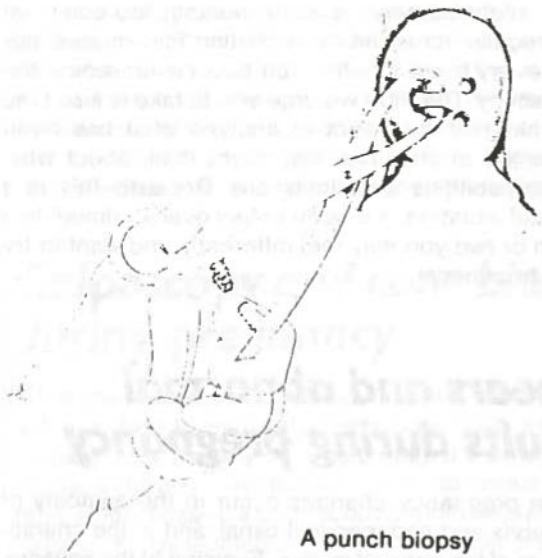
If there are white patches and you have access to the video screen, the doctor should point them out for you. If you have never seen your cervix before or have not done regular cervical self-exam, this might be a scary moment, since the cervix is magnified. You should ask the gynecologist to point out the zone of transformation. Because the speculum puts pressure on the sides of the cervix, the inner columnar cells are pushed forward and can be seen more easily.

The specialist will be looking at the white areas in a more detailed way than s/he will point out to you. S/he will be looking at the demarcation lines of the white and normal areas, the texture of the areas, and whether there are any irregular patterns of blood vessels. Remember that your cervix is magnified. The white areas could look huge. Try to put what you see into the perspective of the normal size of your cervix.

Colposcopy is a useful tool to pinpoint and assess abnormal areas on the cervix. However, in some instances, an infection or virus may mimic pre-cancerous conditions. Papillomavirus can be difficult to distinguish

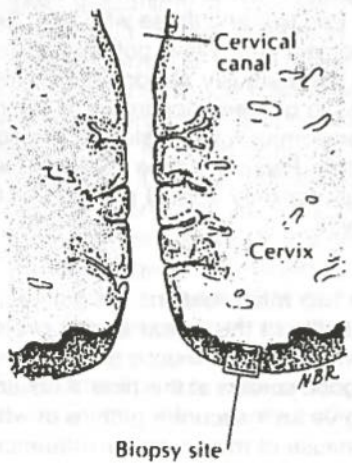
from dysplasia or carcinoma *in situ*. Because of this it may be useless to have this examination until any infection or viral outbreak is resolved. In our experience, this includes women with Class III, as well as Class II, Pap results.

In some clinics, the colposcopist will take a Pap smear in order to verify the reason for the visit and check microscopic changes. The specialist usually takes biopsies from suspected areas. A biopsy is a small piece of tissue about the size of a match head which is snipped (punched) from the cervix. This biopsy



A punch biopsy

will contain several layers of epithelium, so that the pattern and depth of any abnormal changes beneath the surface can be observed. Different specialists take different numbers of biopsies. Some take only from the worst area. Others take 2 to 5 from all around the cervix to get a good picture of the development of the abnormality. If the abnormal area (lesion) is small, the biopsy may cut all or most of it out.



You may feel a pinch on your cervix as the gynecologist takes the punch biopsy. A tampon is inserted against your cervix to check the small amount of bleeding that should occur. A few women feel mild to moderate cramping later on in the day.

Endocervical curettage (scraping) of the endocervical canal may also be performed. An endocervical curettage involves the insertion of a tiny spoon-shaped instrument a short way up through the os to scrape cells not seen through the colposcope. Even though some columnar cells are pushed forward by the speculum, it may be impossible to see the whole squamo-columnar junction. Also, with the curettage, the gynecologist can tell whether the lesion extends up the endocervical canal, as happens in a minority of cases. If s/he cannot see the limits of the squamo-columnar junction or the abnormal area, the curettage should be performed. Sometimes, a small asymptomatic adenocarcinoma (glandular cancer) may be revealed by curettage, because cells from the glands that line the canal are taken by the scraping.

If there is no video monitor, try to get the specialist to make a diagram of your cervix and zone of transformation, showing where s/he sees abnormal areas. This will be useful as you decide what treatment to follow or if you have another colposcopy in the future.

The sampling of cells from the punch biopsy is sent to the pathology (study of disease) lab. Through a more elaborate process than that of Pap cytology, slides are prepared and examined under a microscope.

Not all pathologists analyze biopsies in the same manner. The best report for you is one which contains a micro report as well as a diagnosis. That is, as well as describing the extent of abnormalities of cells, the pathology report will give an idea of how deep the abnormal cell penetration is, possibly what formation it takes, if it is wart-like, etc.

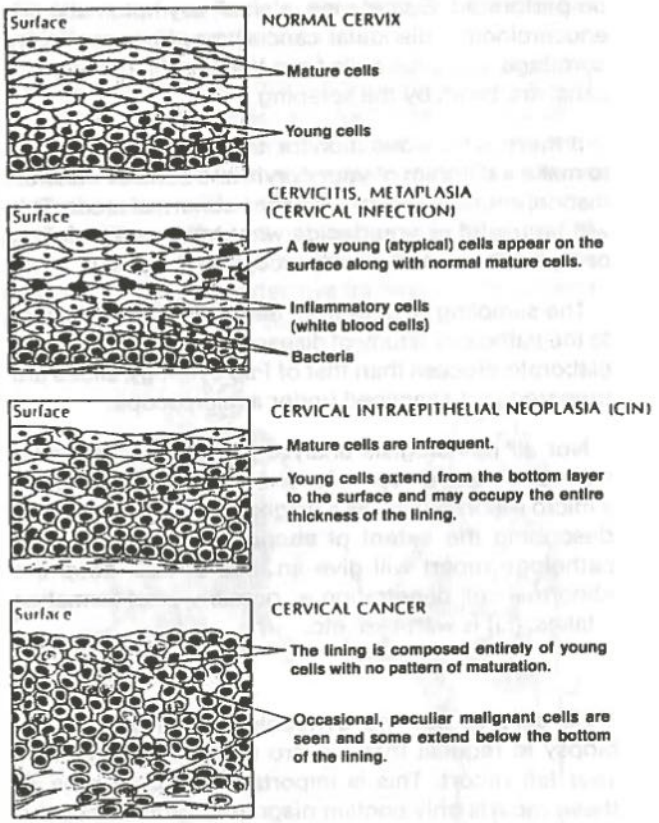
Be sure to ask the gynecologist performing the biopsy to request that a micro report be included in your lab report. This is important because some of these reports only contain diagnoses. Sometimes the pathologist will use both the colposcopy and the Pap smear to make the diagnosis. You want to know what each is separately. The Pap smear and the biopsy may differ and this could be important in assessing what to do.

It could take a few days to a few weeks for the report to come from the lab. The gynecologist will see this report and make a recommendation for treatment. This recommendation goes with the lab report to your doctor, who then will contact you.

Biopsy report

The biopsy report can include one of the following diagnoses:

- benign, no abnormality
- dysplasia
- carcinoma *in situ*
- micro-invasive carcinoma
  There is no standard definition for micro-invasive carcinoma in Canada. This usually means the abnormality has penetrated below the epithelial layer (basement membrane) to a depth not more than five millimetres.
- invasive carcinoma
  This means the abnormal cells go deeper than five millimetres.



If cancer cells (carcinoma) extend below the epithelial surface cells, they are categorized as micro-invasive or invasive cancer, depending upon how deep they penetrate (1 to 5 mm). Different gynecologists and pathologists use different measurements within this range to separate micro-invasive from invasive cancer.

Once you see the biopsy report and the gynecologist's recommendation, it is time to evaluate what course of action to take. We cannot stress enough that you can give yourself time to determine what is best for you, no matter how much pressure you may get from doctors, nurses and friends.

Many regressions often occur within one year, without a woman doing anything at all. Some treatments we will mention seem to work in about 2 to 4 months. Some people think that a woman's age affects her possibility of reversing a smear result. Under 40 years of age is considered easier than over 40. We do know of a woman over 40 who changed a Class IV result to Class I in six months.

You might be nervous about waiting. You could set up a regular schedule for repeating Pap smears, say once every three months. You could even repeat the colposcopy. The time we urge you to take is also time to think. You may want to analyze what has been happening in your life. You might think about what your capabilities and limits are. Because this is a stressful situation, it is easy to feel overwhelmed. In a month or two you may feel differently and want to try other treatments.

Smears and abnormal results during pregnancy

With pregnancy, changes occur in the anatomy of the cervix and endocervical canal, and in the characteristics of the cervical mucus. Eversion of the squamo-columnar junction brings columnar cells out into the vagina and makes them more visible. The cervix feels softer. The endocervical canal is filled with a thick mucus that can block access to the columnar cells underneath. Additionally, the pregnant woman's cervix contains an increased number of blood vessels (vascular) and is often friable (bleeds more easily).

We recommend Pap smears be done after delivery rather than at the traditional time, the first pre-natal visit. The exceptions to this are women who have never had a Pap test and those who have not had one in years. Women who have gotten pregnant during follow-up of a previously abnormal Pap test need to evaluate how to proceed according to their individual situation. For women with a history of previous miscarriage, a routine Pap can cause bleeding, which even though it may be only a local reaction of the cervix, can be scary.

There are two main reasons for our recommendations. The quality of the smear during pregnancy is a consideration, since thick mucus prevents practitioners from taking good smears at this time. Also, an abnormal report may give an inaccurate picture of what is really going on because of the hormonal influences of preg-

nancy. A 1980 Alabama study begun in 1952 concluded that true abnormality tended to persist after delivery and that these abnormal cells should not be confused with pregnancy-associated atypia. Folic acid deficiency is thought to be a possible cause of some pregnancy-related changes. The placenta is a large consumer of folic acid and large dysplastic cells found in Pap smears could represent folic acid deficiency. Also, degenerating decidual cells from the endometrial side of the placenta could be confused with carcinoma *in situ* because of their size and many shapes.

Many women find abnormal smear results revert to normal after pregnancy. In the Alabama study, 126 of 188 women did so. Three months postpartum gives enough time for healing of the cervix after birthing, and by then good smears can be taken. However, the Alabama study also proposed that hormonal changes and the recovery of atypical cells may continue to influence Pap test results during breast-feeding.

Colposcopy and cone biopsy during pregnancy

It is possible to care for most pregnant women without resorting to medical intervention such as cryotherapy, laser therapy or cone biopsy. If a practitioner insists on further investigation for an abnormal smear then, in most cases, a colposcopy should be sufficient. Usually, the gynecologist can see the whole squamo-columnar junction because of the eversion and can examine it at various times during the pregnancy. Women with severe dysplasia and carcinoma *in situ* can be seen monthly until delivery. Pap tests, colposcopy and bite biopsy can be done at any point to monitor cervical changes.

If the abnormal area appears to go further up the cervical canal than can be seen by the colposcope, then the practitioner might want to perform a cone biopsy. The eversion of the squamo-columnar junction and increased vascularity of the cervix make cone biopsy more difficult, because there is more risk of post-operative hemorrhage, premature onset of labour, cervical incompetence (hence miscarriage) and cervical dystocia (rigid cervix that won't dilate) as possible complications. Fetal loss can occur in 5-10%. Cone biopsies should be avoided in the first trimester if possible. As an alternative in early pregnancy for women whose transformation zone is not fully visible, endocervical curettage is recommended by one local practitioner. Again there is speculation by some British Columbia practitioners that in pregnancy there is a tendency for colposcopy to overestimate the severity of lesions, and that this is probably made worse by the increased vascularity of the cervix during this time.

Alternative treatments

1. Vitamin therapy includes C and A. Vitamin C as cancer therapy is now accepted in some medical circles. Linus Pauling's books are helpful if you are interested. Vitamin C (like vitamin E and selenium) acts as an anti-oxidant or detoxifying agent in the blood stream. This means that in collaboration with molecular oxygen and certain enzymes in the body, vitamim C converts toxic substances into non-toxic derivatives that are then eliminated in the urine. Vitamin C also aids in the regeneration of epithelial tissue. Two Soviet researchers found that the ascorbic acid levels in abnormal cervical cells were depleted compared to normal cervical tissue.

Since vitamin C is a water soluble vitamin, there are no serious side effects if you use more than you need. Most of the side effects are gastro-intestinal discomforts and can be remedied by decreasing the intake of the vitamin. Different doctors may recommend different daily amounts of vitamin C. Four grams a day may be an appropriate beginning dose.

The study at the Albert Einstein College of Medicine found that approximately 100 milligrams daily is important for prevention. Some doctors say that standard cancer therapy is at least 10 grams daily. If you have extended medical benefits, check to see whether they will reimburse you for vitamin C therapy if you use it by prescription from a doctor.

2. Do you smoke? Try to stop. If you cannot stop smoking, but can cut down on your intake, consider vitamin therapy. It has been suggested that vitamin C may reduce the carcinogenic effect of cigarette smoking as a risk factor in lung cancer.

3. There is also the beta-carotene influence mentioned earlier. Carotenes are found in green, yellow and red vegetables. They are utilized in the digestive system. Carotenes are precursors of vitamin A and are just as effective as the vitamin when converted by the body to vitamin A. The beta-carotene form is the most effective for treating abnormal tissues and there is less danger of overdosing with it. Vitamin A is a fat soluble vitamin and can build up in the body to toxic levels. We suggest that you work with a holistic practitioner and do some reading to decide how much to take.

4. In June, 1982, the American Academy of Sciences released a report advising that lower intake of fats would significantly reduce cancer in the United States. The report also suggests moderation in two other areas: salt-cured or smoked food and alcoholic beverages.

Heavy use of alcohol, particularly combined with heavy cigarette smoking, is associated with cancers of the mouth, throat and esophagus (squamous cell areas). The yeast which is used in the fermentation process (Saccharomyces) produces estrogen in the fermentation. This estrogen shows up in significant levels in alcohol, particularly in beer. Many meats and dairy products contain estrogens because of hormone use in animal production. Excess estrogen may be responsible for abnormal cell growth.

There have also been studies linking coffee and refined foods with increased risk of cancer.

5. Our bodies have certain natural defenses against disease, including cancer. Vitamin C is only one substance of many which are essential for efficient working of a person's immune system. You might want to work on upgrading your whole immune system. Vitamins, diet, herbal cleansers and avoidance of food you may be allergic to may be helpful. Get rid of anything which may clog this system and block maximum utilization of nourishment. Also, any chronic medications which are used to suppress your immune system, such as cortisone (steroids), could be adversely affecting your ability to get well.

There are some sensible changes in a woman's diet which might help her ability to regain a healthy cervix. Get rid of addictions as much as possible. Cut down on coffee, sugar, alcohol and cigarettes. Cut down on fats: red meat, smoked meat, high fat cheeses, butter, and high fat fish and seafood such as salmon and shrimp. Cut down on refined foods. This means eating lots of whole grains, fresh fruits and vegetables, nuts and seeds.

This kind of diet can be planned with the help of a holistic practitioner, nutritionist or doctor. These people may have variations of vitamin therapy and may use internal or topical treatments such as douches, herbs and fasts. Acupuncture does not seem helpful for abnormal cervical smears. Also, there is plenty to read, many other women to talk with about their own healing experiences and information available from the Vancouver Women's Health Collective or a local health centre.

6. Topical applications have been used successfully by women treating irritated areas on their cervices. These may be useful to women when used in conjunction with other healing methods. A woman can insert a speculum, use a cotton swab to wipe off mucus, and then use another cotton swab to apply something to her cervix. This is easier if a friend is able to do the application. Applications can be made daily or 2 to 3 times a week. We have heard of women using vitamin E, honey, aloe vera, wheat grass juice, and various combinations of these, It is also possible to apply beta-carotene directly to the cervix. Beta-carotene in liquid form is available from holistic sources. Because of possible toxic changes, we suggest approaching the use of topical vitamin A with a practitioner who has had some experience or one who will monitor your cervix closely.

7. Last and most difficult to pinpoint is stress. Many of us lead lives that include lots of daily stress. There are times when this is worse than others. Some of us who have had abnormal Pap smears have been exhausted at the time of the smear and working beyond our capacities.

Some women's stories about healing themselves involve changing major elements of their lives, like jobs or relationships. These are not necessarily easy decisions to make, but certainly seemed relevant to these women's positive outlook about their future and ability to be well.

Women we know have used the following techniques to help with stress: autogenic training (a relaxation method using aspects of self-hypnosis), visualization (a mental exercise imagining a positive course of action), meditation, body and foot massage, yoga, and

body and psychological therapy. Different women use different techniques. You might use one for a while and another later.

Western medicine has standard treatments for all women. Alternative healing varies with each woman and may require hard work. It certainly requires motivation. Whatever methods you choose, take time to think about them and decide which is best for you. It may be that some of the easier methods do not work for you and others seem overwhelming. You may fear progression of the abnormality or not have the time or energy for some alternatives. In this case, medical treatments may be the answer.

Cryosurgery

With cryosurgery, compressed gas (usually nitrous oxide) released from a tank into a gun-shaped instrument expands rapidly to produce intense cold, freezing the tissue it touches. This procedure produces a uniform area of tissue destruction, leaving deep tissue beyond and below the cauterized (burned) area undamaged. There is minimal scarring with this treatment.

Each freezing takes 3 to 4 minutes. Depending upon the size or location of the lesion, different sized or shaped applicator tips may be used and several applications of freezing may occur. Generally, a wide area around the abnormality is frozen. This procedure may produce a sensation of coldness in the vaginal area and cramping.

Normal after-effects of cryosurgery include a profuse watery discharge lasting 1 to 2 weeks and possible spotting or bleeding. The watery discharge sometimes has an odour. In two weeks, the discharge becomes mucus-like and by five weeks it is essentially gone.

This discharge contains potassium. Any damage to tissue causes a loss of potassium from the cells. Since potassium is necessary for nerves to conduct impulses and muscles to contract, foods high in potassium should be increased. These include bananas, dates, cantaloupe, citrus fruits and green, leafy vegetables.

Patients are advised not to have intercourse or use tampons during the first 2 to 3 weeks after treatment because of the delicate condition of the cervix. Appointments can be scheduled immediately following menstrual periods so that a woman will not menstruate for approximately three weeks following the cryosurgery.

Complications are rare with cryosurgery. Women are asked to lie quietly for a few minutes afterwards, as some women have a slight flushing sensation following the freezing. Mild to severe cramps are also possible.

Cryosurgery minimizes surgical risks since no anaesthetic is necessary and no incisions are made. It also eliminates the inconvenience of hospitalization, since it is done on an out-patient basis, and therefore costs a fraction of the fee charged for cervical conization (see "Cone biopsy" section).

There are gynecologists who urge extensive use of cryosurgery instead of cone biopsy as treatment for dysplasia and carcinoma *in situ*. To facilitate this method they routinely use endocervical curettage, carried out at the time of the preliminary colposcopy.

In North America, acceptance of non-surgical treatment with cryosurgery is slow, even though the potential benefits of avoiding cone biopsy and hysterectomy (see "Hysterectomy" section) have been recognized. In Britain, patients are regularly considered for cryosurgery unless there has been incomplete visualization of the squamo-columnar junction or there is any suspicion of invasive cancer. In one British study involving cases of dysplasia and carcinoma *in situ* in which cryosurgery was used on lesions extending up the os, the successful treatment rate was 75%. Cryosurgery was successful in 89% of women whose lesion was completely seen. Only 30% of all women in this study went on to surgery. Some other studies say cryosurgery success is 92% for lesions which are completely seen.

There was a marked increase in failure of cryosurgery in patients who have had three or more pregnancies. The cervix in such women often has irregularities and scarring which may interfere with uniform application of the cryotips to the epithelial surface, producing an uneven freezing with inadequate penetration of the cervix. Of the women going on to surgery, there was also a higher percentage of larger lesions and lesions extending up the os. However, some women with these characteristics were treated successfully with cryosurgery and were Class I in follow-up Pap smears and colposcopy.

In Vancouver and British Columbia, the prevailing practice is different. Generally, you cannot undergo cryosurgery if the lesion appears to extend up the os, because the unseen area might reveal the most abnormal cells on biopsy. Cryosurgery is usually recommended only if the entire lesion can be seen during colposcopy, the Pap smear and biopsy report agree, there are no cervical irregularities, and the lesion does not extend up the os. If a woman has a lesion which seems to extend up the os, she may have to seek out a number of specialists until she finds one willing to perform cryosurgery.

Healing takes a while after cryosurgery. For some women it can take longer than for others. In British Columbia, this procedure is often done as day surgery, so that women need only spend a few hours in a surgical clinic. General anaesthetic is used and when the surgery is over, women wake up quite groggy and are sent home to recuperate. In some areas of British Columbia, a woman may spend several days in the hospital for this same surgery.

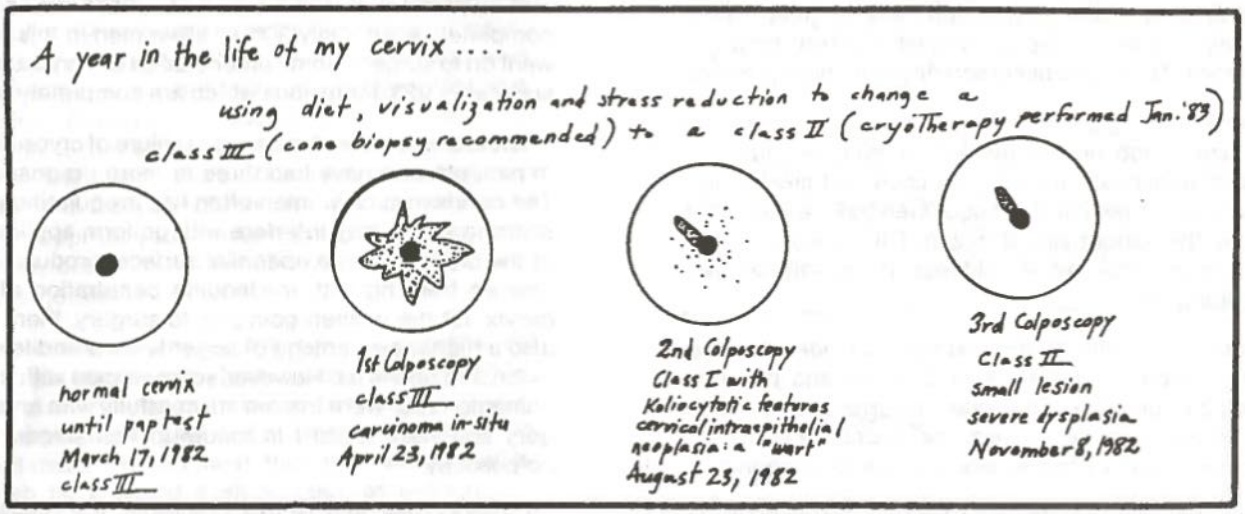
The cervix shows some interesting colposcopic changes after cryosurgery. The epithelium is thickened. The regrowth of cells occurs at such a fast pace that they can look like dysplasia. Also, because of the freezing process, the squamo-columnar junction is usually higher up in the cervical canal and may be invisible to the naked eye. It is not a good idea to have a Pap smear again until you are sure that the healing is completed.

If abnormal cells do remain after cryosurgery, they usually show up in the first year after treatment. Once the lesion is eradicated by cryosurgery, a woman appears to be at no higher risk of development of subsequent cervical abnormalities than any other "high-risk" woman.

Some gynecologists stress that conservative treatment with cryosurgery requires good follow-up procedures of Pap smears and colposcopy. Some women could be considered unsuitable for cryosurgery because they are too "transient" or "irresponsible." This is another instance of the sexism and class bias in a health care system that decides which women are suitable for the least drastic surgery. Some gynecologists find it easier to "cut it out" than to educate women about procedures and to follow-up and preserve cervices.

One British study suggests the use of a patient-held record. The results of Pap tests and other procedures could be recorded on a card or in a small booklet. This way if a woman or a clinic or practitioner moves on, the information can stay with the woman. Women would not become "lost to follow-up" with this system.

A YEAR IN THE LIFE OF MY CERVIX



Patrice Snopkowski

Postscript: ***1986 Post-natal Pap Smear Class I***

Laser therapy

Laser therapy is available at the Women's Clinic at the Vancouver General Hospital. This is a more precise method of destroying cells than cryosurgery. There is less harm done to surrounding tissue because the high energy light beam can be precisely directed at specific points.It cuts with intense heat, sealing blood vessels as they are cut, and reducing loss of blood and body fluids.

At Vancouver General Hospital the criterion for laser treatment is initially the same as for cryosurgery; that is, the lesion must be visualized fully with the colposcope and not seen to extend up into the endocervical canal. Generally, it seems that the gynecologist has to think there is a specific advantage to having laser therapy. Laser therapy, discovered in the 1960s, is a higher technology and therefore, more expensive. It also takes extensive training to learn the technique.

In the case of a large lesion, laser therapy may have no distinct advantage over cryosurgery. For a woman who may have scarring on her cervix from tearing while giving birth, laser therapy would have an advantage over cryotherapy, which needs a smooth surface for the freezing.

In some clinics, every woman is given a local anaesthetic during laser treatment. In Vancouver, only women with large lesions or women who the specialist

thinks will be uncomfortable during the procedure are given anaesthetic. If the treatment is to be extensive, a general anaesthetic may be given. As with cryosurgery, a woman would have treatment right after her menstrual period so that there would be as little change to the cervix as possible after treatment.

With laser therapy, there is slightly more chance of bleeding right after treatment. Discharge will be blacker than with cryosurgery. This might be alarming. There might also be an odour during the procedure caused by the destruction of tissue. The treatment may also cause as much discomfort as cryosurgery.

The healing process may take a little long, but there is no difference in the follow-up examination. A woman would have her cervix checked at three months, just as with cryosurgery. According to the V.G.H. Women's Clinic, the cure rate with laser therapy is about the same as with cryosurgery.

Cone biopsy

In British Columbia, cervical conization is being used with increasing frequency. Thus, growing numbers of women are being subjected to a procedure which alters the cervical environment and could affect menses, fertility, pregnancy outcome, labour and delivery. In general, the availability of cone biopsies has decreased the number of hysterectomies which used to be performed for cervical abnormalities.

Cone biopsy is used both as a diagnostic procedure and therapeutic treatment for women with dysplasia and carcinoma *in situ*. A diagnostic cone means just what it implies: the cone is used to diagnose the abnormality. Standard reasons for having this type of cone biopsy include evaluating abnormalities in women with a transformation zone which cannot be completely seen with colposcopy, repeated Pap smear reports which are not explained by colposcopy examinations, and biopsies which identify micro-invasion.

When the entire squamo-columnar junction is not visible by speculum and colposcopic examination, it may be difficult for an individual woman to assess whether she wants to proceed with the more drastic cone biopsy. The advantage of this procedure in this situation is that cone biopsy would give deeper tissue evidence of abnormal, cancerous or normal looking cells from the endocervical canal. Finding cancerous cells would mean that the procedure was indeed the right one to choose. Evidence of normal looking cells would mean that perhaps the procedure was unnecessary and that cryosurgery would have been sufficient.

Getting cells from an endocervical curettage is not nearly as effective as the deep cone cut and will not give information about the cells beneath the surface epithelium. The difficulty in making this decision is that if a woman has cryosurgery, a cancerous process developing in the endocervical canal may go untreated. In this case, invasive cancer may develop at a later time. It is this not knowing that frequently causes doctors and women to agree on cone biopsy.

A therapeutic cone biopsy is one which would remove all evidence of abnormal growth.

A cone biopsy is a surgical procedure. A cone shaped piece of the cervix is removed by instruments inserted vaginally. The particular cuts are described as long or short, and broad or narrow. The cone is centered on the area defined by colposcopy. Any gynecologist can perform a cone biopsy without first performing a colposcopy. S/he would use guidelines suggested by the gynecologist who performed a colposcopy and by iodine staining.

First step of a conization

Second step of a conization

The first step of a conization is to cut a cone-shaped core around the mouth of the cervix with a scalpel. Then the core, or cone, is removed with an instrument called a tenaculum, which looks like a long pair of tweezers. Different dimensions and locations of lesions determine the size and depth of the cone. In British

Columbia, this procedure is often done as day surgery, so that women need only spend a few hours in a surgical clinic. General anaesthetic is used and when the surgery is over, women wake up quite groggy and are sent home to recuperate. In some areas of British Columbia, a woman may spend several days in the hospital for this same surgery.

About 20% of women experience some form of complication from the cone biopsy, ranging from mild to severe infection and hemorrhaging. It is not uncommon for bleeding to continue for one week. Rest is suggested, particularly for about a week to ten days, when hemorrhaging is most likely to occur. Broad and long cuts can contribute to hemorrhage. Intercourse and strenuous activities should be avoided for several weeks following the operation. Women who have bleeding complications should contact their doctor. Complications could require suturing, general anaesthetic, transfusion or immediate hysterectomy.

Since cone biopsy removes one fourth to one half of the face of the cervix, this operation can have significant effects on both the appearance and function of the cervix. Scar tissue can make the opening of the cervix less elastic, and the cervical canal less flexible and weaker. The incidence of dysmenorrhea (menstrual pain) and bleeding complications is high. The procedure can cause stenosis, a hardening in the cervical canal, making menstrual outflow difficult. It can also contribute to problems in achieving conception, maintaining a pregnancy and delivering vaginally. Long cuts contribute to stenosis problems.

A standard cone biopsy removes certain cervical glands that produce the mucus necessary to conduct sperm up through the cervix. The cervix and mucus also serve to prevent micro-organisms and noxious substances from entering the uterus.

There have been conflicting studies since 1938 on the effect of conization on future pregnancies. Reports have included increases in infertility, prolonged labour, cervical problems leading to Cesarean sections, spontaneous abortions (miscarriage), shortened labour, and premature delivery.

A 1981 study from California of 314 women found no unexplainable increase in any of the above, except for an effect on the first stage of labour in a few women. Although cervical tissue needed to hold up a baby is removed with cone biopsy, the rate of miscarriage is not as high as expected. If a previous cone biopsy has widened the cervical os, the cervix may dilate too soon, causing miscarriage, or dilate quickly in labour, causing a fast first stage. Women who have a history of miscarriage or who are worried about this can have their cervix stitched in a "purse string" fashion with special sutures which are removed just prior to delivery. They are called cerclage or Shirodkar sutures. Use of cerclage can reduce the risk of spontaneous abortion by 75%. Sometimes these sutures do not hold and miscarriage can occur.

Another effect of cone biopsy may be a scarring and narrowing of the cervical os. During delivery, manual help to dilate the cervix or a Cesarean section may be needed. The risk of premature delivery may also be increased. In 1980, a Vancouver doctor reported almost twice as many premature labours among women who gave birth following a cone biopsy as that of all birthing women during that period. The difficulty in all these studies is sorting out the effects from a previous cone biopsy among all the variables of pregnancy and delivery.

Success rates for cone biopsy range between 89 and 90% at best. In those women who show abnormal Pap smear results after conization, another cone or cryosurgery may be performed. The second cone would take a larger section from the cervix, but still leave some remnant of the cervix intact.

One of the least mentioned disadvantages of cone biopsies is the possibility of ill-defined notations or inaccuracy of the pathology report. Slides are prepared from sections of tissue of the cone biopsy and sent to a pathologist for microscopic assessment. The pathology report should note whether the whole lesion was cut out and give as much detail as possible.

Both the quality of the prepared slide and the opinion of the pathologist can vary. Rate of error in these reports is about 3 to 4%. When cone biopsy sections from many doctors in British Columbia were examined by a panel of pathologists, 25% of the biopsies were seen to have abnormal cells extending to the edge of the cut. A good cut should take out slightly more than the abnormal area to ensure that the entire abnormality is gone. Otherwise, it is possible that some abnormal cells are left and can keep developing. Preventing the recurrence of abnormal cells after a cone biopsy may depend directly on the skill of the surgeon.

D & C (dilatation and curettage)

At the same time as the cone biopsy, the gynecologist usually performs a D & C for diagnostic purposes. One reason is to curette a sample from the endocervical canal above the lesion. Another reason is that cancerous cells arise not only in the squamous and columnar cells, but also in the endometrial cells that line the uterus. These are completely different types of cells and cancers. The D & C is done by dilating the cervix and then scraping the uterine lining for a sample of cells to determine whether there is an abnormality.

A D & C is a traumatic procedure with a risk of infection. Only rarely and under certain conditions are suspicious endometrial cells found during a D & C with a cone biopsy. However, this procedure is done routinely on all women undergoing cone biopsy. Those women who might require this additional procedure are those who are experiencing menopause, are postmenopausal, are suspected of having uterine abnormalities such as abnormal bleeding or endometrial hyperplasia, and those with abnormal glandular cells as noted on a Pap smear report. Some doctors are taught that a D & C is necessary to make sure that women are not pregnant. A cone biopsy could cause miscarriage which may, in turn, damage the healing cervix.

For those women who need analysis of their endometrial cells, a less dangerous procedure, vacuum aspiration, can be done to analyze cells. To examine the contents of the uterus, an intrauterine washing device, a double-tubed cannula (tube), is inserted. A saline solution is drawn into the uterus by vacuum suction. After the uterus is thoroughly bathed, the fluid is withdrawn. Endometrial cells in the fluid are sent to the lab and checked in a way similar to Pap smears.

Complications of cryosurgery and cone biopsy for DES daughters

DES daughters are more likely to experience difficulties as a result of either cryosurgery or cone biopsy than are women who have not been exposed to DES. It is thought that DES daughters have more problems from these procedures on their cervix either because DES-affected tissue heals differently than other tissues, or because the cervical canal may be narrower in DES daughters than in other women.

In one study of 42 DES daughters who had cryosurgery performed, 74% of the women developed cervical stenosis. In the same study, 3 of 5 DES daughters who had cone biopsies developed stenosis.

If you are a DES daughter and are convinced that you need cryosurgery, it is important to be sure that the os is not touched if there is no abnormality on or around the os itself. Focal cryosurgery, which affects only those areas with abnormal tissue, can be done with the aid of a colposcope. Although studies of complication following laser therapy in DES daughters have not been carried out, it is assumed that because the destruction of tissue is more precise, less scar tissue is likely to develop, and the likelihood of cervical stenosis developing is decreased.

Hysterectomy

The term hysterectomy covers a number of surgical procedures in which the uterus is removed. This alternative is rarely indicated for treatment of dysplasia or carcinoma *in situ*, unless there is some other reason for it. Hysterectomy is generally advised for microinvasion unless the woman wants to preserve her uterus. Hysterectomy has possible long-term consequences. With invasive cancer, this operation is more frequently advised, possibly in conjunction with radiation therapy.

Physicians often associate the uterus with reproduction alone. Many women report that their general state of health seems worse after the operation. Masters and Johnson have documented the integral part the uterus plays in sexuality. There are numerous risks and complications which can occur after hysterectomy because it involves major abdominal surgery. Examples are infections of the incision or urinary tract, accidental cutting of other organs, back problems and pain from scar tissue. Women also report numerous emotional and sexual problems afterwards. These include depression, memory loss and decreased sexual drive.

Health practitioners may mention hysterectomy if you are over 35 or have another condition, such as heavy menstrual bleeding, for which the operation can be performed. We recommend reading *Coping With Hysterectomy* by Suzanne Morgan before making a decision concerning this operation. This book has information on non-invasive treatments. Always get a second opinion!

My experience healing myself

by Robin

August, 1981

After months of feeling exhausted, I went on holiday and became ill with flu. After the holiday I went to my doctor for a check-up which included a Pap smear. I had not had one for fourteen months because I had heard that it was ok to have them less frequently if you were over 35, had a herstory of Class I and did not have high risk characteristics such as early age first intercourse and many partners. I am also Jewish and had heard that Jewish women rarely got cervical cancer.

My life the past year had included the death of my father, change in sexual relationship, overwork in feminist groups and an exhausting and stressful job.

September, 1981

My Pap smear result was Class III.

I stopped drinking coffee. I already did not eat sugar. My doctor tried to reassure me, saying that it might turn out to be warts. I was scheduled for a colposcopy in two weeks.

I began taking four grams of vitamin C daily.

October, 1981

I went for the colposcopy. Everyone said that it would be like a Pap test. I did not know what to look for. The specialist pointed out a lot of white patches around my os. I was told this was abnormal and he thought it was pre-cancerous. He took a biopsy to send to the lab for verification and pushed a tampon up against the cut on the cervix. I felt the cut and later had cramping which no one had warned me about. He said that he would have to wait for the pathology report to make definite diagnosis. When I asked what the treatment was, he said, that in view of my age (36) a hysterectomy would be in order. I was shocked.

I left the clinic in tears. I have a history of cancer in my family. I went to my doctor's office. Again she was reassuring. She said that cryosurgery and cone biopsy were performed way before a hysterectomy. She made an appointment for me with a gynecologist.

Immediately after seeing my doctor I went to the Women's Health Collective. I got personal support from a woman I knew. She recommended several books about cancer, vitamins and diets.

I began to increase my intake of vitamin C by a gram a day according to Linus Pauling's method.

The pathology report returns and says that I have carcinoma *in situ*.

I go on a short fast. I then see an herbalist who uses iridology (study of the eyes) for diagnosis. She suggests a diet without fats, dairy or many grains. She suggests various herbs and vitamins and a wheat grass and aloe vera douche. I freak out after seeing her and cry a lot.

I begin regular reflexology and massage treatments.

I cut down on my social and political life.

November, 1981

My ex-lover is diagnosed as having testicular cancer. He goes in almost immediately for surgery. All the medical people look amazed when we ask whether there could be a connection between his cancer and my abnormal Pap result. They said that there is no connection. I do not believe them.

I do a few visualizations with a friend. We work on my negative feelings towards premenstrual syndrome and painful periods.

I see the woman gynecologist. She tells me that I will have a D & C besides the cone biopsy. That way they can see if the cancer is elsewhere. I freak again. I have had friends with PID in the hospital and fear that I could get PID.

December, 1981

I leave my receptionist/clerical job where I am overworked in a continually stressful situation with poor working conditions.

I see a woman naturopath in Seattle. She helps me to refine my diet and suggests more to do including a herbal cervical pack. I have by this time lost lots of weight. I feel and look better.

My doctor sends me a note suggesting that I get a cone.

January, 1982

I go to the Bay Area. I make an appointment at the Berkeley Women's Health Collective Clinic. The woman I see cautions me about the dangers of trying to heal myself. I get a Pap smear result in four days which is a Class II. I am told that I have Gardnerella. I return to Vancouver and tell my doctor. She tells me that labs in the States are inferior. She does another Pap smear and it comes back in a week, Class III, though the description changes slightly. I am upset that I do not have her support.

February, 1982

I receive a call from Rebecca from the Health Collective. Am I interested in a support and research group on abnormal Paps? Three of us talk about our experiences and, based on our questions, begin work together.

March, 1982

I go to Seattle to consult with the naturopath and have another Pap smear. We discuss the Gardnerella and decide that the cure is not worth it at that time. In the past year and a half I had taken Flagyl three times. There aren't many symptoms. My smear result is Class II.

I begin therapy once a week.

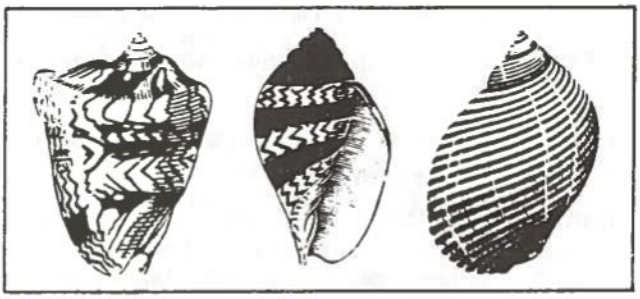
In my readings I come across the passage about curing infections because they make cells look abnormal.

I am confused but think I am ok. I feel ok. I want to prove it to my doctor. I ask for another colposcopy appointment.

This time Rebecca plans to come with me to the colposcopy. We have discussed what questions we want to ask and how she can support me. At the clinic she is not permitted to come into the exam room with me. They say that no one has ever done that. (We knew of women from the Health Collective who had). I am angry. I decide to go by myself. I ask questions of the specialist. He answers, but offers no additional information. I tell him that I have an infection. He says, "No you don't." The nurse makes fun of me for trying to get more information and figure out what is happening. The specialist makes a comment that even if it is better, it's dangerous to play around with. On the video screen my cervix looks better and the white area is much smaller. He never comments on that. He wasn't going to do a biopsy and I tell him to take one. He tells me that labs in the States are inferior and often in places like garages.

Our group does much research and then goes to the Cytology Lab for an hour and a half conversation with a pathologist. I learn that the procedure for processing smears includes placing your whole Pap history with the slide to be examined. They are all evaluated together. They also know whether you have had treatment or not. Also, when evaluating the colposcopy report they give one half weight to the smear result. He says that there isn't any difference between the labs in the States and here. What matters is the skill of the technician. Presumably the larger labs see more slides and therefore are more experienced.

I am convinced that I have to get rid of the Gardnerella and then get a Pap smear under a different name.



I receive the results of a hair analysis. They show that my body doesn't absorb nutrients well, that my diet is deficient in B12 and that I have a high concentration of mercury (all the low fat fish I'd been eating). I begin eating eggs and more chicken and less fish.

May, 1982

I do a two week herbal treatment and rid myself of Gardnerella.

I get a Pap smear under a different name.

I have the last of a number of conversations with Rebecca and my therapist about cone biopsy and D & C, trying to work on my fears of them.

June, 1982

Research has continued. I begin analyzing and writing about the causes and natural history of cervical cancer. I become convinced that I am well and that the system is faulty.

Pap smear report under assumed name is Class I.

June, 1986

Pap smear result still Class I.

It may not be suitable in all cases to submit a smear under an assumed name. For example, if you have a history of abnormal paps, a more experienced lab person might review the slide.

Glossary

ADENOCARCINOMA • Cancer arising from columnar (glandular) epithelial tissue.

ADENOSIS • Columnar (glandular) cells growing where they do not usually grow as on the vaginal wall.

ANTIBODY • A protein substance formed by the body in response to a foreign substance such as a virus.

ATYPICAL • Abnormal.

BASEMENT MEMBRANE • The division between the epithelium (surface cell layers) and deeper tissues.

BENIGN • Different, but normal. Not abnormal or cancerous.

BIOPSY • A small piece of tissue taken as a sample for laboratory analysis.

CARCINOMA *in Situ* • Cancer cells which are contained in a localized surface area. They would be evident in all layers of the epithelium, but would not have broken through the basement membrane to deeper tissues.

CARCINOGEN • Any substance which produces cancer or encourages its development.

C.I.N. or CERVICAL INTRAEPITHELIAL NEOPLASIA • A system of three grades used to classify abnormal cervical cell changes. In some areas this replaces the Papanicolau system's Classes I to IV.

COLUMNAR CELLS • Column-shaped (glandular) cells which line the cervical canal.

CONE BIOPSY • The surgical removal of a cone-shaped piece of tissue from the cervix for diagnosis or treatment of abnormal cell growth.

CYTOLOGY • The study of cells taken from the body, as in the Pap test.

D & C or DILATATION AND CURETTAGE • A surgical procedure in which the cervix is dilated (opened) and a metal instrument shaped like a spoon is used to scrape out the lining of the uterus. This can be performed for diagnosis, treatment or abortion.

DES • The abbreviation for diethylstilbestrol, a synthetic hormonal drug given to millions of pregnant women in the 1940s, 50s and 60s, mostly to prevent miscarriage. DES has caused health problems in people exposed to the drug before birth.

DES DAUGHTER • A woman who has been exposed to the drug DES before birth, in other words whose mother was given the drug during pregnancy.

DYSKARIOTIC • A cell with an abnormally large or irregular nucleus.

DYSPLASIA • Disorganized cell growth patterns.

ENDOCERVICAL CURETTAGE • The scraping of the cervical canal to obtain cells for diagnosis by inserting a tiny spoon-shaped instrument a short way up through the os.

ENDOCERVIX • The canal or passageway leading from the uterus to the vagina. It is between 2 and 2.5 cm in length.

ENDOMETRIUM • The lining of the uterus with layers of endometrial cells.

EPITHELIUM • A layer of squamous or columnar cells which form the surface in different parts of the body.

ESTROGEN • A hormone produced by the ovaries, adrenals and other tissues which is responsible for triggering ovulation and growth of the uterine lining.

GLANDULAR CELLS • Columnar cells which line the glands in the endocervical canal.

HORMONE • Minute quantities of substances produced in different organs of the body. These regulate specific body functions.

HYPOTHALAMUS • An area of the brain which controls some body and metabolic functions and influences hormone production.

HYSTERECTOMY • Surgical removal of the uterus. It may also include the removal of the ovaries (oophorectomy).

INVASIVE • Cancer cells which have spread from the epithelium (surface area) to deeper tissues.

KOILOCYTOTIC • A characteristic of cells produced by the Human Papilloma Virus (H.P.V.). They are spoon-shaped under microscopic inspection.

LASER • New technology for destroying abnormal cells by vaporizing them with intense heat from a high powered light beam.

MALIGNANT TUMOUR • Growth of cancerous cells.

MATURATION INDEX • A ratio of numbers which expresses the degree of maturity of the cells in the vaginal epithelium.

METAPLASIA • Squamous cells developing in an area of epithelium where columnar cells usually grow.

Words, Words, Words

METASTASES • Cancer cells which have broken away from the main original tumour and spread through the body by blood or lymph vessels.

MICRO-INVASION • A cancer (carcinoma) which has broken through the basement membrane of the epithelium but has not penetrated very far, from 1 to 5 mm.

OS • The opening of the cervical canal into the vagina.

ONCOLOGY • The study of cancer.

PATHOLOGY • The study of body tissues and fluids.

pH • A scale of numbers describing the acidity or alkalinity of a fluid. Low numbers are acid, high numbers are alkaline.

PITUITARY • A small hormone-producing gland at the base of the skull.

PRE-CANCER • A description of a condition which *might* progress to cancer, if left untreated for a long time. Most of these do not become cancer.

PROGESTERONE • A hormone produced by the ovaries which acts on the uterine lining, especially during pregnancy.

PROGNOSIS • The prediction of the course of a disease.

SPECULUM • A metal or plastic instrument which is used to hold open the vagina, to enable the cervix to be seen.

SQUAMOUS • Flat cells which form a layer of covering tissue (epithelium), as in the vagina and the skin.

SQUAMO-COLUMNAR JUNCTION • Where the squamous cells of the vagina meet the columnar cells of the endocervical canal, at the cervical os.

STENOSIS • The narrowing and hardening of a flexible passage, like the cervix, because of injury or scar tissue from surgery.

TRANSFORMATION ZONE • The area around the squamo-columnar junction where the squamous cells of the vagina meet the columnar cells of the cervical canal. In this type of area where two different cells meet, there is the potential for one kind of cell to transform itself into the other. It is in this transformation zone that cancer cells are sometimes thought to arise.

Bibliography

General

Gusberg, S.B. (1981) The Battered Womb Syndrome, Editorial, *Oncol. Times* 3(12):2.

Hasselbring, Bobbie (1983) A Woman's Guide to Pap Smears, *Medical Self-Care*, Fall, pp.26-31.

Jordan, Joseph A. and Albert Singer (1976) *The Cervix*, W.B. Saunders, London.

Nahhas, William A. (1979) The Pap Smear: How, When and on Whom to Do It, *Diagnosis* 1(3):60-68.

Sontag, Susan (1977) *Illness as Metaphor*, Vintage Books, N.Y.

Zuna, Rosemary E. (1984) The Pap Smear Revisited: Controversies and Recent developments, *Postgraduate Medicine* 76(6):36-46.

Health Facts. Cancer Issue Nov./Dec. 1978; Cervical Cancer Screening Sept./Oct. 1980 Center for Medical Consumers and Health Care Information, 237 Thompson St., New York, N.Y. 10012.

Reproductive Cancers: A Report from the Women and Cancer Conference (1986) Center for Medical Consumers and National Women's Health Network, New York and Washington, D.C.

The Walton Report. Reconvened Task Force on Cervical Cancer Screening Programmes, Health And Welfare Canada, Ottawa, 1982.

Down There, an illustrated guide to self-exam (1981) Onlywoman Press Ltd., London.

Federation of Feminist Women's Health Centers (1981) *How to Stay Out of the Gynecologist's Office*, Peace Press, Culver City.

Federation of Feminist Women's Center's (1981) *A New View of the Woman's Body*, Touchstone Press.

Natural History

Anderson, George *et al* (1983) The Maturation Index: A cytological technique for hormonal evaluation, *B.C. Med. J.* 25(11):565-567.

Coppleson, Malcolm (1967) *Preclinical Carcinoma of the Cervix Uteri* Pergamon Press, N.Y. p.454.

Fridell, Gilbert H. *et al* (1960) *Carcinoma in situ of the Uterine Cervix*, p.27, Thomas, Springfield.

Graham, John, P. *et al* (1962) *Carcinoma of the Cervix*, p.93, Saunders, Philadelphia.

Green, G.H. and J.W.Donovan (1970) The natural history of cervical carcinoma *in situ*, *J. Obstet. Gynaecol. Brit. Comm.* 77(1):1-9.

Kilen, L.J. and A.I. Spriggs (1978) Women with positive cervical smears but without surgical intervention. *The Lancet* 8085:463-465.

Kolstad, Per (1979) Conization treatment of cervical intraepithelial neoplasia, *Obstet. Gynecol. Surv.* 34(11):827.

Murad, Tariq M. *et al* (1981) Atypical Cells in Pregnancy and Postpartum Smears, *Acta Cytologica* 25(6):623-630.

Richart, Ralph M. (1980) Current Concepts in Obstetrics and Gynecology: The Patient with an Abnormal Pap Smear—Screening Techniques and Management, *New England J. Med.* 302(6):332-334.

Spriggs, A.I. (1971) Letter: Follow-up of untreated carcinoma *in situ* of cervix uteri, *The Lancet* 7724:599-600.

Stern, Elizabeth and Peter M. Neely (1964) Dysplasia of the Uterine Cervix: Incidence of Regression, Recurrence and Cancer, *Cancer* 17:508-512.

Worth, A.J. *et al* (1977) *B.C. Cytology Manual*, Cancer Control Agency of British Columbia, Vancouver.

Cervical Cancer Screening Programs I. Epidemiology and Natural History of Carcinoma of the Cervix (1976) *Can. Med. Assoc. J.* 114:1003-1012.

Causes—DES

Fowler, Wesley C. *et al* (1981) Risks of Cervical Intraepithelial Neoplasia Among DES-Exposed Women, *Obstet. Gynecol.* 58(6): 720-724.

Fu, Yao S. *et al* (1983) Cervical Papilloma Virus Infection in Diethylstilbestrol-Exposed Progeny, *Obstet. Gynecol.* 61(1):59-62.

Mattingly, Richard F. and Adolf Stafl (1976) Cancer risk in diethylstilbestrol-exposed offspring, *Am. J. Obstet. Gynecol.* 126(5):543-548.

Orr, James W. *et al* (1981) Cervical Intraepithelial Neoplasia Associated with Exposure to Diethylstilbestrol in Utero: A Clinical and Pathological study *Obstet. Gynecol.* 58(1):75-82.

Richart, Ralph M. and Yao-Shi Fu (1982) Letter: DES and CIN, *Obstet. Gynecol.* 60(5):668-669.

Robboy, Stanley J. *et al* (1978) Squamous Cell Dysplasia and Carcinoma in Situ of the Cervix and Vagina After Prenatal Exposure to Diethylstilbestrol, *Obstet. Gynecol.* 51(5):528-535.

Robboy, Stanley J. *et al* (1981) Dysplasia and Cytological Findings in 4,589 Young Women Enrolled in Diethylstilbestrol-Adenosis (DESAD) Projects, *Am. J. Obstet. Gynecol.* 140(5):579-586.

Schmidt, Grant and Westley C. Fowler (1980) Cervical Stenosis Following Minor Gynecologic Procedures on DES-Exposed Women, *Obstet. Gynecol.* 56(3):333-335.

Stillman, Robert J. (1982) In Utero Exposure to Diethylstilbestrol: adverse effects on the reproductive tract and reproductive performance in male and female offspring, *Am. J. Obstet. Gynecol.* 142(7):905-921.

Causes—Hormonal

Boots, L. and P. Cornwell (1980) Oral Contraceptives and Nutrient Metabolism, *Continuing Education*, August.

Harris, R.W.C. *et al* (1980) Characteristics of Women with Dysplasia or Carcinoma in situ of the Cervix Uteri, *Brit. J. Cancer* 42(3):359-368.

Herbst, A.L. (1979) DES-associated clear cell adenocarcinoma of the vagina and cervix, *Obstet. Gynecol. Survey* 34(11):844.

Hill, Josephine *Coevolution Quarterly* Winter 1977/1978.

Hillemanns, H.G. *et al* (1979) The Stilbestrol—Adenosis—Carcinoma Syndromes, *Obstet. Gynecol. Survey* 34(11):814-817.

Meisels, Alexander *et al* (1977) Dysplasia of Uterine Cervix—Epidemiological Aspects: Role of first Coitus and Use of Oral Contraceptives, *Cancer* 40(6):3076-3081.

Melamed M.R. *et al* (1969) Prevalence Rates of Uterine Cervical Carcinoma in Situ for Women using the Diaphragm or Contraceptive Oral Steriods, *Brit. Med. J.* 3:195-200.

Peritz E., *et al* (1977) The Incidence of Cervical Cancer and Duration of Oral Contraceptive Use, *Am. J. Epidemiol.* 106(6):462-469.

Seaman, Barbara and Gideon Seaman (1977) *Women and the Crisis in Sex Hormones*, pp.13-15, Rawson, New York.

Stern, Elizabeth *et al* (1977) Steroid Contraceptive Use and Cervical Dysplasia: Increased Risk of Progression, *Science* 19:1460-1462.

Swan, Shanna and William L. Brown (1981) Oral Contraceptive Use, Sexual Activity, and Cervical Carcinoma, *Am. J. Obstet. Gynecol.* 139(1):52-57.

Voss, Tom (1981) Folate, the Head-to-Toe Healer, *Prevention* June pp.50-56.

Waitzkin, Howard (1978) A Marxist View of Medical Care, *Science for the People* 10(6):31-42.

Worth, A.J. and D.A. Boyes, (1972) A Case Control Study into the Possible Effects of Birth Control Pills on Pre-clinical Carcinoma of the Cervix *J. Obstet. and Gynaec. Brit. Comm.* 79(8):673-679.

International Family Planning Perspective and Digest Vol. 4, No. 2, summer, 1978.

World Health Organization (1984) Letter: Breast Cancer, Cervical Cancer and Depot Medroxyprogesterone Acetate, *The Lancet* 8413: 1207-1208.

Causes—Viral

Beral, Valerie (1974) Cancer of the Cervix: A sexually transmitted disease?, *The Lancet* 7865:1037-1040.

Cocks, P.S. *et al* (1982) Concurrent carcinoma of penis and carcinoma *in situ* of the cervix in a married couple, Case Report, *Brit. J. Obstet. Gynaecol.* 89(5):408-409.

Hamilton, Richard (1980) *The Herpes Book*, J.P. Tarper, Los Angles.

Hills, Ellen and Colin R. Laverty (1979) Electron Microscopic Detection of Papilloma Virus Particles in Selected Koilocytotic Cells in a Routine Cervical Smear, *Acta Cytologica* 23(1):53-56.

Kessler, Irving I. (1979) On the Etiology and Prevention of Cervical Cancer—a Status Report, *Obstet. Gynecol. Survey* 34(11):790-794.

Kirkup, William, Albert Singer and A. Shirley Hill (1979) Follow-up of women treated for cervical precancer: an argument for a more rational approach, *The Lancet* 8132:22-24.

Papilloma virus seen as the culprit in cervical dysplasia, *Med. World News* 23(7):8-9, 1982.

Laverty, C. (1979) Noncondylomatous Wart Virus Infection of the Cervix: Cytologic, Histologic and Electronmicroscopic Features, *Obstet. Gynecol. Survey* 34(11):820-822.

Meisels, Alexander *et al* (1977) Condylomatous Lesions of the Cervix II. Cytologic, Colposcopic and Histopathologic Study, *Acta Cytologica* 21(3):379-390.

Meisels, Alexander *et al* (1981) Human Papilloma Virus Infection of the Cervix: The Atypical Condyloma, *Acta Cytologica* 25(1):7-16.

Purola, Esko *et al* (1977) Cytology of Gynecologic Condyloma Acuminatum, *Acta Cytologica* 21(1):26-31.

Reid, Richard and Mujtaba Husain (1982) Letter: Cervical Condylomatous Atypia and Its Relationship to Cervical Neoplasia, *Am. J. Clin. Path.* 77(6):772-773.

Reid, Richard *et al* (1982) Genital Warts and Cervical Cancer I. Evidence of an Association Between Subclinical Papillomavirus Infection and Cervical Malignancy, *Cancer* 50(2):377-387.

Syrjänen, Kari J. *et al* (1981) Cytological Evidence of the Association of Condylomatous Lesions with Neoplastic Changes in the Uterine Cervix, *Acta Cytologica* 25(1):17-21.

Vayrynen, M. *et al* (1985) Colposcopy in Women with Papillomavirus Lesions of the Uterine Cervix, *Obstet. Gynecol.* 65(3):409-415.

Causes—Male Role

Buckley, J.D. *et al* (1981) Case control study of the husbands of women with dysplasia of carcinoma of the cervix uteri, *The Lancet* 8254:1010-1014.

Kessler, Irving I. (1976) Human Cervical Cancer as a Venereal Disease, *Cancer Research* 36:783-791.

Lombard, Herbert L. and Evelyn A. Potter (1950) Epidemiological Aspects of Cancer of the Cervix II. Hereditary and Environmental Factors, *Cancer* 3(6):960-968.

Martin, Clyde E. (1967) Epidemiology of Cancer of the Cervix II. Marital and Coital Factors in Cervical Cancer, *Am. J. Public Health* 57(5):814.

Okagaki, T. (1979) Is the stem cell DNA really increased in CIN or is it an unproven fable? *Obstet. Gynecol. Survey* 34(11):818-819.

Reid, Bevan *et al* (1978) Sperm basic proteins in cervical carcinogenesis: correlation with socioeconomic class, *The Lancet*, July 8, pp.58-62.

Richardson, A. Cullen and James B. Lyon (1981) The Effect of condom use on squamous cell cervical intraepithelial neoplasia, *Am. J. Obstet. Gynecol.* 140(8):909-913.

Sebastion, James A. *et al* (1978) Cancer of the Cervix—A sexually transmitted disease: Cytologic screening in a prostitute population, *Am. J. Obstet. Gynecol.* 131(6):620-622.

Singer, Albert, Bevan L. Reid and Malcolm Coppleson (1976) A Hypothesis—The role of a high risk male in the etiology of cervical cancer: a correlation of epidemiology and molecular biology, *Am. J. Obstet. Gynecol.* 126(1):110-114.

Singer, Albert and Bevan L. Reid (1979) Does the male transmit cervical cancer? *Contemporary Ob Gyn* 13:173-180.

Skegg, D.C.G. *et al* (1982) Importance of the Male Factor in Cancer of the Cervix, *The Lancet* 8298:581-583.

Terris, Milton *et al* (1967) Epidemiology of Cancer of the Cervix V. The relationship of coitus to carcinoma of the cervix, *Am. J. Public Health* 57(5):840-847.

Buena Vista Women's Services Newsletter March, 1980.

Causes—Environmental and Class

Brown, Susan *et al* (1984) Social class, sexual habits and cancer of the cervix, *Com. Med.* 6:281-286.

Clarke, E. Aileen *et al* (1982) Smoking as a risk factor in cancer of the cervix: additional evidence from a case-control study, *Am. J. Epidemiology* 115(1):59-66.

Germana, D. and M. Danbrot (1977) The Anti-Cancer Diet, Wyden Books New York pp.52-53.

Harris, R.W.C. *et al* (1980) Characteristics of women with dysplasia or carcinoma in situ of the cervix uteri, *Br. J. Cancer* 42:359-368.

Katz, Sidney (1982) You, Your Diet and Cancer, *Chatelaine*, July.

Lieberman, Sharon (1977) Circumcision is No Insurance, *Lilith*, Spring/Summer, pp.19-20.

Paloucek, F. and J. Graham (1966) The Influence of Psycho-Social Factors on the Prognosis in Cancer of the Cervix, *Annuals of the New York Academy of Sciences* 125(3):814-816.

Priden, Helen and A.M. Lilienfeld (1971) Carcinoma of the Cervix in Jewish Women in Isreal, 1960-1967: An Epidemiological Study, *Isreal J. Med.* 7(12):1465-1470.

Stamler, Jeremiah *et al* (1967) Epidemiology of Cancer of the Cervix I. The Dimensions of the Problem: Morality and Morbidity from Cancer of the Cervix, *Am. J. Public Health* 57(5):791-802.

Tokuhata, G. (1967) Tobacco and Cancer of the Genitalia Among Married Women, *Am. J. Public Health* 57(5):830-839.

Wakefield, John *et al* (1973) Relation of Abnormal Cytological Smears and Carcinoma of Cervix Uteri to Husband's Occupation, *Bri. Med. J.* 2:142-143.

Wynder, Ernest (1969) Epidemiology of Carcinoma *in situ* of the Cervix, *Obstet. Gynecol. Survey* 24:697-709.

Baram, A. and A. Schacter (1982) Letter: Cervical Carcinoma: Disease of the Future for Jewish Women, *The Lancet* 8274:747-748.

Strepo, Keith (1982) Beta-Carotene Gets an A+ Grade in the Battle Against Lung Cancer, *Let's Live* 50(8):16-20.

Don't Blame th Patient, *Manchester Guardian*, June 2, 1982.

Report slams risky work conditions, *The Vancouver Sun*, December 9, 1982.

Causes—Stress

Schmale, Arthur and Howard Iker (1966) The Psychological Setting of Uterine Cervical Cancer, *Ann. New York Acad. Sci.* 125(3):807-813.

Schmale, A.H. and H. Iker (1971) Hopelessness as a Predictor of Cervical Cancer, *Soc. Sci. Med.* 5:95-100.

Tarlau, M. and I. Smalheiser (1951) Personality Patterns in Patients with Malignant Tumors of the Breast and Cervix, *Psychosom. Med.* 13:117-121.

Wheeler, J. and Betty Caldwell (1955) Psychological Evaluation of Women with Cancer of the Breast and of the Cervix, *Psychosom. Med.* 17:256-268.

Treatments—Alternative

Avtandilov, G.G. *et al* (1977) The microspectrophotometric research of the content of ascorbic acid in carcinoma of the uterine cervix, *Acta Histochem.* 59:254-257.

Butterworth, C.E. *et al* (1982) Improvement in cervical dysplasia associated with folic acid therapy in users of oral contraceptives, *Am. J. Clin. Nutrition 35:73-82.*

Lloyd, Humphrey E.D. and John Garry (1963) Atypical cells in vaginal smears in pernicious anemia, *Am. J. Obstet. Gynecol.* 85(3):408-412.

Strepo, Keith (1982) Beta-Carotene Gets an A+ in the Battle Against Lung Cancer, *Let's Live* 50(8):16-20.

Stern, Elizabeth *et al* (1977) Steroid contraceptive use and cervical dysplasia: increased risk of progression, *Science* 196:1460-1462.

Voss, Tom (1981) Folate, the Head-to-Toe Healer, *Prevention*, June, pp.50-56.

Wassertheil-Smoller, Sylvia *et al* (1981) Dietary Vitamin C and Uterine Dysplasia, *Am. J. Epidemiology* 114(5):714-724.

Seaman, Barbara and Gideon Seaman (1977) Women and the Crisis in Sex Hormones, Rawson, New York.

Treatments—Medical

Andersch, Björn and Mahmud Moinian (1982) Diagnostic and Therapeutic Viewpoints on Cervical Intraepithelial Neoplasia: 10-Year Follow-up of a Conization Material, *Gynecol. Obstet. Invest.* 13: 193-205.

Baggish, Michael S. (1980) High-power-density carbon dioxide laser therapy for early cervical neoplasia, *Am. J. Obstet. Gynecol.* 136(1): 117-125.

Benedet, J.L. *et al* (1977) Colposcopic evaluation of pregnant patients with abnormal cervical smears, *Brit. J. Obstet. Gynecol.* 84(7): 517-521.

Buller, Richard E. and Howard W. Jones III (1982) Pregnancy following cervical conization, *Am. J. Obstet. Gynecol.* 142(5):506-511.

Cimons, Marlene (1980) *Glamour*, December, p.114.

Helmkamp, B. Frederick *et al* (1983) Cervical conization: When is uterine dilatation and curettage also indicated? *Am. J. Obstet. Gynecol.* 146(8):893-894.

Holt, David G. *et al* (1982) Diagnostic significance and sequelae of cone biopsy, *Am. J. Obstet. Gynecol.* 143(3):312-318.

Lickrish, Gordon M. and Michel Fortier (1977) Conservative management of intraepithelial cervical neoplasia, *CMA J.* 116:641-643.

Luesley, D.M. *et al* (1985) Complications of cone biopsy related to the dimensions of the cone and the influence of prior colcoscopic assessment, *Brit. J. Obstet. Gynecol.* 92(2):158-164.

Marshall, K.G. and J.P.A. Latour (1971) The conservative management of pregnant patients displaying abnormal cervical cytology, *CMA J.* 105:1307-1310.

Monaghan, J.M. *et al* (1982) Treatment of cervical intraepithelial neoplasia colposcopically directed cryosurgery and subsequent pregnancy experience, *Brit. J. Obstet. Gynaecol.* 89(5):387-392.

Richart, Ralph (1980) Current Concepts in Obstetrics and Gynecology: the Patient With an Abnormal Pap Smear—Screening Techniques and Management, *New Eng. J. Med.* 302(6):332-334.

Richart, Ralph *et al* (1980) An analysis of "long-term" follow-up results in patients with cervical intraepithelial neoplasia treated by cryosurgery, *Am. J. Obstet. Gynecol.* 137(7):823-826.

Singer, Albert *et al* (1984) Impact of introduction of colposcopy to a distinct general hospital, *Brit. Med. J.* 289:1049-1051.

Stuart, G.C.E. *et al* (1982) Assessment of failures of cryosurgical treatment in cervical intraepithelial neoplasia, *Am. J. Obstet. Gynecol.* 142(61):658-663.

Cone Biopsy May Contribute to Cervical Incompetence, *Family Practice News* 8(25), 1980.

How not to miss invasive cancer, *Medical World News* 20(5):53-54, 1979.

What is Cervical Intraepithelial Neoplasia Anyway? (1981) *Santa Cruz Women's Health Center Newsletter* 24:5-6.

Cancer Screening

Boyes, D.A. *et al* (1982) A Cohort Study of Cervical Cancer Screening in British Columbia, *Clin, Invest. Med.* 5(1):1-29.

Napoli, Maryann (1980) Cervical Cancer Screening, *Health Facts*, September-October, Center for Medical Consumers and Health Care Information, 237 Thompson St., New York, N.Y. 10012.

Sellers, A.H. and Erica E. McLerie (1973) A Note on Trends in Mortality from Cervical Cancer, Ontario and British Columbia, 1950-1971, *Can. J. Public Health* 64:364-367.

Shapiro, Sam (1975) Screening for Early Detection of Cancer and Heart Disease, *Bulletin of New York Academy of Medicine* 51(1): 80-95.

Do Cervical Smears Save Lives? (1969) *Brit. Med. J.* 5657:585-586.

The Cervical Cancer Controversy: Two Harvard Doctors Give Their Views, *Harvard Medical Area Focus*, October 16, 1980.

Politics of Cancer

Chowka, Peter Barry (1981) The Cancer Charity Rip-Off. Warning: The American Cancer Society May Be Hazardous to Your Health. *Public Scrutiny*, February.

Mandel, Richard (1980) The Politics of Disease: Cancer in a Metastatic Society, *Black Rose*, Spring.

Napoli, Maryann (1978) Cancer Part I: Cancer Politics, *Health Facts* II9(12):1-6.

Napoli, Maryann (1979) Cancer Parts II and III: Cancer Therapies, *Health Facts* III(13-14):1-12.