SB

253

SENATOR JIM DUNCAN

ALASKA STATE LEGISLATURE

Alaska State Senate

State Capitol • Room 119 • Juneau, Alaska 99801-1182 • (907) 465-4766 • Fax 465-4748

Memorandum

Date: April 30, 1996

To: Representative Jeannette James, Chair
House State Affairs Committee

From: Senator Jim Duncan

Subject: SB 253, An Act relating to insurance coverage for costs of prostate cancer or cervical cancer detection.

I request that you schedule SB 253, relating to insurance coverage for costs of prostate cancer or cervical cancer detection, for a hearing in the House State Affairs Committee as soon as possible.

Prostate cancer is a serious health concern to men over the age of fifty. Prostate Specific Antigen (PSA) blood tests can be done to detect the presence of cancer and alert men of potential health problems. Currently, insurance companies are not required by Alaska law to include this test in their coverage package. SB 253 will require that insurance companies cover the PSA on annual physical exams when appropriate.

The importance of screening for malignant cancer is well documented. Prostate cancer accounts for 36% of all male cancers and is the second leading cause of death in men after lung cancer as reported by the National Cancer Institute. Although often presumed to develop slowly, nearly two thirds of new cancer cases have spread beyond the prostate gland by the time of diagnosis.

In addition to coverage of the PSA, SB 253 would require coverage of cervical cancer screening. Early detection of cervical cancer involves the Pap Smear, a test that takes a small sample of cervical cells. The American Cancer Society recommends that all women who are sexually active or over the age of eighteen should have a Pap test each year. About 90% of cervical cancer

cases can be detected early through the use of Pap smears. If discovered early, cervical cancer is almost 100% curable.

SB 253 makes health issues a priority. I would welcome your support in requiring that insurance companies cover the cost of prostate and cervical cancer screening and request that you schedule this bill for a hearing in the House State Affairs Committee as soon as possible.

Attachments

Mark R. McCaughan, M.D.

Diplomate,
American Board
Of
Urology

3227 Glacier Highway
Juneau, Alaska 99801

(907) 586-5656
Fax (907) 586-6081

March 26, 1996

Senator James Duncan
FAX 465-4748

Dear Senator Duncan:

Thank you for your request for testimony in regard to your wish to have Aetna cover the cost of prostate-specific antigen testing on a routine screening basis.

As you have undoubtedly learned, this is not currently covered as a screening test. To be fair, its reputation as a screening test is controversial. However, we all know of personal anecdotal incidences, and as a urologist I know of many situations whereby curable prostate cancer was diagnosed solely on the basis of the patient having had a PSA determination. Admittedly, it is falsely positive on numerous occasions. However, it is impossible to place a value on a life saved by early detection of prostate cancer.

As you likely know, the incidence of the diagnosis of prostate cancer, particularly in a curable stage, has dramatically increased over the past few years. While our ultimate ability to make the diagnosis depends on prostate ultrasound and ultrasonically-guided needle biopsy as well, the initial suspicion of the possibility of prostate cancer is almost always the result of an elevated PSA. The time-honored method of diagnosing prostate cancer has heretofore been the annual rectal examination. There are increasingly dismal statistics to back up the fact that while this exam certainly does pick up curable prostate cancer, it also simply points out the probability of prostate cancer, which in many cases is no longer curable.

To summarize, PSA determination is indeed an important, and perhaps the most important, first line test for the early diagnosis of curable prostate cancer. Like many medical tests, it certainly has a significant incidence of false positivity, however, the fact remains that it is essential as a part of our diagnostic armamentarium in regard to uncovering curable prostate cancer. The current recommendations, depending on various sources, would generally suggest that annual PSAs be done on the 50 to 60-year-old age group, and semiannual PSAs beginning at age 60. This should be done ten years earlier if there is a first degree relative with the diagnosis of prostate cancer or if one is an African American.

I regret that I could not attend your committee meeting to testify in person. My failure to do so does not indicate a lack of interest, but rather a schedule which could not be changed without inconveniencing multiple patients to do so.

If I may be of further help in achieving your goal of including PSA determination under Aetna coverage, please do not hesitate to call or write.

Sincerely,

Mark R. McCaughan, M.D.

MRM/blh

TO: JIM DUNCAN
466-4748

FAXED 10:00 a.m
3-7-96

FROM: JIM STOUGHTON

March 5, 1996

Senator Jim Duncan
Alaska State Capitol
Room 119
Juneau, AK 99801-1182

Dear Senator Duncan:

It's my understanding that you are introducing a bill for all insurance companies to pay for a prostate specific antigen or PSA testing for Prostate Cancer. I think this is wonderful and way past due for prevention and early detection of Prostate Cancer.

In addition, I recommend that you include coverage for a PAP test which is required if someone has an elevated PSA result. Also, please consider coverage for a penile implant. Many men loose the ability to obtain an erection after surgery due to nerve damage, including myself who underwent Prostate surgery at the age of 55.

I did not have any symptoms of Prostate Cancer, but it was discovered with the PSA screening done at an routine physical. Having had the surgery after a second opinion by a Urologist in Seattle, I have and will take for my lifetime a chemotherapy oral medication and a monthly injection. These two medications cost $298.35 and $523.25 per month.

The American Cancer Society promotes prevention and early detection. Having the insurance companies pay for the PSA screening which is approximately $200.00 as likewise a PAP screening if required will save money and lives.

My coverage under the State of Alaska's Aetna plan will not cover a penile implant. Yet, the same plan will cover a breast reconstruction for a women that has had to undergo a mastectomy. The breast is a non operating organ. I do not resent this because there is also an psychological impact with either of these procedures for a cancer patient.

Please consider amending your bill to cover all of these procedures.

I would like to testify at the hearing, but unfortunately, I work for the Alaska Marine Highways and will be out on the ship. Please accept this letter as my testimony.

According to the American Cancer Society, Prostate Cancer incidence rates increased 50% between 1980 and 1990, largely due to improved detection. There was approximately 40,000

due to improved detection. There was approximately 40,000

deaths in 1995, the second leading cause of cancer death in men, with lung cancer being number one. The 5 year survival rate for patients with prostate cancer diagnosed while it is still localized is 94%.

Sincerely,

Jim Stoughton

Jim Stoughton
9410 Riverside Dr.
Juneau, Ak 99801

ALASKA NURSES ASSOCIATION

237 E. 3rd Avenue #3 Anchorage, AK 99501-2523
(907) 274-0827 FAX: (907) 272-0292

April 23, 1996

Dear Commitee Members:

This letter indicates support of the Alaska Nurse's Association and the Alaska Nurse Practitioner Association for SB 253, relating to insurance coverage for costs of prostate cancer detection. Presently, women live longer than men. This bill would increase men's odds of survival!

If you exclude skin cancer, prostate cancer is the leading cause of cancer in men. In the U.S., there were 200,000 new cases in 1994. It is the second leading cause of death from cancer in men, causing 38,000 deaths in the U.S. in 1994.

Certain factors place some men at greater risk for developing prostate cancer. These include: African-American background, increasing age, and perhaps a diet high in fat intake. The course of prostate cancer is extremely variable. Some tumor subsets are aggressive, grow rapidly, metastasize quickly and lead to a rapid death. Generally, they are slow growing, do not present symptoms, and are only found incidentally at autopsy.

PSA is an enzyme test which measure prostate-specific antigen in the blood. This protein is specific to the prostate, but not to prostate cancer. So blood levels of the protein correlate to the amount of prostate tissue. This means that all kinds of prostate tissue, whether it is normal or malignant, may increase the PSA. Eighty percent of men with prostate cancer, will have an increase in PSA. A smaller increase is occasionally seen in older men with an enlarged prostate, which is a common condition in elderly males. If PSA results are low (< 4 ng./ml.), one feels reassured. If results are high (>10 ng./ml.) the client is referred to a urologist. Results between 4-10 are in "the gray zone". This is considered a minimal elevation. Twenty five % of these men (with results between 4-10) will have prostatic cancer, regardless of the finding on a digital rectal examination.

Most authorities who recommend the PSA test, advocate combining it with other modalities such as digital rectal examination

or trans-urethral ultrasound. Although PSA misses about 20-30% and digital rectal exams miss about 50% (range, 14-64%) of prostate cancer, the two together detect an additional 15-20% or more over results from either one alone.

The treatment for prostate cancer is surgery and/or radiation. Urinary incontinence is a complication in 30% of cases.

Routine screening of men without symptoms of prostate cancer is controversial. Presently, no data links PSA screening with a decrease in deaths from prostate cancer. The FDA has not approved PSA as a screening test for early detection, although it is approved for monitoring patients who already have prostate cancer.

The American Cancer Society (ACS) and American Urological Assn. (AUA) recommend annual PSA testing for all men aged 50 and older. Both of these professional organizations recommend annual screening for men younger than age 50 who are in high-risk groups. This includes men 40 and over with a family history of prostate CA & men who have had their vasectomy at 40 or older.

The AUA recommends stopping annual testing at 70.

The ACS recommends screening be stopped when the patient's. life expectancy is <10 years.

The American Academy of Family Physicians, Canadian Task Force on Periodic Health Examinations, National Cancer Institute, and US Preventive Services Task Force do not recommend routine screening in asymptomatic men

The negative side of this testing is that up to 70% of men with PSA levels b/w 4-10 will not have prostate cancer and may undergo the expense, discomfort and emotional stress of additional diagnostic studies for no benefit.

The possible benefits of PSA screening are:
-men are more willing to have a blood test than a physical exam.
-if it is combined with a digital rectal examination, there is a 2-3 time increase in prostatic cancer detection rate
- a decrease in death from prostate cancer that is discovered early. However, there is no current data available to demonstrate this. (This test has only been available since 1979, hence the reason for the lack of long-term data)

- PSA may improve the specificity of prostate cancer screening and reduce unnecessary biopsies.
- it is the most cost effective way of screening for prostatic CA. (The cost of a PSA at Corning Lab is $43.30. A trans-urethral ultrasound in a urology office is $325.00)

More specific screening tests are needed. As we speak, these are being developed. They include:

-adjusting for increasing age
-measure serial PSA's and calculate the rate of change
-calculate the ratio of PSA level to the volume of the prostate (PSA Density)

Although this is not a perfect test, it is the best that we have for now. The Alaska Nurse Practitioner Association and the Alaska Nurses Association recommend that this bill be passed with the goal of detecting prostatic cancer at a curable stage, thereby improving men's health.

Sincerely,

Mary Anne Wilson

Mary Anne Wilson, MS, RN, CS, ANP
Legislative Representative for the
Alaska Nurse Practitioner Association and the
Alaska Nurses Association

AMERICAN CANCER SOCIETY ALASKA DIVISION, INC.

FAX COVER SHEET

Fax To: Christine Date: 3-6-96 Time: _____

Company: Senator Duncan # Pgs. Including Cover: 1

Fax #: (907) 465-4748 From: Diana Kuhn

(907) 277-8696 • (907) 263-2073 fax

Comments:

American Cancer Society position:

Dr. Ho asked the Committee to approve the following REVISED RESOLUTION ON REIMBURSEMENT FOR DRE/PSA: The Committee approved the following revised statement: "The ACS supports reimbursement for digital rectal examination and PSA performed in combination, for the early detection of prostate cancer, as recommended by the ACS guidelines, namely annual digital rectal examination and prostate-specific-antigen (PSA) performed on men 50 years and older. In addition, these examinations should be reimbursed when performed on men in high risk groups (African-American, positive family history) 40 years and older, when recommended by a physician."

The revision was unanimously approved.

Christine — I would be out Duncan Mar. 12 + 13 + would like appt. to meet with either of Senator Duncan

If there are any problems with this fax transmission, please call (907) 277-8696

Diana

1057 WEST FIREWEED LANE, SUITE 204, ANCHORAGE, ALASKA 99503 * 907/277-8696 * 800/478-9355 * FAX/907/263-2073

Senator Kennedy

FYI

ORIGINAL
SENT: 03/24/96 TIME: 21:36
FROM: STEVE DICKINSON
SUBJECT: ALERT: SWS UPDATE #1
PRINT DATE: 03/26/96 TIME: 13:44

MEDIA ALERT March 24, 1996

TO: Communications/PI Directors, CRS Coordinators
cc: Division EVP's, NVPDSs, National Media & Government Relations Offices

SUBJECT: News From the Science Writers Seminar - Alert #1

CONTACT PERSONS: Joann Schellenbach or Lynne Camoosa: 415-749-6187, 415-749-6188, 415-749-6189

This Media Alert is the first update from the Science Writers Seminar in San Francisco, highlighting Sunday's presentations.

SUNDAY'S PRESENTATIONS ARE EMBARGOED UNTIL MONDAY

Four presentations on various aspects of prostate cancer:

* Thomas Stamey, MD - Stanford University- discussed standardization issues for prostate specific antigen (PSA) testing. Currently in the United States there are five FDA approved PSA assays. Dr. Stamey's research is aimed at standardizing PSAs throughout the world, a parallel concern with quality control in mammography screening.

* Glen De Vries, PhD - Columbia University - Is developing a process to address the need for a staging modality that can detect prostate cancer that has spread to the bloodstream. Using molecular biology to obtain unique prognostic information possibly can help determine the course of treatment and eliminate surgery in men whose cancer has already spread.

* Haakon Radge, MD - University of Washington - Presented seven years of data on the longest and largest series of men treated with brachytherapy (radioactive seed implants). Men with small localized disease continued to do well in this series.

* John A. Petros, MD - Emory University - Describes an approach to treatment of metastatic prostate cancer by delivering DNA molecules to cancer cells. The DNA is "hooked up to" androgens. The DNA, once it is in the cell, shuts down the oncogene. This approach is far from clinical application.

No. 1

Bill Version: SB 253

(S) Publish Date: 3-14-96

FISCAL NOTE

STATE OF ALASKA
1996 LEGISLATIVE SESSION

Revision Date:
Title: Insurance for Prostate Cancer Testing
Sponsor: Senator Duncan
Requestor: Labor & Commerce Committee

Department: Commerce and Economic Development
BRU: Insurance
Component: Operations
COMPONENT SERIAL NO. #354

Expenditures/Revenues (Thousands of Dollars)

OPERATING EXPENDITURES	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0
CAPITAL EXPENDITURES						
CHANGE IN REVENUES						

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 General Fund						
1005 GF/Program Receipts						
1006 GF/MHTIA						
Other						
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0

Estimate of any current year (FY 96) cost: $ 0.0

POSITIONS

FULL-TIME	0	0	0	0	0	0
PART-TIME						
TEMPORARY						

ANALYSIS: (Attach a separate page if necessary)
No fiscal impact.

Prepared by: Joan Brown, Administrative Officer Phone: 465-2597
Division: Insurance Date: 2/9/96

Approved by Commissioner: William L. Hensley Date: 2-13-96
Agency: Commerce and Economic Development

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[redacted]

FISCAL NOTES (2)

FISCAL NOTE

No. 2

Bill Version: SB 253

(S) Publish Date: 3-14-96

ATE OF ALASKA
EGISLATIVE SESSION

Date:
Act relating to insurance coverage for costs of prostate
cetection.
or: Duncan
stor:

Department Affected: All Agencies
BRU: All Agencies
Component: All Agencies
COMPONENT SERIAL NO. 64

ditures/Revenues: (Thousands of Dollars)

PERATING EXPENDITURES	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02
SONAL SERVICES	0.0	0.0	0.0	0.0	0.0	0.0
/EL						
TRACTUAL						
PLIES						
PMENT						
) & STRUCTURES						
NTS, CLAIMS						
ELLANEOUS						
AL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0
TAL EXPENDITURES	0.0	0.0	0.0	0.0	0.0	0.0
NGE IN REVENUES ( )	0.0	0.0	0.0	0.0	0.0	0.0

D SOURCE: (Thousands of Dollars)

Federal Receipts	0.0	0.0	0.	0.0	0.0	0.0
GF Match						
GF						
F/Program Receipts						
GF/Mental Health						
ER						
AL	0.0	0.0	0.0	0.0	0.0	0.0

nate of any current year (FY 96) cost: $ zero

ITIONS:

-TIME	0	0	0	0	0	0
T-TIME						
PORARY						

LYSIS: (Attach a separate page if necessary.)

ently the State's plan pays for the Prostate Specific Antigen (PSA) test only when there are clinical signs or symptoms ostate disease. This bill would expand health coverage to include routine prostate cancer screening. The State's th insurance premiums are based on the experience of the plan. We anticipate an increase in health costs of oximately $60,000 per year.

ed by: Robert F. Stalnaker Phone: 465-4470
n: Retirement & Benefits Date:

ed by Commissioner: Mark Boyer
Department of Administration Date: 3/12/96

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95

SENATOR JIM DUNCAN

ALASKA STATE LEGISLATURE

Alaska State Senate

State Capitol • Room 119 • Juneau, Alaska 99801-1182 • (907) 465-4766 • Fax 465-4748

February 2, 1996

SB 253

Mandating Insurance Coverage for Prostate Antigen Blood Tests

Senator Jim Duncan today introduced legislation which will require that insurance companies doing business in Alaska include Prostate-Specific Antigen (PSA) screening as a covered benefit.

Many insurers do not cover this blood test which the American Cancer Society recommends be performed annually on all men 50 years of age and older as a part of an annual prostate examination. The American Cancer Society also recommends that PSA screening begin at the age of 40 for men at high risk.

"I believe providing coverage for this important test can save lives or improve the quality of life for many Alaskan males," Duncan, a Juneau Democrat, said. "In 1991, the Legislature mandated insurance coverage for mammograms, and SB 253 represents a similar step towards preventative health care for men."

According to the National Cancer Institute, prostate cancer is the most common malignant cancer in American men. Prostate cancer is now the second leading cause of death in men, the first being lung cancer. The PSA test clearly increases the detection rate of early stage cancers, thus resulting in better, less invasive medical treatment for the patient.

-30-

CURRENT CONCEPTS

SCREENING FOR PROSTATE CANCER WITH PROSTATE-SPECIFIC ANTIGEN

An Examination of the Evidence

STEVEN H. WOOLF, M.D., M.P.H.

AFTER lung cancer, prostate cancer is the leading cause of deaths from cancer among men in the United States. It will claim 40,000 lives in 1995.[1] Studies in the early 1990s demonstrated that levels of prostate-specific antigen (PSA), a serine protease, are elevated in most men with clinically important prostate cancer and that measuring them is the best means for early detection of the disease.[2-5] In 1993, the American Cancer Society recommended that clinicians measure PSA in all men 50 years of age and older as part of an annual prostate examination and that PSA screening should begin at the age of 40 in men at high risk.[6] The American Urological Association issued similar recommendations. Support for PSA screening is not universal, however. Recommendations against PSA screening have been issued by the U.S. Preventive Services Task Force, the Canadian Task Force on the Periodic Health Examination, and the Canadian Urologic Association.[7,8] Recommendations by the American College of Physicians and the American Academy of Family Physicians are currently under review. Physicians in practice have opposing views about PSA screening.[9]

The debate about whether to perform PSA screening has important implications for both individual and public health, but the setting of appropriate policy has been hindered by inadequate data. Screening may reduce morbidity and mortality associated with prostate cancer, but this hypothesis is unproved. On the other hand, widespread testing may set off a cascade of diagnostic and treatment procedures with potentially serious complications, but the magnitude of these risks is uncertain. The overall balance of benefits and harms is therefore unclear. The economic implications of PSA screening are also unknown: testing all men over the age of 50 could cost the country billions of dollars, but the investment might be justified if suffering from prostate cancer could be reduced.

This article reviews the central scientific arguments in the controversy over PSA screening. The discussion is organized around the principal scientific questions that should be asked when one is evaluating any screening test: Is the target condition serious? Is the screening test accurate? Does early detection improve outcome? Is screening or treatment harmful? Does screening do more good than harm?

From the Department of Family Practice, Fairfax Family Practice Center, Medical College of Virginia, Fairfax. Address reprint requests to Dr. Woolf at the Fairfax Family Practice Center, 3712 Charles Stewart Dr., Fairfax, VA 22033.

ANALYTIC ISSUES

Is Prostate Cancer Serious?

There is little doubt about the seriousness of progressive prostate cancer (tumors that spread beyond the capsule or metastasize). Thousands of men suffer painful complications and die prematurely from such tumors. Ten-year survival rates are 75 percent when the cancer is confined to the prostate, 55 percent with regional extension, and 15 percent with distant metastases.[10] Age-adjusted mortality from prostate cancer has increased by 24 percent in recent years[11] and, largely because of increased screening, the incidence of new cases has risen by 40 percent.[12]

Not all prostate cancers are serious, however, because of the frequently indolent behavior of the disease. Autopsy studies report that about 30 percent of men over the age of 50 have histologic evidence of prostate cancer.[13] Extrapolation of these rates to U.S. census data suggests that as many as 9 million men could harbor latent prostate cancers (Table 1). Since there are about 40,000 deaths each year from the disease,[1] it seems likely that most prostate cancers in the population are not clinically important. Most men with latent prostate cancer die with, rather than from, the disease.

Is PSA Screening Accurate?

Because it might be unethical for researchers to perform biopsies on men with normal PSA results, the true sensitivity and specificity of PSA screening are unknown. The test has a reported sensitivity of up to 80 percent in detecting prostate cancer in screened men,[4] but it lacks specificity. False positive results due to the presence of benign prostatic hypertrophy or prostatitis are common; 25 to 46 percent of men with benign prostatic hypertrophy have elevated PSA values.[23,24] PSA values may also fluctuate by as much as 30 percent for physiologic reasons.[25] The reported positive predictive value of PSA in screening studies is 28 to 35 percent, which means that one third of men with elevated PSA levels (>4 mg per milliliter) will be found to have prostate cancer on biopsy and two thirds will not (i.e., will have false positive results).[1,2,4,5] Participants in these studies were either patients seen at urology clinics or community volunteers, which has caused some to question whether the positive predictive value might be lower when screening occurs in primary care settings.

Promising techniques to improve the accuracy of PSA screening include measuring PSA density[26] (the PSA concentration divided by the volume of the gland) or the rate of change in PSA over time.[27] A third approach is to use age-adjusted reference ranges,[28] since PSA values increase with age. Finally, some advocate measuring the ratio of free to complexed PSA.[29] PSA bound to alpha$_1$-antichymotrypsin accounts for a larger proportion of total PSA in patients with prostate cancer than in those with benign prostatic hypertrophy. No single approach has yet been proved to be more accu-

rate than another. For now, the best way to reduce the frequency of false positive results is to combine PSA screening with the digital rectal examination, which increases the positive predictive value from 32 to 49 percent if the results of both are abnormal.[1]

A more fundamental problem than false positive results, however, has been how to determine whether cancers detected through PSA screening (true positives) are clinically important. As has already been noted, autopsy studies suggest that 30 percent of men over the age of 50 have latent prostate cancers that are unlikely to produce symptoms or affect survival. It has long been feared that population screening would preferentially identify these latent cancers (rather than aggressive disease) and that thousands of men who are more likely to die of other causes (e.g., coronary artery disease) would be subjected to unnecessary testing and treatment for prostate cancer. Recent evidence suggests, however, that cancers detected through PSA screening may be more aggressive and clinically important than latent cancers found on autopsy. About 31 to 38 percent of cancers identified through PSA screening and radical prostatectomy have evidence of extracapsular extension, poorly differentiated cells, large volume, or metastases.[3,30,31] These features are associated with an increased risk of progression, although they are not pathognomonic of aggressive disease. Autopsy studies also report capsular penetration, local tissue invasion, and diffuse or poorly differentiated cells in 10 to 88 percent of men with no antemortem prostate history.[16,19,32] For now, neither PSA values nor histologic findings can predict with certainty whether a newly diagnosed prostate cancer will progress or remain latent.

Does Early Detection of Prostate Cancer Improve Outcomes?

Ultimately, accuracy is less important than clinical outcomes in judging the efficacy of screening. Debates about the relative superiority of density, rate-of-change, and other indexes in improving the accuracy of PSA screening are irrelevant unless early detection improves the patient's health. PSA screening is often defended incorrectly on the basis of what has been discussed thus far, with the evidence that the test can detect organ-confined cancer cited as sufficient grounds for screening. Screening cannot be justified unless patients who are screened have better health outcomes than those who are not. The literature provides such evidence for breast, cervical, and colorectal cancer screening.[5]

There is little direct evidence, however, that screening for prostate cancer reduces morbidity or mortality. Indeed, few controlled studies have ever addressed this question. Observational studies of screening by digital rectal examination reported no benefit,[33,34] and no controlled study of health outcomes after PSA screening has yet been reported. Randomized, controlled trials addressing the health benefits of screening are under way in the United States and Europe, but the results will be unavailable for more than a decade.[35]

There is some indirect evidence that early detection may be beneficial. Men who undergo PSA screening are more likely to have early-stage disease at diagnosis (a phenomenon known as "stage shift") than unscreened men, and the proportion of cancers that are clinically or pathologically advanced appears to decrease with each successive year of testing.[30] Survival data suggest that men with localized tumors at diagnosis live longer than those with more advanced disease.[1] It is unclear, however, whether these findings reflect lead-time and length biases rather than an actual improvement in outcome. (Lead-time bias occurs when survival appears to be lengthened because the diagnosis was made earlier, rather than because death was delayed. Length bias refers to the tendency of screening to generate favorable outcomes by preferentially detecting slowly growing, indolent tumors, as opposed to aggressive tumors that are present in the population relatively briefly.)

One reason for questioning the effectiveness of early detection is the lack of direct evidence that treatment for prostate cancer improves outcomes. Arguments for the effectiveness of the principal treatments for prostate cancer — radical prostatectomy, radiation therapy, and hormonal treatment — are supported mainly by uncontrolled observational reports. The lack of controls and other design flaws limit the persuasiveness of this evidence. A randomized, controlled trial conducted in the 1970s reported that radical prostatectomy did not improve 15-year survival, but the trial suffered from numerous methodologic problems.[36] Well-designed randomized, controlled trials of treatment are now under way in the United States and Europe, but the results will be unavailable for more than a decade.[37]

Skepticism about the efficacy of treatment has been heightened in recent years by evidence that patients with early-stage prostate cancer have good outcomes even without treatment. Johansson[38] and colleagues followed a population-based cohort of 223 Swedish men with initially untreated prostate cancer. After 12.5 years, only 10 percent had died of prostate cancer and 56 percent had died of other causes; the 10-year disease-specific survival rate was 85 percent. Critics argued that survival may have been inflated by the inclusion of a large proportion of older men with small, well-differentiated tumors.[39] Moreover, of the patients

Table 1. Estimated Prevalence of Latent Prostate Cancer in the United States, According to Age.*

Age (yr)	U.S. Population†	Reported Prevalence of Latent Prostate Cancer (%)‡	Projected No. of U.S. Men with Latent Prostate Cancer
50–59	10,632,000	22.1	2,349,672
60–69	9,710,000	36.1	3,505,310
70–79	5,849,000	37.8	2,210,922
≥80	2,155,000	53.7	1,157,235
Total	—	—	9,223,139

*Values are for men over the age of 50, the population for which screening is typically considered. Autopsy studies indicate that the prevalence of latent carcinoma in men 40 to 49 years of age is about 3 percent, and one autopsy study of men 30 to 39 years of age reported a prevalence of 30 percent.[16] Thus, the total population of American men with latent prostate cancer may be larger.

†Data are from the U.S. Bureau of the Census.[40]

‡Values are weighted, age-specific means for the extent of latent carcinoma as reported in seven autopsy studies that used systematic step-section analysis of prostate gland specimens from a total of 918 patients.[16,19]

who were alive at 10 years, 45 percent had tumor growth or metastasis, prompting speculation that a survival disadvantage might have become apparent if the follow-up period had been longer.

More recent studies of conservative treatment have failed to resolve the issue. A review of all men with prostate cancer who died between 1988 and 1990 in Göteborg, Sweden, reported that men with conservatively treated localized tumors had mortality rates of 50 to 100 percent, but the retrospective and selective study design (which included, for example, only decedents, rather than all men with prostate cancer, in the denominator) limits the utility of the data.[40] In the United States, an analysis of prostate cancer cases in Connecticut estimated that, after a mean follow-up of 16 years, life expectancy with conservative treatment of localized prostate cancer (either no treatment or hormonal therapy) was unchanged from that of the general population if the tumor was of low grade but was reduced by as much as 4 to 5 years or 6 to 8 years if the tumor was of moderate or high grade, respectively. These data derive from a retrospective chart review of cases diagnosed between 1971 and 1976, however, and include only patients 65 to 75 years of age.[41]

Researchers have pooled study data to model the natural history of untreated prostate cancer, but their findings have also been criticized. On the basis of data from 144 articles, Wasson et al.[42] estimated that the annual risks of metastasis and death from untreated prostate cancer were low (1.7 percent and 0.9 percent, respectively). This study was criticized for including a large proportion of patients with well-differentiated tumors and patients receiving androgen-deprivation therapy. On the basis of six major studies, Chodak et al.[43] reported that conservative management (delayed hormone therapy but no surgical or radiation therapy) was associated with a 10-year disease-specific survival rate of 87 percent for men with well-differentiated or moderately differentiated tumors and 34 percent for men with poorly differentiated tumors. For patients alive after 10 years, the probability of having metastatic disease was 19 percent, 42 percent, and 74 percent, respectively, for well-, moderately, and poorly differentiated cancers. Although critics disagree with the study's probability estimates,[44] the findings underscore the role of cell differentiation in predicting future tumor progression.

Is Screening or Treatment Harmful?

The potential benefits of any screening test must be weighed against the potential harm of testing and treatment. In the case of PSA screening, the physical effects of venipuncture are trivial, but the consequences of false positive (and false negative) results deserve consideration. If the reported positive predictive value of 28 to 35 percent is assumed to be correct, two out of three men with abnormal results on routine PSA screening will not have cancer. Before cancer can be ruled out, however, they must undergo the inconvenience and discomfort of follow-up testing (e.g., repeat PSA testing, ultrasonography, and biopsy) and the anxiety of waiting for results. Needle biopsy is performed in about 20 percent of screened men and is complicated by infection or bleeding in 0.1 to 4 percent of patients and by discomfort and anxiety in 58 to 68 percent of patients.[2,45,46]

A more serious source of concern than testing is the potential complications of treatment (e.g., impotence, incontinence, and death), the probabilities of which are summarized in Table 2. Although experts report anecdotally that their complication rates are lower than those in published reports, complication rates in the community are thought to be higher (Table 3). Reported mortality rates for radical prostatectomy are 0.2 to 2 percent, with lower rates reported by urologists at specialized centers and in studies involving patients under the age of 65.[47,49-51]

Does Screening Do More Good Than Harm?

Ultimately, the most important question about PSA screening is whether it improves the overall health and well-being of patients. As has already been noted, clinical trials that will provide this information are currently in progress. In the meantime, researchers have used decision analysis to try to estimate the net effect of benefits and risks on quality-adjusted survival, but both the methods and results of these analyses are controversial. Decision analyses of screening[52,53] have even suggested that quality-adjusted survival is reduced by screening, but the models' assumptions have been challenged.[54] Other decision analyses have focused on the effects of treatment. Fleming et al.[55] concluded that treatment, when compared with observation, increases quality-adjusted survival by less than one year and decreases survival in men over the age of 70 and those

Table 2. Reported Complication Rates for Radical Prostatectomy and External-Beam Radiation Therapy.*

Complication	Reported Incidence (%)
Radical prostatectomy	
Impotence	20–85
Incontinence	1–27
Urethral stricture	10–18
Thromboembolism	2–30
Permanent rectal injuries	1–3
Perioperative death	0.3–2
Radiation therapy	
Acute gastrointestinal or genitourinary complications	3–67
Chronic complications requiring surgery or prolonged hospitalization	1–2
Anorectal complications	2–23
Impotence	30–67
Urethral or bladder complications	3–17
Incontinence	1–3
Death	0.2–0.5

*Data were collated from 23 studies, 11 of which were published between 1993 and 1995 (citations are available from the author on request). Reported rates vary partly because definitions of complications vary from study to study and because some symptoms (e.g., impotence) are common preexisting conditions in this age group. Experts report anecdotally that current complication rates are lower than in published reports. Surgical complications have been reduced to some extent by the use of bilateral nerve-sparing techniques and by limiting the operation to younger and healthier men. Improvements in radiation therapy (e.g., three-dimensional conformal radiotherapy) may also produce fewer side effects.

Table 3. Adverse Outcomes of Radical Prostatectomy, Reported by a National Probability Sample of Medicare Patients.*

Condition	% of Men Reporting
Attributable 30-day postoperative mortality	0.6
Cardiopulmonary complications (congestive heart failure, myocardial infarction, pulmonary embolism, or respiratory failure)	4–5
Incontinence	
Wore pads or other devices for incontinence	31
Dripped more than a few drops daily	23
Underwent surgical treatment for incontinence	6
Had a catheter	2
Impotence	
Was able to have erections before surgery	90
Had no full or partial erections since surgery	61
Had erections firm enough for intercourse in previous month	11
Underwent medical or surgical treatment for stricture, two to four years after surgery	20

*Data are from Fowler et al.[4] as reproduced with additional material in a publication of the U.S. Office of Technology Assessment.[48]

with well-differentiated disease. Critics questioned the probability estimates and the inclusion of a relatively older population of men with small, well-differentiated tumors.[56,57]

In assessing whether PSA testing does more good than harm, one must consider the effect of screening on other health care services. Screening typically occurs in the primary care setting, where busy clinicians are concerned with other preventive services (e.g., breast-cancer screening, immunizations, and smoking cessation) and caring for sick patients. Time devoted to prostate screening may come at the expense of other conditions that pose a greater threat to individual and public health. A similar phenomenon can occur on a national level, where other health care services could be affected by the provision of prostate screening and follow-up to the 28 million American men over the age of 50 to whom the recommendations of the American Cancer Society apply. The first year of screening could cost an estimated $12 billion to $28 billion,[10,58] and subsequent screening might cost $3 billion per year.[59] If screening can reduce the disease burden from prostate cancer, this large investment might be worthwhile,[60] but its ability to do so remains unproved.[48]

Is There Enough Evidence?

Definitive evidence of whether prostate screening and treatment improve health will be unavailable until the turn of the century, when current clinical trials will be completed. For now, the debate centers on what the appropriate policy should be in the meantime, a period during which thousands of men will die of prostate cancer. Since screening has the potential to save lives (although its actually doing so is unproved), few would question the appropriateness of screening were it not for its potential harm. Proponents and critics of PSA screening differ in the ways they balance the benefits and risks.

Proponents believe that the benefits outweigh the risks: they argue that waiting for better evidence is unnecessary and that withholding screening while men die of prostate cancer is unethical. Critics of screening worry that the risks may outweigh the benefits. They believe that current evidence does not ensure safety and that encouraging screening without this evidence is unethical (*primum non nocere*). Until better data become available, the true balance of benefits and risks remains a matter of opinion.

How to Advise the Patient

These uncertainties must be acknowledged when physicians counsel patients. Physicians should neither recommend nor discourage PSA testing without, first, ensuring that patients have complete information about potential benefits and risks, and second, determining their personal preferences. Although it is advisable to obtain informed consent for any screening test, it is especially important for PSA screening, because the data are unclear and patients face potentially serious consequences to health and survival by either accepting or declining the test. Patient education is also important, because most men receive incomplete or inaccurate information about PSA from acquaintances, advertisements, and the lay media.

Therefore, the first step in counseling patients is to present the facts about the benefits and harm that can result from testing and treatment. Fact sheets[61] and videotapes[62] can help provide an unbiased summary of both sides. The second step is to assess the patient's preferences. This step is necessary because the fear of cancer, the potential impact of iatrogenic complications on the quality of life, and the absence of "proof" from controlled studies mean more to some men than others. Before deciding on testing, the patient should consider the procedures that would necessarily follow an abnormal screening result and whether he would want to be treated if cancer were diagnosed. In particular, men with a life expectancy of less than 10 years should be advised that screening and treatment are unlikely to be helpful and may worsen the quality of their lives.

Once fully informed about the consequences, some patients find it difficult to make this decision and prefer instead to seek the doctor's advice. Offering an opinion in response to this invitation is entirely appropriate, but physicians who uniformly encourage or discourage PSA testing without first reviewing the facts and exploring preferences are unfairly imposing their values on the patient. For this reason, adding a PSA measurement to a panel of other tests, as one would add a potassium or hemoglobin measurement, is inappropriate if it is not preceded by the kind of discussion described above. It is equally inappropriate for a physician opposed to PSA screening to avoid the topic when patients do not request the test. Patients who are unfamiliar with PSA testing have a right to know about the availability of the test and the recommendations of groups that encourage screening.

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New Cancer Test For the Prostate Appears Promising

By Ron Winslow
Staff Reporter of The Wall Street Journal

Medical researchers said a new version of a widely used screening test for prostate cancer appears to improve its accuracy in detecting the disease.

If the results are borne out in further studies, the test may yield fewer false positive readings for cancer and thus reduce by 31% to 76% the number of men who undergo unnecessary biopsies and other examinations to confirm whether they have cancer.

Use of the current test, known as PSA, for prostate-specific antigen, has increased among men over 50. But it also has provoked controversy in part because only one in three men who have positive readings turns out to have cancer. That means the tests cause two out of three to undergo unnecessary and sometimes painful biopsies and other tests.

The high rate of false positive results occurs because PSA is also elevated in older men with a common noncancerous condition called benign prostatic hyperplasia.

The new test measures two forms of PSA, one that binds to certain blood proteins and another that is free-floating in the blood stream. For reasons not understood, men with prostate cancer have significantly lower levels of free PSA than men with BPH, said William J. Catalona, chief of urologic surgery at Washington University School of Medicine, St. Louis, and lead author of the study. As a result, the study indicated, the new test can better distinguish between men with prostate cancer and those with BPH.

In the study, published in today's Journal of the American Medical Association, researchers used frozen blood samples taken from 113 men over 50 whose original readings were between four and 10. Among those, who had also undergone biopsies and rectal exams, 63 had been diagnosed with BPH and 50 had prostate cancer.

In general, researchers found that men whose free-floating PSA was significantly below 20% of their total PSA levels were more likely to have cancer than those with free PSA levels above 20%.

The study found that the free PSA test would have eliminated 76% of unnecessary biopsies among men who didn't have BPH and 25% of the biopsies among those with the benign condition. In a third group, who had BPH and no cancerous symptoms when doctors felt the prostate during a rectal exam, the free PSA test would have eliminated 31% of unnecessary biopsies.

Dr. Catalona said a new national trial to involve 12,000 patients at eight medical centers around the U.S. has been launched in an effort to verify the results.

— included in this packet of articles
see JAMA. Oct. 18.

JUNEAU EMPIRE
SPORTS

SUNDAY 4/21/96

from the SIDELINES

With Miller back, I feel lots better

By MIKE STEWART
THE JUNEAU EMPIRE

What a joy it was to see Mike Miller at the Augustus Brown poolside in the Southeast Regional Championships over the weekend.

Here he was helping kids with their techniques, jotting notes, talking to parents and helping direct the meet, just as he's done for the past 14 years as the coach of the Glacier Swim Club.

The pool – indeed, the community – hasn't felt right in the past few months in his absence. Selfishly, it made me feel much better to see him in the role of a coach again, instead of wondering how he was doing far away in an Oregon hospital as a patient.

For those who aren't aware, Miller was diagnosed with prostate cancer on Jan. 17. That bad news quickly got worse when it was discovered it had spread to bone cancer. He now has a tumor on his spine at the base of his neck and three more on his skull.

"They have what's called a staging cell of A through D," Miller explained of cancer cell progression on Saturday in his office above the pool. On the deck below, some 250 kids from five Southeast communities battled for region honors. "I'm at a D-2 range, which is classified as incurable."

On a scale of 1-10, Miller was told his form cancer was a very aggressive, high-grade 9. The bot-

Next stop: Olympics

BRIAN WALLACE / THE JUI

Glacier Swim Club coach Mike Miller talks to Eric Moss, 8, on Saturday during the Southea gional Championship meet at the Augustus Brown pool. Miller was at poolside for the first t nearly three months since being diagnosed with prostate cancer

aggressive, high-grade 9. The bottom line: he was given 17 to 35 months to live.

"You're scared, you just go numb," he said of his reaction upon learning his condition. "My immediate concern was for my wife (Judy) and my whole family."

The Millers thought they could handle anything. They've had good training for this sort of situation. It was only five years ago when their son, Todd, faced another life-threatening situation. He was hit by a truck while riding his bike. For a few agonizing days they didn't know if Todd would survive. Thankfully, he's since made a near-complete recovery.

"We'd been through this trauma once before," Miller recounted. "We felt like we'd have a better go-round because of our experience."

But they learned the pain, the fear, doesn't go away, no matter how many times a family is confronted with death.

"That hasn't been the case," Miller quietly agreed. "It's been difficult at times."

Despite having every reason to feel cheated and bitter for all of their recent hardships, the Miller family members have tried to remain positive throughout. And, Miller added, there is reason to be positive.

First, he said the love from his family and the overwhelming support he's received from the community are a springboard to health in even the most dire situations, regardless of how bleak the prognosis is.

"That's the bottom line," he said. "You have this awareness of how much love they have for you, and you for them. It makes all of us strong."

To the point of healing?

"I believe it can do that."

Further, Miller has undergone a radically new – and dangerous – treatment which has been remarkably successful. A normal prostate specific antigen count is around four or below. When Miller was first tested, his PSA count was a whopping 26.6.

What does this mean in medical terms?

"Basically, I was off the Richter scale," he chuckled.

But in the less that two months that he's received hormonal treatment in combination with the drug Suramine, his PSA level has dropped to a miniscule .05.

"That makes everyone at Oregon Science Health University kind of jazzed," Miller said, referring to the clinic where he receives treatment. "There's only 20 people in the country getting this same treatment, and I've had

Please see Sidelines, Page B3

nearly three months since being diagnosed with prostate cancer. He's wearing sunglasses because the treatment he's receiving leaves [illegible]

Suddenly cool Mariners lo

THE ASSOCIATED PRESS

SEATTLE – Juan Guzman allowed five hits in eight innings, and Shawn Green homered and doubled in the go-ahead run Saturday night, leading the Toronto Blue Jays over the Seattle Mariners 3-1.

Ken Griffey Jr., batting just .217, accounted for Seattle's run with his sixth homer. The Mariners lost their second straight following an eight-game winning streak, which tied a team record.

Guzman (3-1) allowed five hits in eight innings, struck out seven and walked two. Mike Timlin pitched a perfect ninth for his third save.

After allowing Griffey's homer in the first, Guzman loaded the bases on walks to Edgar Martinez and Paul Sorrento, and an error by centerfielder Otis Nixon on a drive by Jay Buhner.

Guzman retired Doug Strange on a liner to shortstop, ending the inning, and Seattle failed to get a runner past first base after that.

Paul Menhart (0-2), who has a 7.15 ERA, gave up all three runs and seven hits in six innings.

He opened the game with walks to Nixon and Domingo Cedeno, then allowed a two-out infield single to Joe Carter that scored N on.

Green led off the second w his first homer of the year, givi Toronto a 2-1 lead. Doubles by

Yanks 'Doc' not feeling well after getting sent to bullpen

THE ASSOCIATED PRESS

MINNEAPOLIS – Dwight Gooden, 0-3 with an 11.48 ERA in three starts for the New York Yankees, was demoted to the bullpen Saturday.

Gooden, back in the majors after a 1½-year suspension for violating his drug aftercare program, was dropped from the rotation a day after his worst outing of the season, a 7-1 loss to Minnesota.

"I have no problem with it," Gooden said. "That tells me a lot of work needs to be done."

Gooden gave up six runs on s hits and four walks in three-pl innings Friday night. Manag Joe Torre informed Gooden the decision when the pitcher a rived at the Metrodome for Sa urday night's game.

"We have no choice at th point," Torre said.

Torre said he considered sen ing Gooden to the minors, but l believes pitching coach Mel Sto tlemyre is the best person to he Gooden. Stottlemyre, Gooden pitching coach with the Ne

Please see Gooden, Page B

Mets top Rockies, halt skid

■ *Vizcaino's two-out run-scoring hit in 10th inning decides it*

THE ASSOCIATED PRESS

NEW YORK – Jose Vizcaino, back in the lineup after the birth of his son, singled home the winning run with two outs in the 10th inning Saturday and the New York Mets beat the Colorado Rockies 4-3, ending a three-game losing streak.

Andres Galarraga homered twice, doubled and drove in all three Rockies runs. He led off the ninth inning with a home run against John Franco (2-0), tying it at 3.

Rey Ordonez opened the Mets' 10th with a bloop single off John Habyan (0-1) and moved to second on a two-strike sacrifice by pinch-hitter Brent Mayne. Vizcaino sin-

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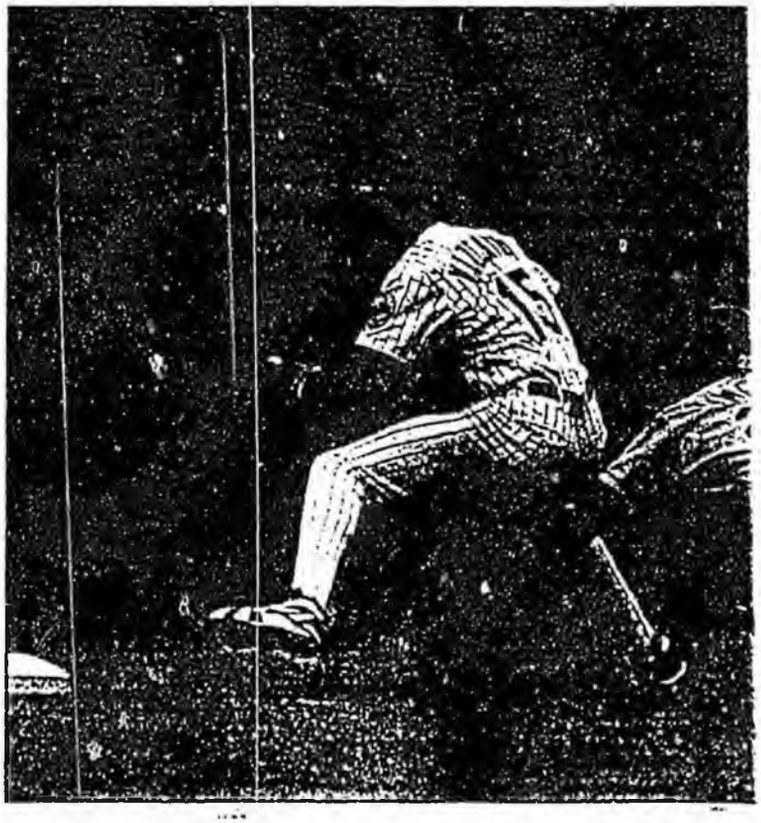

He's Met his match: Colorado's Walt Weiss, right, is about to Viscaino on Saturday at Shea Stadium as Weiss tries to turn a sing Rockies to stop a three-game losing skid.

BRIAN WALLACE / THE JUNEAU EMPIRE

ity soccer player Heidi
der on Saturday in a scrim-
layer Kristi West moves in
up their regular season this

gled, and Ordonez slid home ahead of right fielder Dante Bichette's throw.

Vizcaino left Friday night's game for a pinch-hitter when his wife, Jessica, went into labor with the couple's third child. Their son, Jonathan, was born later in the evening.

Giants 8, Cubs 4

Barry Bonds homered, doubled and drove in three runs Saturday and the San Francisco Giants ended Chicago's four-game winning streak.

The teams combined for five home runs, taking advantage of 21 mph winds. A day earlier, the clubs hit nine homers.

Bonds went 3-for-5. He led off the third inning with his sixth homer, a towering shot onto Sheffield Avenue beyond the right-field bleachers, and had a two-run double in the fourth.

Steve Scarsone also homered for the Giants. Brian McRae homered to lead off the was the loser.

Expos 11, Pirates 2

Darrin Fletcher hit his first grand slam and tied a career-high with five RBIs and Henry Rodriguez homered twice, leading Pedro Martinez and the Montreal Expos past Pittsburgh.

Martinez (1-1) pitched three-hit ball for eight innings, giving up home runs to Nelson Liriano and Jeff King.

Rodriguez, who also doubled and drove in four runs, and Moises Alou hit consecutive home runs in the first inning against John Ericks (0-3). Ericks has lost eight straight decisions since last Aug. 5.

Fletcher hit grand slam off reliever Lee Hancock during a six-run third inning and added an RBI single in the fifth.

Cardinals 1, Phillies 0

Brian Jordan singled home the winning run with two outs in the ninth, giving St. Louis its second straight 1-0 victory over Philadelphia.

Ricky Bottalico (1-1) walked Royce Clayton leading off the ninth, Pat Borders sacrificed and Willie McGee walked. Ron Gant struck out and finished with a perfect ninth for his fifth save.

Braves 6, Padres 5

Ryan Klesko matched his career high with four hits, including a double and triple, and scored the go-ahead run.

With one out in the eighth and the score tied 5-all, Klesko tripled off Doug Bochtler (0-1). Javy Lopez walked and pinch-hitter Dwight Smith lifted a sacrifice fly to right, the first RBI this season by a Braves pinch-hitter.

Greg McMichael (1-0) pitched a perfect eighth, and Mark Wohlers got three outs for his fifth save. Atlanta has won five of its last six, including three straight over the Padres.

Marlins 7, Dodgers 4

Hideo Nomo, who struck out a career-high 17 against the Marlins in his previous outing, was knocked out in the fifth inning.

Joe Orsulak hit a two-run homer just inside the right-field foul pole, his first home run since last Aug. 17. Gary Sheffield hit a solo shot off the upper-deck facade, his seventh homer of the season, helping the Marlins win their third straight.

knee ligament Thursday night, 34-year-old Jon Casey will get only his fourth start since he was recalled from the International Hockey League on Feb. 21. He appeared in seven others as a backup. Casey, however, is not a playoffs rookie. In 1991, Casey led the underdog Minnesota North Stars to the Stanley Cup finals.

"Fortunately for us, he's an experienced goalie," general manager-coach Mike Keenan said. "He took a team to the Stanley Cup finals. He may rise to the occasion."

Detroit at Winnipeg

The Jets are hoping for a boost from a sell-out crowd of 15,000 at Winnipeg Arena, where the Jets were 22-16-3 during the regular season. Winnipeg, which was outshot 34-16 Friday night, also was 12-11-4 against Central Division opponents, including Detroit, this season.

Blackhawks at Flames

With Calgary blaming poor officiating in part for its deficit, Chicago center Jeremy Roenick is trying to guard against a Flames backlash.

"I'm sure they're an angry team, a team that's going to be motivated," Roenick said.

Sidelines...

Continued from Page B1

the fastest drop."

However, there are potentially disastrous side affects to this treatment.

"It's highly toxic. If your body rejects it, you die," Miller said. "It was frightening, but I said, 'Sign me up.'"

Less frightening side effects exist, too. For instance, his testosterone level has been depleted significantly by the doctors, because it is a carrier of the cancer cells. The testosterone is replaced with estrogen, a female sex hormone.

This leads Miller to be more emotional than he'd like at times, and he also experiences uncomfortable hot flashes, much like a woman who is going through menopause.

Yet he says with a smile, "I have the best of both worlds, I'm a guy on the outside and a woman on the inside."

The way he sees it, these are minor nuisances in the road to recovery.

While Miller certainly appreciates the help he's received from some of the finest medical help in the country, he said the flip side of all this has been that being away from home for such long periods of time has been agonizing. He's only been out of Portland for about a week since starting his treatment.

"You have your ups and downs. It was really bad around Easter; I was really homesick."

Miller believes recovery is possible, but he doesn't put up any kind of a false front. He isn't giddy with an artificial excitement, nor does he weave around the room throwing left jabs at an imaginary foe, promising to go the distance if that's what is required to beat this puzzling illness.

Instead, he emits a sort of comfortable reassurance.

"The whole key is just having a chance to prolong your life," Miller said. "I guess I can accept facing death a little better now. We're all going to die. How long do I have? I don't want to put a timeline on it. I just want to enjoy each day."

This appreciation, he said, is a silver lining in what has been a very cloudy past two months. Enjoying life isn't a convenient excuse to make the prospect of death easier to accept, he added. You can't ignore death, but if we incessantly worry when we might die, Miller said, we miss celebrating every moment of life.

"I've always been sort of emotional about things," Miller said. "But now I have an even more intense feeling; I'm much more sensitive. I look across the channel to the mountains and see the snow and trees and really enjoy it. You just have so much more of an appreciation for life."

It was a very reassuring thing to see Miller again. He looked wonderful and healthy. Except for the dark glasses he had to wear – the treatment he's received makes his eyes sensitive to bright light – one wouldn't have noticed anything different about him at all.

Maybe that's because there is nothing different. He's the same caring, thoughtful person we all knew him to be three months ago when he left for treatment.

I confessed to Miller that I think his visit here helped me more than it helped him. He said that was normal, noting that he's learned it's important for those ailing not to hole up in a hospital or health-care facility.

"It's better for people to see me; it reassures them. You have cancer and they think automatically you're dying," he said.

Mike Miller's message is clear: I'm more alive than ever.

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CERVICAL CANCER

DEFINITION

The cervix is the narrow opening of the uterus (womb) that leads into the vagina (female sex organ). The cells lining the interior of the cervix produce mucus (a body fluid) that keeps the vaginal area moist. In childbirth, the cervix dilates (opens) to allow passage of the infant through the birth canal.

Cervical cancer is cancer that begins in the cervix. It first appears as low-grade (slow-growing) squamous intraepithelial (lining cell) lesions (sometimes referred to as LGSIL) or dysplasia, a condition in which cervical cells go through subtle changes that are clearly abnormal but are not clearly cancerous. These changes can be observed in cell samples, examined under a microscope by a trained technologist.

Next, high-grade (fast-growing) squamous intraepithelial (lining cell) pre-cancerous lesions (sometimes called HGSIL) called carcinoma in situ develop. "In situ" means that the lesion--which is not yet viewed as a true cancer--has not spread beyond the site where it started. If detected at this stage, it can be cured. Left untreated, it can become a true cancer and metastasize (spread) to distant organs, posing a threat to life.

Since the cervix is located deep in the body, and this type of cancer usually doesn't cause any discomfort or symptoms during early development, the only way to detect cervical cancer early is to have a screening test, called the Pap smear, at regular intervals.

EPIDEMIOLOGY

Cervical cancer is a relatively common cancer, accounting for about 16% of all cancers in women. The American Cancer Society estimates that about 80,800 new cases of cervical cancer will be diagnosed in 1995. Of these, 15,800 will be invasive (spreading into other organs) and 65,000 will be in situ.

Over the past thirty years, as the number of women having the Pap test has gone up, the number of advanced cervical cancer cases has gone down; however, the number of cases in women over the age of 50 has increased. In populations where women do not have the Pap smear, including in some groups in the United States and in all developing countries, cervical cancer rates are high, cases are diagnosed at a late stage, and the rate of deaths is higher than in women who do

have the Pap smear. It is the second leading cancer in women worldwide.

SIGNS AND SYMPTOMS

-Cervical cancer may develop and begin to spread without showing any symptoms.

-Unusual bleeding, spotting (blood spots or light bleeding), or other unusual discharge from the vagina, not from the normal monthly period, may be a sign of cervical cancer.

-Pain may develop in the uterus or in the tummy area, but pain does not usually occur in the early stages of the disease.

These symptoms can be caused by a number of conditions, including some sexually transmitted diseases. If you have these symptoms, don't try to guess, and don't wait for pain to develop. See your health provider promptly.

RISK FACTORS

The following conditions or situations often, but not always, lead to dysplasia or cervical cancer.

-**HPV (human papillomavirus or genital warts).** HPV is a sexually transmitted disease--that is, it is passed from one person to another during sex. While men have no cervix (and therefore cannot develop cervical cancer), men can get HPV and pass it on to female partners. If you are concerned that you may have been infected with HPV, but you have no symptoms, you should request an HPV test when you have your yearly Pap smear and pelvic examination. If you have genital warts or any other symptoms that cause concern, you should see your health provider promptly.

-**Having a high number of male sexual partners, or having sex with high-risk men.** In terms of cervical cancer, "high-risk men" means mean who have had many sexual partners. More than five is considered high. Having many sex partners greatly increases the likelihood of infection with HPV (and therefore, the likelihood of cervical cancer). It also increases the risk of AIDS. These conditions are so closely related that the U.S. Centers for Disease Control and Prevention now defines AIDS in women as: a positive blood test for HIV (infection with the virus that causes AIDS) plus cervical cancer.

-**Having sexual intercourse at a young age** (loss of virginity)

-**Smoking or other tobacco use.** Nicotine and other chemicals and byproducts of smoking affect more than the lungs. These harmful substances have been found in washings taken from the cervix of women who smoke. Researchers believe that these substances damage the genetic makeup of cells in the cervix, and this damage leads to cancer.

-**A high number of pregnancies**, even if the pregnancy was not carried to term (there was no birth)

-**Low income level**

EARLY DETECTION OF CERVICAL CANCER: THE PAP SMEAR

In a Pap smear, a small sample of cervical cells and the mucus made by the cervix is lightly scraped onto a swab, spatula, or brush. The sample is then "smeared" onto a glass slide. The slide is sent to a laboratory where a specially trained technologist examines it under a microscope.

The Pap test can be performed by a physician, nurse practitioner, physician's assistant, or nurse, in the office. It takes only a few moments and normally, is not painful, although some women experience very mild, momentary cramping when the smear is done. Usually, a pelvic examination is also done, immediately after the smear is taken.

The Pap test can find developing cancer cells before they have a chance to spread to other places in the body. About 90% of cervical cancer cases can be detected early through the use of Pap smears. If found early, cervical cancer is almost 100% curable. Also, the earlier the cancer is found, the less complicated its treatment will be.

WHO SHOULD GET A PAP TEST

All women who are sexually active or over the age of 18 should have a Pap test each year. Even women who have had a hysterectomy (surgery to remove the uterus), should continue to have annual vaginal examinations and Pap smears because these can help to detect cancer of the vagina.

WHAT THE PAP SMEAR RESULTS MEAN

An abnormal result of a Pap smear does not necessarily mean cancer. In addition to finding cancer cells, the Pap test can also show dysplasia, which means that there are abnormal, but not cancerous cells.

If your Pap smear shows abnormal (not normal, average, or typical) cells, you may need an additional test called a colposcopy. In colposcopy, an instrument with a magnifying lens is inserted into the vagina. The lens makes it possible to see the tissues of the vagina and cervix more closely. This examination has no side effects. If you are pregnant, your health care provider may choose to wait until after the delivery to do the colposcopy; however, it can be done safely during pregnancy.

Two types of cancer are found in the cervix:

-**Squamous cell carcinoma** comprises 90% of cervical cancers. Squamous cells are scale-like cells that make up passage membranes such as the cervix.

-The remaining 10% are **adenocarcinomas**, which begin in the cervical glands.

In examining the Pap smear, the technologist uses a classification system and terminology, called the Bethesda system, to answer the following questions:

-Is the sample adequate for evaluation? If not, it will be necessary to have the test again.

-Are the sample cells normal, going through benign (non-cancerous) changes, or abnormal?

-If the changes are benign, are they due to infection with yeast, fungus, bacteria, or virus? Or are the changes reactive--caused by routine cellular repair work, or aging, or an intrauterine contraception device (IUD)?
-If the changes are abnormal, do they indicate cancer development? If yes, is the cancer squamous cell or adenocarcinoma? Is the cancer high-grade (fast-growing) or low-grade (slow-growing)?
-If the cancer is adenocarcinoma (glandular), did it begin in the cervix, in the lining of the womb, or in the uterus?
-If a vaginal smear has been taken, is the hormonal pattern of the vaginal cells normal for the woman's age and history?

STAGING

Once a diagnosis of cervical cancer is certain, the next step is to determine the stage (extent) of the cancer. Staging is a very important step, because selecting the most effective treatment depends on the stage of the cancer. If you have cervical cancer, ask your cancer care team to explain the stage of your disease. This way, you can participate in making informed decisions about treatment.

For staging, your cancer care team considers:
-The size of the lesion or tumor
-How deeply the tumor has invaded the tissues at the site of development
-The extent of any invasion into surrounding organs (the uterus, the pelvic wall, the vagina, the rectum, the bladder)
-The extent of invasion of distant organs

To obtain this information, you will need additional tests, which may include:
-**Biopsy,** removal of a sample of the cancerous lesion, for examination under a microscope. Selection of areas to be biopsied may be based on the colposcopy results.
-**Cone biopsy,** in which a cone-shaped portion of tissue is removed for examination under a microscope. This type of biopsy shows how deeply the tumor is invading underlying tissue.
-**A complete physical examination,** with special attention to the lymph nodes (for evidence of metastasis), the bladder (for evidence of blockage or local extension of the tumor), and the cervical ligaments and rectum (for evidence of local extension). Based on the findings of the physical examination, **cystoscopy** (examination of the bladder) or **proctoscopy** (visual inspection of the rectum by way of a lighted tube) may be needed.
-**A chest x-ray,** if the cancer is not in a very early stage (cervical cancer can spread to the lungs, but this is very rare)
-**Computed tomography (CT) scans,** to check the urinary tract and the lymph nodes. In this imaging method, an x-ray beam rotates around the body, taking images at various angles. The images are then put together into 3-dimensional views by a computer. A contrast medium (special dye) may be injected to highlight details. If the lymph nodes look suspicious, they may be biopsied, using the CT scan or ultrasound imaging as a guide.
-**Examination of the cervix under anesthesia,** to determine the extent of

disease in the cervix, especially if radical hysterectomy (surgical removal of the uterus, tissues around the uterus, and a segment of the vagina) is under consideration. If surgery is performed, the retroperitoneal lymph nodes (those at the rear of the abdominal and pelvic wall) may be examined.
-**Cystoscopy** (examination of the bladder)
-**Proctoscopy** (examination of the rectum)

Invasive cervical cancer can spread through the bloodstream or the lymph nodes (a network of pea-sized glands that produce white blood cells and fight infection) into other parts of the body. Occasionally, cervical cancer behaves in an unpredictable manner, showing up as a small tumor, but with new tumors already establishing themselves at a distant site. Most cervical cancer takes ten to twelve years to develop to the point of invasive cervical cancer; however, in about 10% of women, invasive cervical cancer can develop in one year or less.

If you have cervical cancer, ask your cancer care team to explain the stage of your disease. This way, you can participate in making an informed decision about treatment.

DESIGNING A TREATMENT STRATEGY

After the diagnostic tests, when your disease stage is known, your cancer care team will recommend a treatment strategy. Consider the options without feeling rushed, and if there is anything you don't understand, ask to have it explained again. Your overall physical health, the nature of your disease, and your unique situation in life are all essential factors for determining a treatment plan. Together, you and the members of your cancer care team should develop a plan and a follow-up program that fits your particular needs.

Whatever your situation, you may want to seek a second opinion for personal or practical reasons. Personally, pursuing another medical perspective can deepen your understanding of your treatment options. A second opinion may reassure you in your decision to work with the first medical team you consulted, or you may find that the second treatment situation suits you better. On the practical side, some insurance companies require a second opinion before authorizing reimbursement (payment for your cancer care expenses).

TREATMENT FOR SQUAMOUS INTRAEPITHELIAL LESIONS (LGSIL, HGSIL)

Although squamous intraepithelial lesions are not cancer, it may need to be treated. Treatment choices are:

-**Cryosurgery:** Freezing and then removing abnormal cells.
-**Laser surgery:** A focused laser beam is used to burn off abnormal cells.
-**Electrosurgical loop excision diathermy (LEEP):** Use of a small looped wire with electric current to generate heat and burn off cancerous cells.
-**Electrocautery:** With electric current, burning off abnormal cells.
-**Hysterectomy:** Surgical removal of the uterus and cervix.

IF YOU ARE PREGNANT

Treatment for cervical cancer may differ significantly if you are pregnant. If you have cervical cancer and are pregnant, talk with your cancer care team about your options.

IF YOU ARE NOT PREGNANT

The choice of treatment depends on your age, the stage of the cancer, and whether you wish to have children. Hysterectomy means that you can no longer bear children.

TREATMENT OF CERVICAL CANCER, ACCORDING TO STAGE

The stage of cervical cancer is classified by the FIGO system. (FIGO stands for International Federation of Gynecologists and Obstetricians). In general, the higher the stage, the more difficult the cancer is to treat successfully. Metastasis means that the disease is spreading beyond the original tumor.

When radiation is used, it may be given as **external beam radiation**, which is like having an x-ray, but for a longer period of time and at a higher dose of x-rays, or as a **radiation implant**, which is inserted into the cervical area for a specified period of time.

Stage 0 means the tumor is in situ (it has not begun to spread into adjacent or nearby tissues).

Stage I means that the tumor involves more tissue, but has not spread beyond the cervix. Treatment at these stages is usually highly successful. During pregnancy, no treatment is given for these stages. Otherwise, treatment options include:

- **Electrosurgical loop excision diathermy (LEEP)**, as described above.
- **Laser surgery**, as described above.
- **Conization:** Removal of a cone-shaped section of tissue that includes the cancer. **Cold-knife conization** means that high-frequency current is used for the procedure.
- **Cryotherapy**, as described above.
- **Radiation (without surgery):** A radiation implant is applied to the affected area. This method is chosen only if other health conditions make it risky or impossible to perform a hysterectomy. Depending on the size of the lesion, external radiation may also be performed.
- **Total hysterectomy (removal of the uterus and cervix):** This may be done via an incision through the abdomen or through the vagina. This treatment is often recommended for women past the childbearing years, or when the cancer has begun to spread to areas surrounding the cervix. Depending on age and the circumstances, oophorectomy (removal of the ovaries) may also be done. If it appears that the tumor has begun to spread beyond the original site, it will be necessary to check the lymph nodes during surgery.
- **Radical hysterectomy, with bilateral pelvic lymphadenectomy.** More extensive (wider) surgery to remove the uterus and cervix, plus removal of the pelvic lymph nodes to check for spread of the disease. This is sometimes

followed by external beam radiation to the pelvic area (the area between the hips).

Stage II: The cancer has spread beyond the cervix, but not past the upper third of the vagina or into the uterus, or the tumor has spread to the uterus, but not beyond. The options are:

-**Radiation:** External beam or implant(s), with or without hydroxyurea (a cancer-fighting drug).

-**Radical hysterectomy and pelvic lymphadenectomy, often followed by external be radiation to the pelvic area:** Removal of the uterus, cervix, and nearby lymph nodes.

Stage III: The cancer extends to the pelvic wall or the tumor involves the lower third of the vagina, or the cancer has spread to one or both kidneys, or is blocking the flow of urine to the bladder. Treatment options include:

-**Radiation:** External beam or implant(s), with or without hydroxyurea.

Stage IV: This means that the cancer has spread beyond the pelvis or into the bladder or rectum or both, or the kidneys, or to one or more distant organs. The preferred treatment is:

-**Radiation:** External beam or implant(s), with or without hydroxyurea.

-**Chemotherapy:** Treatment with powerful cancer-fighting drugs, especially cisplatin or ifosfamide, when distant organs are involved.

RECURRENT (RE-OCCURRING) CERVICAL CANCER

If the recurrence is at a distant site, there is no standard treatment. If the recurrence is not distant, very extensive pelvic surgery to remove all of the affected tissue and organs may be used, often in addition to radiation or chemotherapy (or both), using fluorouracil, with or without mitomycin. To relieve painful symptoms of advanced disease, chemotherapy with cisplatin, ifosfamide, or a combination including ifosfamide or radiation therapy may be helpful.

SIDE EFFECTS OF TREATMENT

Before you begin treatment, it's a good idea to ask your treatment team about the side effects you can expect. They should have a good idea about what side effects are usually experienced during therapy, how long they might last, and how serious they might be. This can help you to plan and manage your normal activities during the time you will be treated.

If you experience any symptoms related to your treatment, be sure to report them right away to your cancer care team, especially the nurse. There may be ways to relieve the symptoms. For example, new medications recently developed can be given before, after, or during chemotherapy to prevent or stop nausea and vomiting. Also, if you are having trouble staying on therapy, for any reason, don't quit. Talk with your cancer care team. It may be possible to adjust the dosage or the treatment schedule to make it easier for you to complete all the treatments you

need.

PROGNOSTIC (OUTCOME) FACTORS

Early detection of cervical cancer saves lives. Ninety percent of women who have been diagnosed with in situ cervical tumors survive five years or more.

For those women who have invasive cervical cancer, the survival rate varies a treat deal, depending on where the cancer has spread.

If you have questions about your personal chances of cure of cervical cancer, or how long you might survive such a cancer, talk with the people who know your unique circumstances best--your cancer care team.

ORGANIZATIONS AND RESOURCES

For additional information on cervical cancer, contact the National Cancer Institute's Cancer Information Service at 1-800-4-CANCER. A list of clinical trials appropriate for your unique situation will be sent on request.

REFERENCES

American Cancer Society. Cancer Facts & Figures - 1995. Atlanta: American Cancer Society, 1995.

Dorland's Illustrated Medical Dictionary. 26th ed. Philadelphia: W. B. Saunders, 1985.