PUBLIC HEALTH BRIEFING

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Progress in the Control of Prostate Cancer in Rhode Island, 1987-2000

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- THIRD IN A SERIES -

PROFILE

About 5000 men living in Rhode Island today have been diagnosed with prostate cancer (4,984 in 1998), about 900 men are newly diagnosed with prostate cancer each year (896 in 2000), and about 100 succumb to the disease annually (133 in 1999). Prostate cancer is among the top four most prevalent cancers in the state (and the nation), along with cancers of the lung, colon-rectum, and breast. In Rhode Island, prostate cancer accounted for 14% of all newly diagnosed cancers in 2000, and 5% of all cancer deaths in 1999.

CONTROL STRATEGY

Although prostate cancer has been linked to several risk factors, effective preventives are unknown. Speculations about the role of diet, environmental factors, and hormones as risk factors for prostate cancer are inconclusive. [1] Although the **prostate-specific antigen** (PSA) screening test is non-invasive, relatively inexpensive, and effective in the early detection of prostate tumors, its use is controversial. Clinical trials in progress have not yet proven that early detection and treatment are effective in reducing prostate cancer mortality, mass screening efforts are costly, and treatment is associated with high morbidity (e.g. urinary incontinence and sexual dysfunction). However, aggressive use of screening tests remains a key control strategy, along with the assurance of multidisciplinary, state-of-the-art treatment. The Rhode Island Cancer Control Plan,[2] published in September, 1998, recommends:

Screening

- Primary care providers should inform men ages 45 and over about the known risks and potential benefits of prostate cancer screening with the PSA and **digital rectal examination** (DRE).
- Primary care providers should make available annual screening with PSA and DRE to the following populations who, after considering information about the known risks and potential benefits of prostate cancer screening, request to be screened.
  - men ages 50 and over with at least a 10-year life expectancy
  - men ages 45 and over with a high risk of developing prostate cancer (i.e., men with a family history of prostate cancer and African-American men)

Basic Treatment Infrastructure

- Promote and support the adoption of **American College of Surgeons** (ACOS) approved cancer programs in all acute care hospitals in Rhode Island.
- Assure accurate tumor staging with **American Joint Committee on Cancer** (AJCC) staging methodology.

2010 Targets

- *Healthy People 2010,* the most recent set of health objectives for the United States,[3] suggests the following target for the control of prostate cancer:

Mortality

By 2010, reduce the prostate cancer death rate to 28.8 deaths per 100,000 males (age-adjusted to the year 2000 standard population of the United States; baseline = 32.0 deaths per 100,000 males in 1998).

TRENDS (TABLE 1)

Screening

Information on prostate cancer screening rates is unavailable at this time, but survey questions on prostate cancer screening were added to the 2001 Rhode Island Behavioral Risk Factor Surveillance System core questionnaire; results should be available shortly.

Incidence

The age-adjusted incidence of invasive prostate cancer (2000 standard) among Rhode Island men of all races increased from 118 cases per 100,000 in 1987-1991 to 173 cases per 100,000 in 1993 and remained around 170 cases per 100,000 men until 2000 (based on five-year moving averages). From 1989 to 1992, the age-adjusted incidence of invasive prostate cancer (2000 standard) among U.S. men of all races increased from 160 cases per 100,000 men to 201 cases per 100,000 men. This was followed by a decrease to 169 cases per 100,000 in 1995-1999. Rhode Island's invasive prostate cancer rates were below rates for the nation as a whole until 1997.

Table 1. Progress in the control of prostate cancer:

- Average annual age-adjusted prostate cancer incidence rates by summary stage of disease at diagnosis among men of all races
- % cases in RI ACOS-approved treatment programs, of cases with AJCC staging, and of localized cases with recommended treatment
- Average annual prostate cancer mortality rates among men of all races

Place	*Measure*	Source	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
RI	Incidence - In Situ *	[a]	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.3		
RI	Incidence - Local	[a]	64.4	71.6	81.9	89.0	93.7	93.5	95.6	92.5	97.4	102.5		
RI	Incidence - Regional	[a]	10.2	10.5	12.0	13.2	13.9	14.7	14.6	13.7	12.6	11.8		
RI	Incidence - Distant	[a]	19.1	17.9	16.9	15.6	14.1	12.1	10.9	10.0	9.1	7.7		
RI	Incidence - Unknown Stage	[a]	24.1	33.3	41.5	48.0	51.3	52.3	50.5	49.2	48.9	50.2		
RI	Incidence - All Invasive **	[a]	117.8	133.3	152.2	165.8	173.0	172.6	171.7	165.3	168.0	172.2		
U.S.	Incidence - All Invasive	[b]	160.1	180.5	194.6	201.3	200.7	191.1	177.9	169.6	168.8			
RI	% Cases in RI ACOS Tx Pgms	[a]	55	48	44	44	46	44	42	43	46	58	60	76
RI	% Cases with AJCC Staging	[a]	51	53	52	54	66	63	73	71	69	71	73	73
RI	Mortality	[c]	35.8	35.3	35.3	34.8	35.9	35.1	35.4	35.6	33.8			
U.S.	Mortality	[c]	36.8	37.6	38.4	38.7	38.5	37.8	36.8	35.3	33.9			

* Incidence and mortality rates are based on five years' data (e.g., 1989 = 1987-1991; 1998 = 1997-2000), Age adjusted to the 2000 U.S. standard population, expressed as cases per 100,000.

** Invasive includes the following stages of disease at diagnosis: local, regional, distant, and unknown

[a] Rhode Island Cancer Registry, Rhode Island Department of Health

[b] National Cancer Institute. *SEER Cancer Statistics Review 1973-1999.* Bethesda, MD: National Cancer Institute, 2002.

[c] CDC Wonder, Centers for Disease Control and Prevention

NA Data not available or not applicable

In Rhode Island, the analogous rates for *in situ* prostate cancer decreased from 0.4 cases per 100,000 in 1987-1991 to 0.1 cases per 100,000 in 1993-1997 followed by a slight increase to 0.3 cases per 100,000 in 1996-2000.

When age-adjusted incidence rates of invasive prostate cancer are broken down by stage of disease at diagnosis, one may observe an increase in the incidence of local tumors (from 64 per 100,000 men in 1987-1991 to 103 per 100,000 men in 1996-2000). The incidence of regional tumors increased from 1987 to 1994 (10 cases per 100,000 in 1987-1991 to 15 cases per 100,000 in 1994) but was almost balanced out with a decrease later in the decade (12 cases per 100,000 in 1996-2000). From 1987 to 2000, the age-adjusted incidence of distant tumors steadily decreased from 19 to 8 cases per 100,000 men. Tumors of unknown stage doubled from 1989 to 1993, then hovered around 50 per 100,000 men until 1998.

Basic Treatment Infrastructure

For most of the years from 1989 through 1997, fewer than half of the prostate cancer cases newly diagnosed among Rhode Island men were treated under the auspices of six in-state ACOS-approved hospital cancer programs. Another program was approved in 1997, and two more in 2000, bringing the total to nine. With these additions, and with changes in the distribution of prostate cancer cases among hospitals, the proportion of newly diagnosed prostate cancer cases treated under ACOS-approved programs had increased to 76% by 2000.

Prior to a change in the Rules and Regulations of the Rhode Island Cancer Registry in 1992, only about half (51-54%) of the prostate cancer cases newly diagnosed among Rhode Island men were staged using the AJCC system, an important basis for choosing appropriate treatments. After the Rules change, the proportion of cases with AJCC staging increased to 66% (1993), and has averaged 70% from 1993 through 2000.

Mortality

No significant change has occurred in average annual age-adjusted mortality of invasive prostate cancer among Rhode Island men of all races (about 35 deaths per 100,000 from 1987 to 2000, based on five-year moving averages and using the year 2000 U.S. standard population). However, the five-year moving average for 1995-1999 (about 34 deaths per 100,000) is lower than any of the preceding five-year averages since 1987-1991. The analogous prostate cancer mortality rates for U.S. men of all races averaged 38 cases per 100,000 from 1989 through 1995, then decreased to a low of 34 cases per 100,000 in 1997 (based on five-year moving averages).

Assessment

Gains have been made toward the achievement of basic treatment infrastructure goals as set forth in the second (1998) edition of the state's cancer control plan. The proportion of newly diagnosed prostate cancer cases treated under the auspices of in-state ACOS-approved hospital cancer programs increased from 55% to 76% during the period of observation, and the proportion of cases staged with AJCC methodology increased from 51% to 73%.

Rhode Island's invasive prostate cancer incidence rate increased substantially from 1989 to 1993, then plateaued until 1998. When broken down by stage, increases in local tumors, regional tumors, and prostate tumors of unknown stage created the initial upward trend, while incidence rates for distant prostate tumors decreased. U.S. prostate cancer incidence rates for invasive tumors paralleled, at a higher rate, those of Rhode Island in the early 1990s, then decreased in the late 1990s. Little variation was observed in prostate cancer mortality rates for both Rhode Island and the U.S. until the end of the period of observation, when lower rates suggest the beginning of a decline.

Although other factors, such as an increase in operations for benign disease of the prostate,[4] may have contributed to the increase in diagnosed prostate cancer observed in the 1990s, the introduction of the PSA screening test in the late 1980s is likely responsible for the observed upward trend in prostate cancer incidence. This trend was affected by the timing and proportions of men who were offered the new test and who elected to use it, and probably does not reflect a change in the underlying rate at which new prostate tumors develop. The trend in U.S. prostate cancer incidence is suggestive of a classic "screening effect." Rhode Island may have lagged behind the nation in using the PSA test, which would explain the disparity in incidence rates which occurred in the early 1990s.

Until clinical trials provide definitive answers on the efficacy of PSA testing, public health efforts may have to go beyond the continued promotion of screening, whatever its effectiveness in reducing prostate cancer mortality, to achieve the *Healthy People 2010* goal. Given that effective preventive measures for prostate cancer are unknown, efforts should focus on the promotion, use, and evaluation of state-of-the-art prostate cancer therapy, including enrollment of patients in approved clinical trials.

References

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