EVIDENCE OF THE EFFECTIVENESS OF ENDOSCOPIC SCREENING FOR COLORECTAL CANCER AMONG RESIDENTS OF RHODE ISLAND, 1988 - 2002

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PURPOSE

The Rhode Island Cancer Registry (RICR) (managed collaboratively by the Rhode Island Department of Health and the Hospital Association of Rhode Island) was asked by the Comprehensive Cancer Control Program of Rhode Island to explore evidence of the effectiveness of endoscopic screening for colorectal cancer among residents of Rhode Island between 1988 and 2002.

BACKGROUND

Though a number of methods are used to screen for colorectal cancer, modern endoscopic techniques (sigmoidoscopy and colonoscopy) have emerged as advantageous over older procedures (use of rigid endoscopes). These advancements have facilitated more complete rectal and colonic examinations without imposing major risks on the patient. The development of these highly accurate techniques associated with low risks of perforation or bleeding have led to their inclusion in the current screening recommendations of most major health associations, including the American Medical Association, the American Cancer Society, and the American Gastroenterological Association.[1,2,3] While noninvasive alternatives to endoscopy are recommended by these groups, endoscopy's use as a diagnostic and surgical tool adds to its utility. The ability to perform theraputic procedures like polypectomy in conjunction with endoscopy means that the diagnosis and treatment of potentially malignant adenomatous polyps can occur in one procedure with minimal patient discomfort.

METHODS

USE OF ENDOSCOPY

The percentages of Rhode Island adults ages 50 and over who reported *ever* having undergone proctoscopy, sigmoidoscopy, or colonoscopy, by age group, were computed by the Centers for Disease Control and Prevention (CDC) from respones to annual statewide health risk surveys fielded by the Rhode Island Behavioral Risk Factor Surveillance system in 1995, 1997, 1999, 2001, and 2002, and made available on the World Wide Web.[4] Data points for the years 1996, 1998, and 2000 were estimated using linear interpolation. Observed and estimated data points were plotted in Figure 1.

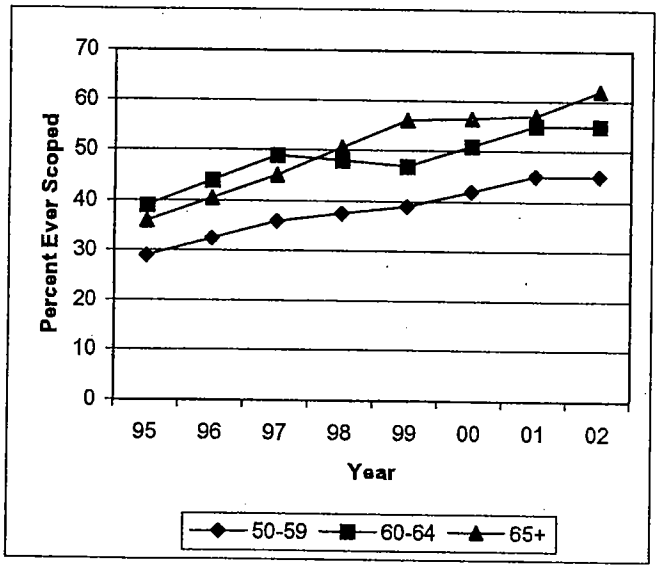
OBSERVED AND EXPECTED COLORECTAL CANCER INCIDENCE RATES

Under the General Laws of Rhode Island, all newly diagnosed cases of cancer among Rhode Island residents (male or female) must be reported to the RICR within 180 days of the date of diagnosis. The RICR began collecting case reports from health care agencies, health care providers, and health care laboratories on October 1, 1986.

All case reports of colorectal cancer newly diagnosed among Rhode Island residents between January 1, 1988, and December 31, 2002, were identified, pulled electronically for analysis, and grouped by five-year age group (50-55, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+) and five-year period (1988-1992, 1993-1997, 1998-2002). Simi-

Figure 1. Percentage of Rhode Island adults ages 50 and over who have ever had proctoscopy, sigmoidoscopy, or colonoscopy, 1995-2002, by age group

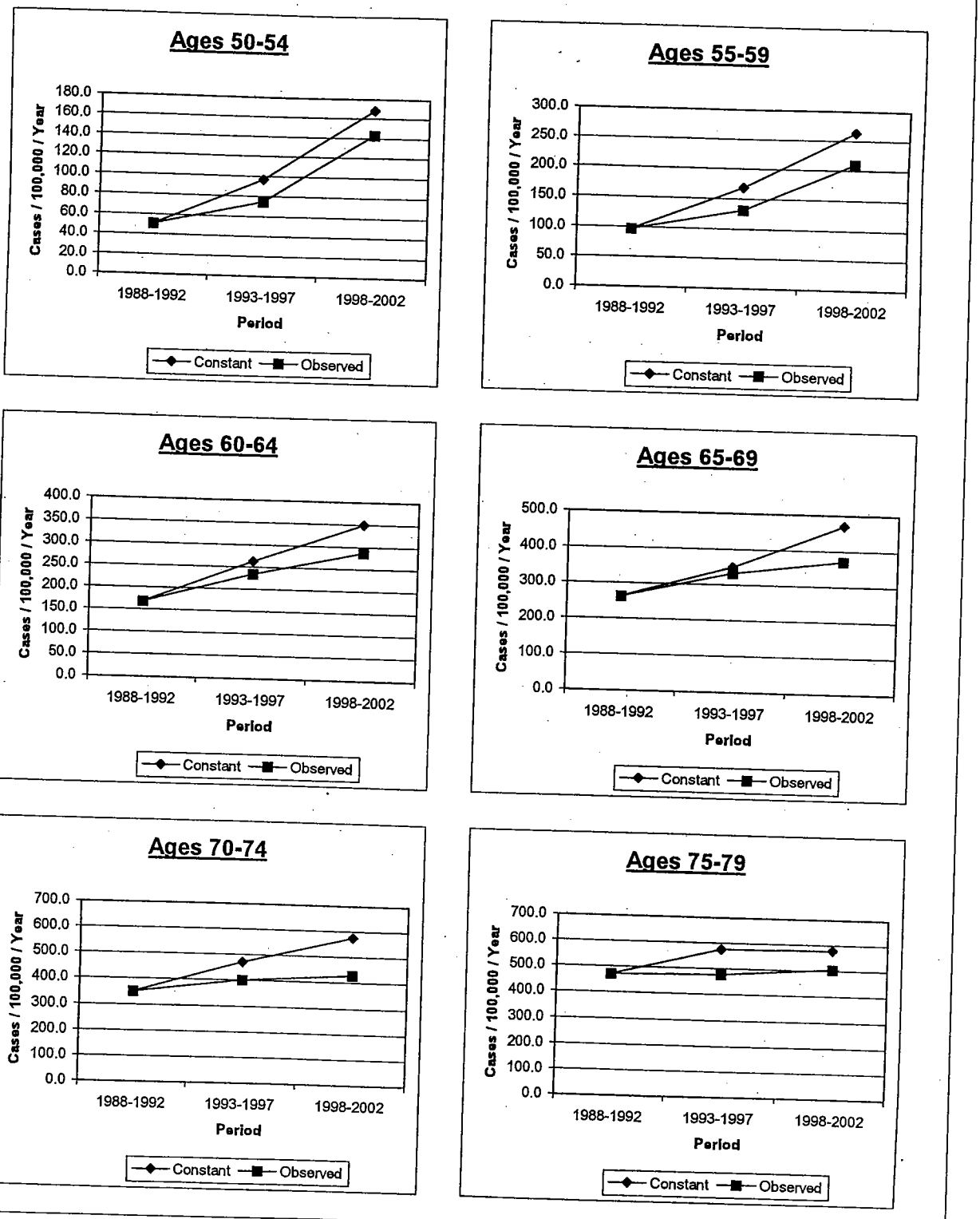
Source: Rhode Island Behavioral Risk Factor Surveillance System



Note: Values for 1996, 1998, and 2000 are estimates.

Figure 2. Incidence of colorectal cancer, cohorts of Rhode Island residents, by age group in 1988-1992

Source: Rhode Island Cancer Registry



lar aggregates of population at risk were constructed from estimates of the population of Rhode Island by age and year. Average annual age-specific incidence rates were computed by dividing age-period case aggregates by analogous aggregates of the estimated population at risk and plotted as "observed" incidence trends for six five-year age cohorts in Figure 2. Each panel of the figure represents the experience of one cohort over time, labelled by the age of the cohort in 1988-1992. For example, the first panel presents the experience of the cohort ages 50-54 in 1988-1992, 55-

59 in 1993-1997, and 60-64 in 1998-2002. The second panel presents the experience of the cohort ages 55-59 in 1988-1992, 60-64 in 1993-1997, and 65-69 in 1998-2002. Rates observed in 1988-1992 were plotted as "constant" incidence for the six cohorts, representing rates that *would have been observed* for each cohort had age-specific incidence remained constant from 1988-1992 through 1998-2002.

Results

The proportion of Rhode Island adults ages 50 and over who reported ever having undergone proctoscopy, sigmoidoscopy, or colonoscopy increased substantially over the period of observation for the three age groups 50-59, 60-64, and 65+, almost doubling for people ages 50-59 and 65+. Colorectal cancer incidence rates declined over the 1988-2002 period for each of the six five-year age cohorts, as evidenced by the gaps between "constant" incidence and observed incidence trends. The gaps widened over time.

Discussion

Rhode Island data reveal increases in the use of endoscopic examinations of the colon and rectum throughout the lifespan, beginning at age 50, paralleled by decreases in the age-specific incidence of colorectal cancer. This result is expected because endoscopic exams may be used to identify and remove pre-cancerous lesions of the colon and rectum, thereby reducing the incidence of newly diagnosed cancers. Other hypothetical explanations of such a decline, such as improvements in diet, increases in physical activity, and maintenance of healthy weight, are not borne out by recent Rhode Island survey data (not shown here).[4] Further analyses of available data will be undertaken to locate potential disparities in screening and the burden of colorectal cancer among population subgroups.

References

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4. Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System. http://apps.nccd.cdc.gov/brfss. Accessed August 23, 2004.

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