

**INCIDENCE OF CANCER IN ZIP CODE 60304 OF
OAK PARK (COOK COUNTY), ILLINOIS**

1996-2000

Prepared by the

Division of Epidemiologic Studies
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Background

The Oak Park Citizen Advisory Committee (CAC) and the Oak Park Department of Public Health contacted the Illinois Department of Public Health (IDPH), Division of Epidemiologic Studies, with a request to evaluate the cancer incidence in Oak Park (Cook County), specifically the Barrie Park area. The citizens are concerned that the soil contamination from the remediation project for the Manufactured Gas Plant in Barrie Park (located in the SE section of Oak Park) is causing an increase of the incidence of cancer in the area.

Ken Runkle, Senior Toxicologist with IDPH, Division of Environmental Health, met with CAC in May 2003 to answer questions and concerns about soil contamination in the Barrie Park area of Oak Park. Dr. Tiefu Shen, Chief, Division of Epidemiologic Studies, IDPH, met with CAC in July 2003 and gave a presentation of the results from the previous evaluations of the incidence of cancer for the Oak Park area. Findings from the two most recent evaluations of the incidence of cancer completed for this area were as follows: 1) evaluation completed October 1997 for ZIP code areas 60301, 60302, and 60304 using data for 1990-1994. No significant differences were noted for any cancer site group, race or sex group; and 2) evaluation completed April 1999 for ZIP code area 60304 using data for 1986-1996. No significant differences were detected for any cancer site group, race or sex group. Since four more years of cancer data (1997-2000) are now available, Dr. Tiefu Shen initiated a fourth evaluation of the cancer incidence in Oak Park.

Methods

The study area was defined as ZIP code area 60304 of Oak Park. Barrie Park and the surrounding three block area are located in the SE part of Oak Park (within ZIP code area

60304). ZIP code area 60304 contains four census tracts (8129, 8130, 8131, and 8132). The Barrie Park area is approximately 1/8 of census tract 8131. Although the cancer incidence data are available at a census tract level, not all cases have been assigned to a census tract based on a street level address. For 14 percent of the cancer incidence cases in ZIP code area 60304, the census tract area was assigned based on the centroid of the ZIP code, which may be a different census tract than the exact street level address. However, all cancer cases have been assigned to a ZIP code area with 99 percent accuracy.¹

All cases of cancer diagnosed among residents of the study area for the most recent five years of complete data at the time of the study, 1996 through 2000, were identified. The source for these data was the Illinois State Cancer Registry (ISCR). Identification of cancer cases in ISCR is dependent upon reporting by diagnostic and therapeutic facilities as mandated by state law.

In addition, ISCR has agreements with other central cancer registries to send back Illinois cancer data which are identified outside the state. These registries include Arkansas, California, Florida, Indiana, Iowa, Kentucky, Michigan, Mississippi, Missouri, North Carolina, Washington, Wisconsin, Wyoming, Barnes-Jewish Hospital in St. Louis, and the Mayo clinic in Minnesota. Completeness of out-of-state reporting depends upon the years of operation of these other central registries, the extent of their identification of out-of-state residents, and their standards of quality. Out-of-state diagnoses among residents of ZIP code area 60304 accounted for less than 1 percent of the total number of cases reported and were included in the study. Completeness of reporting from all reporting sources, assessed using the North American Association of Central

Cancer Registries (NAACCR) Standard^{2,3} is considered to be 99 percent complete for the period 1996 through 2000.

To benchmark and foster best practices among population-based registries, NAACCR has developed a certification process that reviews registry data for completeness, accuracy, and timeliness of reporting. The criteria for silver and gold certification can be found on the NAACCR web site <http://www.naaccr.org/Certification/index.html> As of February 2003, ISCR data met the criteria for gold certification for cancer diagnosis years 1996, 1997, 1998, 1999, and 2000.

All cancer cases from the study area were grouped by tumor site, race, sex, and age. These are referred to as the *observed* cases. Age-, sex-, and race-specific rates from a comparable population in Illinois were applied to each age group of the study population and to each tumor site to obtain an *expected* number of cases for the study area.⁴ The tumor site groups included oral cavity, esophagus, stomach, colon and rectum, liver, pancreas, lung and bronchus, bone, melanoma, breast, cervix, uterus, ovary, prostate, testis, bladder, kidney, Hodgkin's lymphoma, non-Hodgkin's lymphoma, multiple myeloma, leukemia, and all other cancers. The comparable population was defined as an area with similar population density and racial distributions as the study area (Cook County).

Age-, sex-, and race-specific population counts for the study area for each year (1996-2000) were interpolatively estimated using an exponential method with population counts derived from the 1990 and 2000 U.S. Census, the most reliable sources for population counts and estimates for small areas. Age-, sex-, and race-specific population estimates for each year (1996-2000) for the reference group were obtained from the SEER website

<http://seer.cancer.gov/popdata>. These estimates represent a recent modification of the annual time series of July 1 county population estimates by age, sex, race and Hispanic origin produced by the Population Estimates Program of the U.S. Bureau of the Census with support from the National Cancer Institute through an interagency agreement. The population estimates now incorporate bridged single-race estimates for April 1, 2000 that are derived from the original multiple race categories in the 2000 census (as specified in the 1997 Office of Management and Budget standards for the collection of data on race and ethnicity). The bridged single-race estimates and a description of the methodology used to develop them appears on the NCHS web site <http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm> Citation for the population: Surveillance, Epidemiology, and End Results (SEER) Program Populations (1969-2000) (www.seer.cancer.gov/popdata). National Cancer Institute, DCCPS, Surveillance Research Program. Cancer Statistics Branch, released April 2003.

The observed number of cases was compared with the expected number of cases. Based on the Poisson model, a probability of 0.01 or less for an observed number of cancer cases that was higher or lower than the expected number was considered to be a statistically significant difference.⁵ The 0.01 significance level has been consistently used by ISCR to correct for multiple comparison problems and to assure an appropriate level of sensitivity in detecting clusters.

When a significant excess was identified, and when appropriate for the site in question, other data elements and risk factor data, as reported to ISCR, were reviewed. These may include stage of disease at diagnosis, tobacco and alcohol use, occupational information, morphologic type of tumor, and location of residence within the study area.

When the observed number is less than six cases for a specific tumor site, the specific number is not mentioned in this report to protect the privacy of individuals. If possible, the cases are grouped with other sites within body organ systems, or when not possible, they are included in the *All Other Sites* category.

Results and Discussion

For all cancer sites combined, the incidence of cancer among males of all any race (includes unknown race) in the study area was 126 cases observed with 156 cases expected. In females of any race, 181 cases were observed while 180 cases were expected. For all cancer sites combined, the incidence of cancer among white males in the study area was 100 cases observed with 119 cases expected. In white females, 146 cases were observed while 142 cases were expected. Among black males, 24 cases were observed with 23 cases expected and for black females, 26 cases were observed with 25 cases expected.

None of these differences was statistically significant for any sex/race group or any specific cancer site group for any sex/race. The sites are grouped in the table to protect the privacy of individuals. Since results were similar by race group for each cancer site group, only data for all races combined is presented in the table.

Analytical Considerations

In drawing conclusions from these data, two aspects of the statistical method need to be addressed. First, random fluctuations in disease occurrence cannot be completely ruled out in explaining differences between the observed and expected numbers, even when the difference is statistically significant. The problem of random fluctuations is expected to be more prominent as the study areas become smaller.

The second aspect is the power of the statistical test, that is, the probability that a true departure from the expected number can be detected by significance testing. A non-significant difference sometimes reflects the low statistical power rather than the absence of differences. The power of a test varies with the number of cases expected.⁶ In this study, the power of detecting a doubling was high in both sexes for the total cancer cases, and lung and colorectal cancers. Among the sex-specific sites, it was also high for breast in females and prostate in males.

In addition, the latency between the time of exposure and the onset of clinically-recognizable disease for most adult cancers is between 10 and 20 years. Specific cancers may vary somewhat in the length of the latent period, but generally speaking, recent exposure, that is exposures in the last 10 years, cannot be expected to be associated with current cancer incidence. The history of residency for cases included in the present study could not be assessed because this information is not collected by the cancer registry, nor is such information available for the general population in the area.

Additional Comments

Cancer is a common disease, sometimes more common than many people believe. In the U.S., one in two men have a lifetime risk of developing cancer. For women, the lifetime risk is one in three.⁷ The number of people with cancer is increasing in most communities because more people are living to the ages of greatest cancer occurrence.

Many people could reduce their chances of developing or dying from cancer by adopting a healthier lifestyle and by visiting their physician regularly for a cancer-related checkup. Screening examinations, conducted regularly by a health care professional, can result in the

detection of cancers of the breast, tongue, mouth, colon, rectum, cervix, prostate, testis, and melanomas at earlier stages, when treatment is more likely to be successful. More than half of all new cancer cases occur in the nine screening-accessible cancer sites listed above.⁷

Current knowledge suggests that the leading preventable cause of cancer is cigarette smoking.⁸ Exposures to carcinogenic chemicals, ionizing radiation, and other agents produced by humans is responsible for less than five percent of human cancers.⁸ Generally speaking, any possible risk associated with the environment would most likely only have a small effect on

cancer incidence relative to that of tobacco.⁷ The following table shows the best current estimates for the causes of cancer.

Causes of Cancer in the United States	Percent
smoking	30
adult diet and obesity	30
sedentary lifestyle	5
alcohol	3
reproductive factors	3
prenatal factors and growth	5
occupational factors	5
environmental pollution	2
ionizing and UV radiation	2
viruses and other biologic agents	5
prescription drugs and medical procedures	1
food additives and contaminants	1
family history of cancer	5
socioeconomic status	3

Source: Harvard School of Public Health. Harvard Report on Cancer Prevention Volume 1: Causes of Human Cancer. *Cancer Causes and Control*. London: Rapid Science Publishers; 1996:Vol 7.

References

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Illinois State Cancer Registry
 Division of Epidemiologic Studies
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Observed and Expected Numbers of Cancer Cases by Site and Sex
 Residents of ZIP Code 60304 of Oak Park, Illinois
 1996-2000

Cancer Site Group	Males		Females	
	Obs.	Exp. ^a	Obs.	Exp. ^a
Colorectal	12	18	14	18
Other Digestive System	13	19	5	12
Lung and Bronchus	16	25	19	20
Breast invasive	-	-	64	54
Breast <i>in situ</i>	-	-	17	11
Uterus	-	-	9	10
Ovary	-	-	7	7
Prostate	42	41	-	-
Urinary Tract System	17	14	6	7
Lymphomas and Leukemias	10	13	16	11
All Other Sites	16	26	24	30
All Sites	126	156	181	180

SOURCE: Illinois State Cancer Registry, January 2003.

^a Expected numbers are based on the age-, sex-, and race-specific incidence rates in an area of Illinois with a similar population density as the study area.