



Massachusetts Department of Public Health

Evaluation of Breast Cancer Incidence in Andover, Massachusetts
1987-1994

1. Q. Why was a study of breast cancer conducted?

A. In late November 1997, The Massachusetts Cancer Registry (MCR) published the report, *Cancer Incidence in Massachusetts 1987-1994; City and Town Supplement*, which indicated that Andover experienced a statistically significant excess in breast cancer cases compared to the number of cases expected based on statewide rates. In response to these findings and local environmental concerns expressed to the Andover Board of Health, the Community Assessment Unit (CAU) of the Massachusetts Department of Public Health, Bureau of Environmental Health Assessment (MDPH/BEHA), conducted a further review of breast cancer incidence in Andover.

2. Q. How was the study conducted?

A. The MDPH/BEHA followed a standard peer-reviewed protocol for conducting descriptive epidemiologic investigations. This Massachusetts protocol was approved for use in 1992.

3. Q. What cancer data were used in the study?

A. Cancer incidence data for the years 1987-1994 were obtained for the town of Andover from the Massachusetts Cancer Registry (MCR) of the MDPH Bureau of Health Statistics, Research, and Evaluation. The MCR has been monitoring cancer incidence in the Commonwealth since 1982. The eight-year period 1987-1994 is the period for which the most recent complete data were available at the time of this analysis.

These data were evaluated for Andover as a whole and for each of Andover's six census tracts. Data from the MCR indicate the residence of each individual at the time of diagnosis, and thus, these residences were mapped to determine the census tract in which they occurred. By examining the data by census tract, MDPH/BEHA could evaluate whether Andover's elevated breast cancer incidence might be attributable to elevations in certain geographic areas within the town. In addition, MDPH/BEHA staff qualitatively evaluated whether breast cancer incidence appeared concentrated in any specific areas within the census tracts.

4. Q. What were the environmental concerns addressed in the report?

A. The specific local environmental concerns expressed to the Andover Board of Health included possible exposures from several nearby incinerators and from pesticides used at Andover golf courses, as well as potential effects to Andover's drinking water quality.

5. Q. What environmental data were evaluated?

A. The MDPH/BEHA evaluated readily available data from three nearby incinerators located in North Andover, Lawrence, and Haverhill, as well as data readily available regarding chemicals used at the Andover golf courses. In addition, MDPH/BEHA staff reviewed the most recent information on 21E-site locations (i.e., hazardous waste sites) in Andover. Under Chapter 21E of the Massachusetts General

Laws enacted in 1983, the MDEP investigates potentially hazardous sites in the state and oversees the cleanup of these sites.

6. Q. What other data were evaluated in the report?

- A. For breast cancer, the MCR reports information on the extent to which the breast cancer has spread (i.e., staging information) at the time of diagnosis. An evaluation of staging information can help to determine whether cancer patients in a given area are being diagnosed at early or late stages of the disease, which in turn may affect reported incidence rates for the area. MDPH/BEHA evaluated staging data for Andover and each of its census tracts to compare with the state of Massachusetts as a whole.

In addition, indicators of socioeconomic status, such as income and education level, are factors that correlate with risk factors for an increased risk of breast cancer, such as better diet, fewer children, and age at first childbirth. Thus, MDPH/BEHA staff evaluated indicators of socioeconomic status for each Andover census tract to assess whether these factors may be related to increased or decreased rates of breast cancer in certain areas of the town.

Finally, factors such as late age at first full-term pregnancy, low parity, and late age at menarche have been associated with an increased risk for developing breast cancer. While information on these variables are not readily available, MDPH/BEHA did evaluate information on mean age at first birth and information on parity of Andover women in order to determine whether a change in these factors over time in Andover may be related to increased rates of breast cancer.

7. Q. What did the study find about cancer incidence and the hazardous waste sites in Andover?

- A. No discernible geographic pattern of clustering of cases was apparent in Andover or its six census tracts. No geographic pattern was observed between the location and type of hazardous waste sites and breast cancer cases in Andover.

8. Q. Are elevations in breast cancer related to environmental factors?

- A. Cases were not concentrated in any pattern that would suggest golf courses and/or incinerators have played a role in breast cancer incidence in Andover. However, the contribution of environmental factors specific to individuals rather than in the town as a whole could not be determined based on available data.

9. Q. What did the study conclude about breast cancer incidence in Andover?

- A. Based on the data evaluated, a statistically significant elevation in breast cancer was observed in the town of Andover and in CT 2544.02, located in the northwest portion of the town. However, four other census tracts displayed elevated but not statistically significant rates of breast cancer incidence. Therefore, the significant elevation in CT 2544.02 alone does not appear to explain the increased incidence of breast cancer in Andover. The information suggests that increased rates of breast cancer are not likely attributable to any single factor in Andover.

10. Q. Are elevations in breast cancer related to other factors examined by MDPH/BEHA?

- A. The MDPH/BEHA examined staging information for Andover and its census tracts compared with the statewide information. Although not significantly different from the state, the majority of breast cancer cases were diagnosed at an earlier stage rather than a later stage of the disease. Because breast cancer screening improves detection of breast cancer at an early stage of disease, this finding suggests that women in Andover had access to and used breast cancer screening.

No clear pattern was displayed among Andover census tracts with respect to indicators of increased socioeconomic status. Also, data on mean age at first full-term pregnancy and parity suggest that reproductive factors that have been associated with an increased risk of breast cancer have increased in the Andover population and may have influenced the current rate of breast cancer in this area.

11. Q. Does the MDPH plan further study in Andover?

- A. Based on the review of readily available information on nearby incinerators, MDPH/BEHA recommends that because of ongoing community concerns related to the operations of the North Andover incinerator and its exceedances of sulfur dioxide emissions that further study of respiratory health in the community be examined in relation to opportunities for exposure to these emissions.

12. Q. Did MDPH/BEHA conduct a peer review of this report?

- A. Yes. The MDPH/BEHA asked three outside experts in breast cancer research or epidemiology to review and provide comments on the report. These individuals were Dr. David Hunter of the Harvard School of Public Health, Dr. Robert Smith of the American Cancer Society in Atlanta, and Dr. Thomas Mason of the University of South Florida.

13. Q. Who should I contact for more information?

- A. For more information please contact:

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