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Human

Source: Report to the Governor & Legislature  
DIOXIN EXPOSURE  
Article 24-B, Public Health Law  
New York State Department of Health  
Albany, N.Y. 12237  
April 1982

Proportional Mortality of Vietnam Veterans,  
Other Veterans and Matched Controls in New York State,  
Exclusive of New York City

Peter Greenwald, M.D., Vito Logrillo, M.P.H.  
New York State Department of Health;  
Division of Epidemiology and Office of Biostatistics

Address inquiries to Dr. Greenwald, 503 Tower Bldg.,  
Albany, New York 12237, (518) 474-2353

Project Period: November 11, 1980 - November 11, 1982

Performance Site: New York State, Exclusive of New York City

November 1980

## Abstract

The mortality of upstate New York men 18-29 years old at any time from 1962 through 1971 and followed through December 31, 1979 will be studied. All deceased men in this cohort will be identified through New York State death certificate files. Veterans status will be obtained from notations on death certificates and by linking with Veterans Administration records. Adjusted proportional mortality rates will be calculated for Vietnam veterans, veterans who did not serve in Vietnam and non-veterans. Matching or adjusting will take into account age, years of education and race. These data should provide a clue as to whether post-war mortality among Vietnam veterans differs from other veterans or other upstate New York men, and, if so, which disease categories merit further study.

## Specific Aims

To determine if the proportional mortality rates among men in New York State, exclusive of New York City, who served in Vietnam differ from those of other veterans or other upstate New York men after matching or adjusting for age, years of education and race.

## Legislative Mandate

The New York State Legislature determined that there is a public need to know the health effects of exposure to herbicides containing dioxin for residents of the State of New York, including those Vietnam era veterans who may have been exposed to these substances during their period of military service. The New York State Public Health Law amended effective September 1, 1980 to require the Commissioner of Health to "initiate an Epidemiological Study of the health effects of exposure to herbicides containing Dioxin." This project is developed as part of the response to this new legislation.

## Preliminary Studies and Background

The New York State Department of Health has examined data available from death certificates and the State Cancer Registry that will be helpful in planning this project and a parallel case-control epidemiological study of soft-tissue sarcomas. The approximate number of deaths in a cohort of upstate New York males who are 18-29 during the time period 1962-1971 and followed through December 31, 1979 is estimated to be 35,665. Included are 4,401 cancer deaths. This number was derived from death certificate tabulations by five year age groups; for estimation purposes, each year of age was assumed to contribute one-fifth of its group total. Table 1 shows the estimated number for each major cause of death.

Military service history is given on New York State death certificates but not those in New York City. The State death certificate asks:

Veteran of U.S. Armed Forces?

NO            YES            If yes, specify war or dates of service

These data are collected by not keyed into computer. For the year 1979 this item for Upstate New York males age 25-44 was keyed and a tabulation made of the type of hospital reporting death and veteran status. Results for those noted to be veterans are shown in Table 2. It can be seen that 11 percent

TABLE 1

Approximate Number of Deaths in Cohort of  
Upstate New York Males Who Were 18-29  
During the Time Period 1962-1971 by Cause of Death

<u>Cause of Death</u>	<u>Number of Estimated Deaths</u>
All Causes (000-999)	35,665
Infective and Parasitic Diseases (001-138)	296
Neoplasms (140-239)	4,401
Endocrine, Nutritional and Metabolic Diseases (240-279)	610
Diseases of the Blood and Blood Producing Organs (280-289)	122
Mental Disorders (290-315)	486
Diseases of the Nervous System and Sense Organs (320-389)	778
Diseases of the Circulatory System (390-458)	5,462
Diseases of the Respiratory System (460-519)	993
Diseases of the Digestive System (520-577)	1,714
Diseases of the Genitourinary System (580-629)	386
Diseases of the Skin and Subcutaneous Tissue (680-709)	24
Diseases of the Musculoskeletal System and Connective Tissue (710-738)	99
Congenital Anomalies (740-759)	414
Certain Causes of Perinatal Morbidity and Mortality (760-779)	1
Symptoms and Ill-Defined Conditions (780-796)	768
Accidents, Poisonings and Violence (800-999)	19,111

Source: N.Y.S. Death Certificate Tabulations

TABLE 2

Type of Hospital Reporting Death and Veteran Status  
for 25-44 Year Old Men Stated to Be Veterans,  
Upstate New York, 1979

Veteran Status	VA Hospital		Other Hospital		Non Hospital		Total	
	#	%	#	%	#	%	#	%
Vietnam Vet	24	11.01	125	57.3	69	31.7	218	100%
Non Vietnam	12	5.08	157	75.4	39	18.8	208	100%
Unknown Vietnam	12	4.01	215	66.4	96	29.6	323	100%
Total	48	6.54	497	66.3	204	27.2	749	100%

Source: N.Y.S. Death Certificate Tabulation

of deaths among 25-44 year olds stated to be Vietnam veterans were reported from Veterans Administration hospitals. The low percent using Veterans Hospitals may be partially explained by the high proportion of deaths due to accidents

This study plan is based on the recommendations of an Ad Hoc Scientific Advisory Committee to the New York State Department of Health which met in Albany on October 7, 1980. A summary of Advisory Committee recommendations is appended.

Methods

Provided the military service notations are sufficiently complete and valid, death certificate data together with Veterans Administration information on military service status will be used to determine proportionate mortality ratios also can be calculated for Vietnam era veterans. In order to do this the denominator population of veterans who are residents of New York State exclusive of New York City must be known. Perhaps these can be approximated from census data.

The 1970 and 1980 censuses asked for veteran status. On a 15 percent sample of households surveyed, the 1970 census asked:

(Question 26)

"If this is a man--

(a) Has he ever served in the Army, Navy or other Armed Forces of the United States?

0 Yes

0 No

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(b) Was it during-- (Fill the circle for each period of service)

Vietnam Conflict (Since August 1964).....0  
Korean War (June 1950 to Jan. 1955).....0  
World War II (September 1940 to July 1947).....0  
World War I (April 1917 to November 1918).....0  
Any other time.....0

The 1980 Census asked:

(Question 18a)

"Is this person a veteran of active-duty military service in the Armed Forces of the United States?

If service was in National Guard or Reserves only, see instruction guide.

0 Yes

0 No - Skip to 19

### Limitations of the Study

Decoufle et al (1980) showed that the PMR is the same as the standard mortality rate (SMR) when the overall death rates are equal. The PMR will overstate risks when the study group's overall mortality rate is lower than that of the comparison group, while it will understate risks when the study group's overall mortality is higher than the comparison group. Kupper et al (1978) provide further discussion of the relationship of PMR to SMR.

In this study the validity of the PMR for estimating cause-specific risks will be judged by calculating the overall SMR and if possible cause-specific SMR's utilizing estimates from the census as denominators. In addition, the stability of the PMR will be determined by comparing ratios of cause-specific deaths to total deaths and to selected sub-totals -- for example, total minus accidents. Finally, results will be interpreted with the limitations of proportional mortality rates noted above in mind. We believe that this study only can offer a lead as to which disease categories merit further attention. It will not provide a definitive conclusion relating to military service or more particularly to Agent Orange.

### Human Subjects

The proportional mortality rates will be determined using the military service notations on death certificates. In order to assess the validity of those notations, it is necessary to obtain information from relatives of a random sample of decedents from each of the populations being examined. The sample will be comprised of the following:

200 individuals whose certificates assert Vietnam era veteran status

200 individuals whose certificates assert non-veteran and veteran from other era status

200 individuals whose certificates make no assertion as to veteran status

A relative of each decedent will be contacted by telephone and questioned as to the military service status of the decedent. These brief interviews will be conducted by representatives of the New York State Division of Veterans Affairs whose offices are located throughout New York State. Prior to the interviews Division of Veterans Affairs personnel will receive a training session on interviewing and confidentiality procedures given by one of our staff members. Only that information necessary to identify the decedents and to locate their relatives will be abstracted from the death certificates. No cause of death data will be provided. Those interviewed will be informed by Division of Veterans Affairs personnel that the New York State Department of Health is conducting this survey to check the accuracy of information listed on Health Department records for possible use in future studies. Risks, if any, from this quality control measure are minimal. Once the validity of the death certificate information is established only New York State Department of Health and Veterans Administration records will be kept confidential. New York State Department of Health employees are trained in confidentiality procedures and security and regulatory measures are enforced to ensure this confidentiality. Statistical data only will be reported from this study; there will be no identification of individuals.

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- MacMahon B, Pugh TF. *Epidemiology principles and methods.* Boston: Little, Brown and Company, 1970; 59-60.
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Report of the Ad Hoc Scientific Advisory Committee on Dioxin - October 7, 1980.

The meeting of this Committee was convened at 10:45 on October 7, 1980 in room 1432 of the Tower Building. Members of the Committee include -

J. David Erickson, D.D.S., Ph.D.  
Deputy Chief, Birth Defects Branch  
Center for Disease Control, Atlanta

Captain Peter A. Flynn, MC, USN  
Office of the Assistant Secretary of Defense (Health Affairs)  
The Pentagon, Washington, D.C.

Leon Gordis, M.D.  
Chairman, Department of Epidemiology  
Johns Hopkins School of Hygiene & Public Health

Patricia Honchar, M.D., Ph.D.  
EIS Officer, CDC/NIOSH

Richard Monson, M.D.  
Department of Epidemiology  
Harvard School of Public Health

John A. Moore, D.V.M.  
Deputy Director, National Toxicology Program  
National Institute of Environmental Health Sciences

Barclay Shepherd, M.D.  
Special Assistant to the Chief Medical Director  
Veterans Administration

Steven Stellman, Ph.D.  
Assistant Vice President for Epidemiology  
American Cancer Society

A list of those attending the meeting is attached.

Dr. Greenwald presented data on all upstate New York men who were 18 to 19 years of age during the time period 1962 - 1971. When followed through 1979, a total of 35,665 of these men had died (including veterans and non-veterans). About 4,400 had died of cancer and 19,000 of accidents. Data in the New York State Cancer Registry show the most common cancer in this age group to be lymphoma (1,732 cases) and the second most common to be testicular cancer (1,090 cases). These types of cancer would be expected to be common in this age group of men, regardless of their military service experience.

Dr. Greenwald then presented an epidemiologic research proposal. Military experience of men in upstate New York reported with selected cancers would be studied for Vietnam service experience with potential herbicide exposure. Case ascertainment would be via the New York State Cancer Registry and death certificate files.

Men in the study group would be compared to age and area-matched controls. Military service experience would be obtained from notations on death certificates, telephone interviews, and Veterans Administration, Department of Defense or other records. The possibility of studying selected neurological conditions and birth defects also was mentioned. New York City men would be excluded from the study because of the absence of key information on the New York City death certificate.

Advisory Committee members and other participants commented that any study of this sort is limited by the lack of precise information on who might actually have been exposed, the difficulty in getting accurate information on events ten or more years in the past, and the uncertainty about what diseases or conditions are most suspected of being related. It was noted that a single epidemiological study of one condition often costs several hundred thousand dollars and takes two or more years to conduct. Thus, given the budgetary constraints, only one or two carefully delineated projects are feasible.

Since it is uncertain which conditions are of greatest concern, the idea of a proportionate mortality study of all causes of death was suggested. In such a study, Vietnam veterans would be compared to non-Vietnam veterans and to non-veterans. A number of potentially biasing factors would have to be taken into account by matching or during analysis.

Dr. Vianna, Director, Bureau of Environmental Epidemiology and Occupational Health, presented the issues involved in the creation of a voluntary registry relative to the funding available. Census figures estimate that there are 450,000 veterans in New York State who served in Vietnam. Approximately 10,000 of these have filed with the Veterans Administration for illnesses potentially associated with exposure to Agent Orange. The fact that there is no effective means available to ascertain exposure to dioxin creates another serious limitation. Further, a broad spectrum of diseases have been attributed to dioxin exposure, but none of these conditions, with the exception of chloracne, have been substantiated. These factors would make it very difficult to design a registry which would provide useful information for scientific investigations. The Advisory Committee concurred with the difficulty of dealing with these issues and additionally pointed out that significant bias could be introduced by initiating a voluntary registry. The unanimous conclusion of the committee and all present was that it was neither financially feasible nor scientifically advisable to begin a registry.

Ms. Penelope Murphy, Director of Health Promotions, presented a demonstration of the various types of media materials which have been produced by her office for past public health education efforts. Each campaign is carefully designed to highlight the central message of each campaign and to illicit the desired response from the general public. Ms. Murphy asked the Committee and all of those present for suggestions for a central theme for the "Agent Orange" materials and delineation of what response we should attempt to illicit from those viewing the materials. No suggestions were put forth by either the Committee or those attending. Rather, there was a unanimous expression of a desire to postpone any major media effort, particularly any effort involving television spots, until a more definitive message is available.

Prior to adjournment, Dr. Greenwald asked those on the Committee, who were conducting research, to briefly describe their efforts. Dr. Greenwald asked these researchers if they would keep us apprised of their work so that we could maintain the most current information on the health effects of dioxin exposure. We, in turn, would share the results of our work with all those present.

Dr. Greenwald adjourned the meeting, thanking those present for their contributions and indicating that he would share the thoughts of those present with the new Commission on Dioxin.

Dioxin Meeting  
October 7, 1980  
Attendees

New York State Department of Health

Dr. David Axelrod  
Commissioner

Dr. Glenn Haughie  
Director of Public Health

Dr. Peter Greenwald  
Director, Div. of Epidemiology

Dr. David Carpenter  
Director, Div. of Laboratories &  
Research

Dr. Leo Hetling  
Director, Div. of Environmental  
Health

Ms. Penelope Murphy  
Director, Health Education  
Promotion Services

Dr. Philip Taylor  
NIOSH

Dr. Dwight Janerich  
Bureau of Cancer Control

Dr. Nicholas Vianna  
Bureau of Environmental Epidemiology  
and Occupational Health

Mr. Thomas DiCerbo  
Bureau of Environmental Epidemiology  
and Occupational Health

Ms. Deborah Gemmiti-Nunn  
Bureau of Environmental Epidemiology  
and Occupational Health

Ms. Susan Doolittle  
Health Education Promotion Services

Mr. John Cahill  
Health Education Promotion Services

Mr. Donald Walker  
Bureau of Cancer Control

Dr. William Burnett  
Bureau of Cancer Control

Dr. Alice Stark  
Bureau of Cancer Control

Dr. Beatrice Kovaszny  
Bureau of Environmental Epid. &  
Occupational Health

Ms. Carole Ju  
Bureau of Environmental Epid. &  
Occupational Health

Mr. Donna Glebatis-Fect  
Bureau of Cancer Control

Ms. Margaret Prevost  
Division of Epidemiology

Dr. Charles Lawrence  
Operations Research

Dr. Nancy Kim  
Division of Environmental Health

New York State Legislature

Ms. Kathleen Lynch (for Assemblyman Tallon)  
N.Y.S. Assembly Health Committee

Ms. Patricia Clarke  
N.Y.S. Assembly Program and Committee Staff

Ms. Ann Torrey  
N.Y.S. Senate (for Senator Lombardi)

Following asked to attend meeting by Assemblyman Behan

Mr. Jim Rhoda, Sr.  
Veterans Outreach Center, Inc.

Mr. Tom Cray  
Veterans Outreach Center, Inc.

Mr. Frank McCarthy, Pres.  
Agent Orange Victims International

Mr. Edmund H. Jamgandi  
E.T.C./ Agent Orange Victims International

Scientific Advisory Committee Members

Dr. Peter A. Flynn  
Department of Defense

Dr. Barclay Shepard  
Veterans Administration

Dr. Richard Monson  
Harvard School of Public Health

Dr. Patricia Honchar  
CDC/NIOSH

Dr. Steven Stellman  
American Cancer Society (Natl. Division)

Dr. Leon Gordis  
Johns Hopkins University

Dr. J. David Erickson  
CDC, Atlanta

Others

Dr. Morgan Strong  
Westchester Co. Agent Orange Outreach Program

Mr. Joe Brett, President  
Albany Chapter, Vietnam Veterans of America

Mr. John Devine  
NYS Division of Veterans Affairs

Others Continued  
Mr. William Dolan  
NYS Division of Veterans  
Affairs