June 24, 1988

AN HISTORICAL PROSPECTIVE MORTALITY STUDY OF THE SARNIA DIVISION OF DOW CHEMICAL CANADA INC. SARNIA, ONTARIO (1950-1984)

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A B S T R A C T

AN HISTORICAL PROSPECTIVE MORTALITY STUDY OF THE SARNIA DIVISION OF DOW CHEMICAL CANADA INC. SARNIA, ONTARIO (1950-1984)

(Egedahl RD, Olsen GW, Coppock E, Young ML and Arnold IMF)

The mortality experience of 3,479 male Dow Canada employees who were employed at Sarnia Division for at least 12 continuous months during the years 1945 through 1983 was examined. Mortality ascertainment was obtained utilizing the Canadian Mortality Data Base maintained by Statistics Canada and covered the years 1950 through 1984. Cause-specific mortality analyses were accomplished using male, age and calendar-year adjusted death rates for Canada and the province of Ontario. Total mortality was observed to have been significantly below expectation whether the entire follow-up period (240 observed vs. 366.9 expected) or a 15-year latency period (171 observed vs. 290.4 expected) was considered. Statistically significant fewer observed deaths were found for all respiratory cancer, cancer of the bronchus and lung, circulatory disease, ischemic heart disease, cerebrovascular disease, digestive disease, cirrhosis and other liver disease and deaths due to accidents, poisonings and violence. The observation of three deaths due to mesothelioma, a rare cancer often associated with asbestos exposure, was a significant finding as was a statistically significant elevation of observed deaths in the category "other forms of heart disease".

INTRODUCTION

Large scale mortality analyses of petrochemical worker populations have been reported in recent years due to concerns about possible long-term effects of occupational exposures.[1-3] Studies of this nature may: 1) identify workplace hazardous exposures, 2) demonstrate the effectiveness of health and safety programs, and 3) delineate further areas of research.

The present investigation studied the cause-specific mortality experience of 3,479 male employees of the Sarnia Division of Dow Chemical Canada Inc. who had at least one year of service from 1945 through 1983. The study included a comparison between the mortality experience among this employee cohort and those of the Canadian and Ontario male populations. Integral to the conduct of this study was the Canadian Mortality Data Base (CMDB) developed by Statistics Canada which allowed for the identification of deaths since 1950.[4]

STUDY METHODS

Description of the Sarnia Division

The Sarnia Division chemical manufacturing site began operations in 1945. The Sarnia Division facility is a major Canadian producer of chlorine, sodium hydroxide, chlorinated solvents, styrene, vinyl chloride monomer, epoxy resins, vinyl ester resins (Derakane*), propylene oxide, polyols (Voranol*), latex, plastics and glycols.

Cohort Identification and Definition

A Vital Status Registry (VSR) was established to assemble information on all active employees, retired pensioners, transferred and terminated workers who were employed for a minimum of one continuous 12 month period between 1945 and 1983. The completeness of the assembled cohort for employees since 1960, checked by using the annual departmental employee census lists as a second independent data source, was found to be 100 percent. Prior to 1960 there were no available independent data sources that could be used to check for cohort completeness.

*Trademark of The Dow Chemical Company

The study cohort for the current investigation comprised all male Dow Chemical Canada Inc. employees of the Sarnia Division who worked for at least 12 continuous months between January 1, 1945 and December 31, 1983 and, if employed prior to 1950, were still actively employed as of January 1, 1950. The mortality experience of the study cohort was examined during the time period 1950 through 1984.

Currently, approximately 20 per cent of the workforce is employed in administrative or office positions. Plant workers comprise 80 per cent including salaried engineers and chemists as well as hourly maintenance and operator personnel. Maintenance workers are employed as machinists, insulators, painters, pipefitters, boilermakers and carpenters. Historically, the percentage of plant workers has been at least as high as the current levels.

Canadian Mortality Data Base

The record linkage facilities of Statistics Canada were utilized to search the Canadian Mortality Data Base (CMDB) for deaths in the study cohort. The CMDB is a computer file maintained by Statistics Canada containing information derived from death certificates collected by the provincial vital statistics registries.[4] It is frequently used for epidemiologic investigations. At the time of this study death data were available from 1950 to 1984. The mortality ascertainment procedure involved the computer-matching of the 3,479 males in the study

cohort with the CMDB file. For those found deceased, the date and underlying cause of death were abstracted from the CMDB. For each study cohort death a copy of the death certificate was made and assigned a standardized cause of death by Statistics Canada nosologists based upon the Manual of the International Classification of Diseases Adapted for Use in the United States, Eighth Revision (ICDA-8).[5]

Analysis

The analysis used for the study data involved the calculation of a Standardized Mortality Ratio (SMR) for the various causes of death. Monson's computer program[6] has been expanded in accordance with the 174 codes of death developed by the Laboratory Center for Disease Control, Health and Welfare Canada.[7] Person-years for the cohort members were accumulated across five year age and calendar-year specific categories from the date of their entry into the cohort (one year after their date of hire) until their date of death or study termination, whichever occurred first. The expected number of deaths was computed by multiplying the study cohort's age, sex and calendar-year stratum specific person-year estimates and the corresponding Canadian or Ontario cause-specific mortality rates (1950-1984) together and summing the products across strata. SMR's were calculated and reported for all cause of death categories in which there were two or more observed deaths. Approximate ninety-five percent confidence intervals were calculated[7,8] and statistical significance was considered when the null value, 100, was not included in the interval.

RESULTS

Descriptive

The Sarnia Division study cohort comprised 3,479 males who accumulated 70,687 person-years between 1950 and 1984. Table 1 is a distribution of the 3,479 employees by age, onset of person-years experience and distribution.

The average age at hire was 26 years and the mean duration of follow-up was 20.3 years. Nearly 40 per cent of the cohort was hired before 1960 and accounted for 57 per cent of the person years experience.

Comparison with the Canadian Male Population

For all causes there were 240 observed and 367 expected deaths which resulted in an SMR of 65 (Table 2). The 95 percent confidence interval (95 per cent C.I.) was 57-74. Three deaths known by the company from insurance records were not identified by Statistics Canada. If the three deaths were included among total deaths, the SMR would not differ appreciably (SMR 66, 95 per cent C.I., 58-75).

Contributing to the reduced all-cause mortality were statistically significant fewer deaths in the following subgroups: respiratory cancer, circulatory disease, digestive diseases, and accidents, poisonings and violence (Table 2). Deaths due to malignant neoplasms bordered on being a statistically

significant deficit (SMR 78, 95 per cent C.I. 60-100). Four specific causes of death, cancer of the lung and bronchus ischemic heart disease, cerebrovascular disease, and cirrhosis of the liver showed statistically significant fewer observed deaths.

Two causes of death were significantly elevated: pleural neoplasms and other forms of heart disease. The latter is an ICDA-8 disease mortality classification that included cardiomyopathy, congestive heart failure, pulmonary heart disease, cardiac dysarrythmia and myocardial insufficiency. There were three cause of death categories that had nonstatistically significant SMR's greater than 200: malignant melanoma, multiple sclerosis and musculoskeletal disease. All three categories had only two or three observed deaths and less than one expected death.

SMR's were also calculated after ignoring person-years and deaths which had accumulated within 15 years of hire (Table 3). For all causes there were 171 observed and 290.4 expected deaths (SMR = 59, 95 per cent C.I. 50-68) which was lower than the corresponding SMR for the entire follow-up period analysis (SMR = 65). There were statistically significant fewer deaths due to all neoplasms and cancer of the bronchus and lung. Cancer of the pleura remained the only cancer site that had a statistically significant excess with one of the three pleura deaths occurring within 15 years of hire.

Comparison with the Ontario Male Population

Tables 2 and 3 also show the number of expected deaths, SMR's and 95 per cent confidence intervals based on Ontario male mortality rates for the two follow-up periods of time. Cause specific mortality experience was comparable to that based on the corresponding Canadian male mortality rates.

Mortality Distribution by Age and Number of Years Since Entering the Cohort

The distribution of observed and expected number of total deaths by age and onset of person-years experience for the cohort is presented in Table 4. Only two age and calendar-year stratified SMR's were above the null value of 100 and they were based on only one observed and one or less expected deaths.

DISCUSSION

The observation of lower than expected mortality among the Sarnia Division employed population may be partially attributed to the "healthy worker effect".[9] The "healthy worker effect" is greatest in younger working populations and has less effect as a study cohort ages. There is not a homogeneous effect across all causes of death as cardiovascular disease generally shows a greater deficit of deaths than cancer. Exclusion of the first 15 years after hire minimizes the healthy worker effect, as well as considers the latency aspect of carcinogenesis. A latency analysis

excludes the person-years at risk for a potential chemical induced cancer for which the cancer's clinical appearance would be unlikely. It is therefore noteworthy that the SMR for total cancer mortality was lower with the fifteen year latency analysis than with the entire follow-up period.

A major reason for the total neoplasms deficit was the 14 fewer than expected bronchus and lung cancer deaths. A contributing factor may have been the strict restriction of tobacco smoking in the operating units which has been observed elsewhere to have reduced lung cancer mortality in an occupational cohort.[10] Wigle reported no increased risk for lung cancer among the Sarnia population or of men whose usual lifetime occupation recorded on the death certificate was the Sarnia petrochemical industry.[11] Furthermore, the population of Lambton county has been shown to have no elevated risk for total cancer mortality or of any specific major cancer site.[12] Our findings further indicate that there has not been an elevated risk of total cancer or lung cancer among Dow Chemical workers in Sarnia.

Three mesothelioma of the pleura deaths were observed with 0.1 expected. Increased risk of developing mesothelioma has been demonstrated among workers in asbestos mines, asbestos mills and factories, as well as asbestos manufacture and installation.[13]

Of the three former Sarnia Division employees who died of mesothelioma of the pleura, one individual worked in various

positions in the warehouse for 22 years beginning in the early 1950's. During this time period the warehouse was the focal point for asbestos shipped to the plant site. The asbestos, in a loose, dry form, was transported by truck in boxes. Warehouse employees unloaded the asbestos shipments and stored this material or transported it to the end users on the plant site. Boxes would occasionally split open spilling the asbestos. Warehouse employees would then sweep up the asbestos and manually transfer this material to intact boxes. These workers also handled all asbestos gaskets shipped for use on the plant site. Consequently, it is evident that warehouse employees who worked at Sarnia Division in the 1950's and 1960's, including the individual who died of mesothelioma, routinely handled asbestos on a regular basis without the benefit of respiratory protection. Appropriate handling techniques were instituted in the early 1970's at Sarnia Division. This resulted in significant reduction to asbestos exposure.

The second individual worked for 3 years as a pipefitter at Sarnia Division and had the potential of asbestos exposure during delagging operations. Asbestos exposure risk related to his non-Dow employment is unknown.

The third man worked for 32 years as an operator in the solvents, ethylene and styrene plants. In some areas of these plants asbestos was used as an insulating material around piping and in high temperature furnaces. Although this material was well sealed, necessary maintenance could have led to greater risk of exposure.

In the residual category of "other forms of heart disease" there were 8 observed versus only 2.8 expected deaths. It is unlikely that this observation is occupationally related. It may be due to differential medical acumen from rural to urban, and primary to tertiary medical care settings.

Roberts et al have reported the sensitivity and specificity of the CMDB record linkage process.[14] A separate random sample of 1,000 study subjects of unknown mortality status was traced by independent means to provide an accuracy check. A total of 925 subjects were tracked and 63 of them were deceased. The record linkage of the CMDB detected 58 or 92 per cent of these deaths and did not wrongly identify any of the 862 study subjects found to be alive by the independent follow-up.

In the present study the CMDB identified 150 of the 153 deaths (98 per cent) known by the company. One of the three deaths not identified by CMDB died outside of Canada. It is possible that some past employees, who were presumed to be alive because they were not identified by Statistics Canada as deceased, may have died as citizens of other Commonwealth countries or of the United States. It was beyond the scope of this study and its resources to address this issue, although it was felt there would be few additional deaths found if such a search was conducted.

The findings of the present investigation, as well as the study by Roberts and his co-workers, support the conclusion that

mortality ascertainment by use of the CMDB is both sensitive and specific for occupational cohort studies. Furthermore, the CMDB allows the investigator to obtain the cause of death codes which is a more efficient process than that done in the United States where the National Center for Health Statistic's National Death Index only provides information on whether death has occurred. Cause of death information must be subsequently requested from the appropriate state's vital status registrar.

Further studies will update the mortality experience of this cohort. A major goal is to computerize the cohort's retrospective work histories which will allow for analyses by occupation and duration of employment.

ACKNOWLEDGEMENTS

The authors wish to thank several of individuals at Statistics Canada whose assistance was critical to the successful completion of this study. The authors are indebted to G. Quesnel, M. Fair, and P. Lalonde of the Occupational and Environmental Health Research Unit of the Vital Statistics and Disease Registries Section of Statistics Canada. Also, we would like to thank the various provincial vital statistics registrars as the well as the Health Division of Statistics Canada for the use of the Canadian Mortality Data Base for this epidemiologic study and the provision of mortality analysis using Monson's computer program. The authors also wish to thank S. Raman and J. Gentleman for their helpful comments.

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TABLE 1

DISTRIBUTION OF EMPLOYEES BY AGE AND YEAR OF ONSET OF PERSON-YEARS EXPOSURE WITH PERSON-YEARS CONTRIBUTION TO THE STUDY IN PARENTHESES

	Year of Onset of Person-Years Experience				
Age	1950 - 1959	1960 - 1969	1970 - 1979	1980 - 1983	TOTAL
< 20	157 (4,798)	136 (2,650)	206 (2,097)	24 (107)	523 (9,652)
20 - 29	719 (22,058)	670 (13,412)	621 (6,447)	144 (613)	2154 (42,530)
30 - 39	353 (10,644)	129 (2,640)	96 (942)	33 (146)	611 (14,372)
40 - 49	100 (2,697)	36 (705)	19 (198)	7 (28)	162 (3,628)
50 - 59	16 (311)	3 (46)	4 (41)	0 (0)	23 (398)
60+	5 (103)	0 (0)	0 (0)	1 (4)	6 (107)
TOTAL	1,350 (40,611)	974 (19,453)	946 (9,725)	209 (898)	3,479 (70,687)

TABLE 2

OBSERVED (N > 2) AND EXPECTED DEATHS#, SMR'S AND 95 PER CENT CONFIDENCE INTERVALS BY CAUSE FOR THE SARNIA DIVISION MALE EMPLOYEES (1950-1984) ANALYZED FOR THE ENTIRE FOLLOW-UP PERIOD

		Canada			Ontario		
Cause of Death (ICDA-8th Revision Codes)	Obs	Exp	SMR	95% C.I.	Exp	SMR	95% C.I.
All Causes (000-999)	240	366.9	65	57 - 74	357.7	67	59 - 76
Infective and Parasitic Disease (000-136)	2	3.8	52	6 - 189	2.5	80	9 - 288
Neoplasms (140-239)	63	80.9	78	60 - 100	79.7	79	61 - 101
Pharynx Cancer (146-149)	2	1.2	160	19 - 600	1.3	155	17 - 559
Digestive Cancer (150-159)	21	24.3	86	53 - 132	23.9	88	54 - 134
Esophagus (150)	3	1.8	164	33 - 479	2.0	148	30 - 434
Stomach (151)	4	5.9	68	18 - 174	5.1	78	21 - 200
Large Intestine and Rectum (153,154)	6	9.8	62	22 - 134	10.7	59	21 - 128
Liver and Gallbladder (155,156)	2	1.4	143	16 - 516	1.5	135	15 - 488
Pancreas (157)	6	4.4	136	50 - 295	4.2	142	52 - 308
Respiratory Cancer (160-163)	15	26.9	56	31 - 92	26.4	57	32 - 94
Bronchus and Lung (162.1)	11	24.6	44	22 - 79	24.3	45	23 - 81
Pleura (163.0)	3	0.1	2073	417 - 6058	0.1	2738	550 - 8000
Malignant Melanoma (172)	3	1.1	270	54 - 789	1.4	215	43 - 628
Genital Cancer (185-187)	2	4.2	48	5 - 173	4.2	48	5 - 172
Prostate (185)	2	3.4	59	7 - 212	3.3	61	7 - 219
Urinary Cancer (188,189)	4	3.9	102	28 - 262	3.9	102	27 - 261
Kidney (189.0,189.1,189.2)	2	2.1	94	11 - 341	2.0	98	11 - 353
Bladder (188)	2	1.7	117	13 - 422	1.8	112	13 - 404
Brain and Other Nervous System (191,192)	4	3.7	108	29 - 277	3.8	106	29 - 272
Brain (191)	4	3.2	126	34 - 323	3.4	117	32 - 300
Lymphoid Malignancies (200-203)	5	5.2	97	31 - 226	5.0	100	32 - 234
Non-Hodgkin's Lymphoma (200,202)	3	2.8	106	22 - 316	2.7	112	22 - 326
Multiple Myeloma (203)	2	1.0	193	22 - 698	1.0	192	22 - 693
Leukemias (204-207)	3	3.4	87	18 - 255	3.5	86	17 - 253
Neoplasms, Secondary, Ill Defined and Benign (195-199,210-239)	4	3.4	102	27 - 260	3.4	117	31 - 299
Endocrine, Nutritional and Metabolic Diseases (240-279)	4	6.1	66	18 - 168	5.8	69	19 - 178
Nervous System and Sense Organ Disease (320-389)	3	4.9	61	12 - 179	4.6	65	13 - 190
Multiple Sclerosis (340)	2	0.7	282	32 - 1019	0.6	348	39 - 1255
Circulatory Disease (390-458)	110	148.2	74	61 - 89	153.7	72	59 - 86
Hypertensive Heart Disease (400-404)	2	1.4	140	16 - 506	1.2	163	18 - 587
Ischemic Heart Disease (410-413)	86	107.8	80	64 - 98	115.7	74	59 - 92
Other Forms of Heart Disease (420-429)	8	2.7	298	128 - 587	2.0	397	171 - 782

TABLE 2

(continued)

Cause of Death (ICDA-8th Revision Codes)	Obs	Canada Exp	Canada SMR	Canada 95% C.I.	Ontario Exp	Ontario SMR	Ontario 95% C.I.
Cerebrovascular Disease (430-438)	9	17.2	52	24 - 99	17.3	52	24 - 99
Diseases of Arteries, Arterioles and Capillaries (440-448)	4	5.8	68	58 - 175	6.2	65	17 - 166
Respiratory Disease (460-519)	10	17.4	57	27 - 106	16.8	59	28 - 109
Pneumonia (480-486)	5	5.8	87	28 - 203	6.3	80	26 - 186
Chronic Bronchitis, Emphysema and Asthma (490-493,519.3)	5	8.6	58	19 - 137	8.0	63	20 - 147
Digestive Disease (520-577)	4	18.2	22	6 - 56	18.1	22	6 - 57
Cirrhosis and Other Liver Disease (570-573)	4	11.2	36	10 - 91	11.6	34	9 - 88
Genitourinary Disease (580-629)	2	3.9	50	6 - 182	3.8	52	6 - 189
Nephritis and Nephrosis (580-584)	2	2.1	95	11 - 342	2.1	96	11 - 346
Musculoskeletal Disease (710-738)	3	0.7	414	83 - 1210	0.7	434	87 - 1267
Ill Defined Symptoms (780-796)	3	3.1	97	20 - 285	2.4	123	25 - 366
Accidents, Poisoning and Violence (800-999)	33	74.0	45	31 - 63	63.5	52	36 - 73

*Based on male Canadian and Ontario mortality rates.

TABLE 3

OBSERVED (N > 2) AND EXPECTED DEATHS##, SMR'S AND 95 PER CENT CONFIDENCE INTERVALS BY CAUSE FOR THE SARNIA DIVISION MALE EMPLOYEES EXCLUDING PERSON-YEARS AND DEATHS WITHIN 15 YEARS OF HIRE

		Canada			Ontario		
Cause of Death (ICDA-8th Revision Codes)	Obs	Exp	SMR	95% C.I.	Exp	SMR	95% C.I.
All Causes (000-999)	171	290.4	59	50 - 68	285.1	60	51 - 70
Infective and Parasitic Disease (000-136)	2	1.8	110	12 - 398	1.4	141	16 - 508
Neoplasms (140-239)	48	70.0	69	51 - 91	68.9	70	51 - 92
Pharynx Cancer (146-149)	2	1.1	186	21 - 673	1.2	173	19 - 626
Digestive Cancer (150-159)	17	20.9	81	47 - 130	20.6	82	48 - 132
Esophagus (150)	3	1.7	179	36 - 524	1.8	163	33 - 476
Stomach (151)	3	4.8	63	13 - 148	4.2	72	14 - 210
Large Intestine and Rectum (153,154)	4	8.5	47	13 - 121	8.9	45	12 - 115
Liver and Gallbladder (155,156)	2	1.2	162	18 - 585	1.3	153	17 - 552
Pancreas (157)	5	3.9	127	41 - 297	3.8	133	43 - 311
Respiratory Cancer (160-163)	11	24.9	44	22 - 79	24.2	46	23 - 82
Bronchus and Lung (162.1)	8	23.3	34	15 - 68	22.7	35	15 - 69
Pleura (163.0)	2	0.1	1450	163 - 5235	0.1	1917	215 - 6920
Malignant Melanoma (172)	2	0.9	228	26 - 823	1.1	182	20 - 656
Urinary Cancer (188,189)	3	3.5	87	18 - 254	3.5	87	17 - 253
Kidney (189.0,189.1,189.2)	2	1.9	108	12 - 390	1.8	111	12 - 400
Brain and Other Nervous System (191,192)	3	2.9	105	21 - 306	3.0	101	20 - 296
Brain (191)	3	2.6	115	23 - 335	2.8	105	21 - 308
Lymphoid Malignancies (200-203)	3	4.0	75	15 - 220	3.9	78	15 - 229
Non-Hoogkin's Lymphoma (200,202)	2	2.3	89	10 - 321	2.2	93	10 - 335
Leukemias (204-207)	2	2.6	76	9 - 275	2.6	76	9 - 274
Neoplasms, Secondary, Ill Defined and Benign (195-199,210-239)	4	3.2	126	34 - 322	2.8	141	38 - 362
Endocrine, Nutritional and Metabolic Diseases (240-279)	3	5.0	59	12 - 174	4.7	64	13 - 186
Nervous System and Sense Organ Disease (320-389)	2	3.6	56	6 - 204	3.4	58	7 - 211
Circulatory Disease (390-458)	82	125.4	65	52 - 81	129.4	63	50 - 79
Ischemic Heart Disease (410-413)	66	92.5	71	55 - 91	98.3	67	52 - 85
Other Forms of Heart Disease (420-429)	7	2.6	271	109 - 559	1.9	364	146 - 749

TABLE 3

(continued)

Cause of Death (ICDA-8th Revision Codes)	Obs	Canada Exp	Canada SMR	Canada 95% C.I.	Ontario Exp	Ontario SMR	Ontario 95% C.I.
Cerebrovascular Disease (430-438)	6	14.5	41	15 - 90	14.5	41	15 - 90
Diseases of Arteries, Arterioles and Capillaries (440-448)	2	5.3	38	4 - 136	5.6	36	4 - 129
Respiratory Disease (460-519)	9	14.9	60	27 - 114	14.4	63	29 - 119
Pneumonia (480-486)	5	4.7	106	34 - 247	5.1	98	31 - 228
Chronic Bronchitis, Emphysema and Asthma (490-493,519.3)	4	7.8	51	14 - 131	7.3	55	15 - 141
Digestive Disease (520-577)	3	15.3	20	4 - 57	15.3	20	4 - 57
Cirrhosis and Other Liver Disease (570-573)	3	9.9	30	6 - 88	10.3	29	6 - 85
Genitourinary Disease (580-629)	2	2.6	76	9 - 275	2.5	79	9 - 285
Nephritis and Nephrosis (580-584)	2	1.1	175	20 - 633	1.2	175	20 - 630
Musculoskeletal Disease (710-738)	3	0.6	513	103 - 1500	0.6	526	106 - 1536
Ill Defined Symptoms (780-796)	2	2.5	80	9 - 290	2.1	96	11 - 346
Accidents, Poisoning and Violence (800-999)	12	44.3	27	14 - 47	37.7	32	16 - 56

*Based on male Canadian and Ontario mortality rates.

TABLE 4

DISTRIBUTION OF OBSERVED AND EXPECTED (O/E) DEATHS
BY AGE AND YEAR OF ONSET OF PERSON-YEARS EXPERIENCE
(SMR IN PARENTHESES)

	Year of Onset of Person-Years Experience				
Age	1950 - 1959	1960 - 1969	1970 - 1979	1980 - 1983	TOTAL
< 20	4/12.1 (32.9)	2/4.4 (45.8)	2/3.3 (60.7)	0/0.2 (0)	8/20.0 (40.1)
20 - 29	61/94.1 (64.8)	10/26.7 (37.5)	4/9.9 (40.4)	0/0.9 (0)	75/131.6 (57.0)
30 - 39	77/108.3 (71.1)	3/13.0 (23.1)	1/2.3 (43.4)	0/0.3 (0)	81/123.9 (65.4)
40 - 49	56/57.2 (97.8)	3/7.4 (40.8)	0/1.5 (0)	0/0.1 (0)	59/66.2 (89.2)
50 - 59	11/13.4 (82.1)	1/1.0 (101.8)	1/0.6 (157.7)	0/0.0 *	13/15.0 (86.6)
60+	4/10.1 (39.7)	0/0.0 *	0/0.0 *	0/0.1 (0.0)	4/10.2 (39.2)
TOTAL	213/295.2 (72.2)	19/52.5 (36.2)	8/17.6 (45.4)	0/1.6 (0)	240/366.9 (65.4)

*SMR cannot be calculated because of zero observed person-years.