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如何使用多重死因統計 進行學術研究？

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怎樣的死因適合 多重死因研究？

Cause-specific mortality: understanding uncertain tips of the disease iceberg.

M J Goldacre

J Epidemiol Community Health 1993;47;491-496
doi:10.1136/jech.47.6.491

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<i>Main diagnosis on hospital record (ICD code*)</i>	<i>All deaths within 4 wks</i>	<i>Disease on death certificate</i>	
		<i>Any mention (% (no))</i>	<i>Underlying cause (% (no))</i>
Tuberculosis (010-8, 137)	54	75.9 (41)	53.7 (29)
Stomach cancer (151)	676	79.9 (540)	72.3 (489)
Lung cancer (162)	2505	90.9 (2276)	87.9 (2203)
Breast cancer (174)	574	92.2 (529)	84.8 (487)
Cervical cancer (180)	73	79.5 (58)	75.3 (55)
Prostate cancer (185)	344	85.5 (294)	69.2 (238)
Leukaemia, lymphoma (200-8)	675	89.8 (606)	81.3 (549)
Thyroid disease (240-6)	47	48.9 (23)	21.3 (10)
Diabetes mellitus (250)	373	68.6 (256)	29.8 (111)
Anaemia (280-5)	222	22.1 (49)	10.4 (23)
Parkinson's disease (332)	106	61.3 (65)	30.2 (32)
Anterior horn cell disease (335)	63	88.9 (56)	81.0 (51)
Multiple sclerosis (340)	26	88.5 (23)	65.4 (17)
Hypertension (401-5)	172	43.0 (74)	22.1 (38)
Ischaemic heart disease (410-4, 427-9)	10 635	90.2 (9596)	77.8 (8271)
<i>Myocardial infarction (410)</i>	5349	89.7 (4797)	85.6 (4599)
Stroke (430-8)	7396	92.5 (6839)	83.0 (6138)
Aortic aneurysm (441)	600	86.5 (519)	80.0 (480)
Pneumonia (480-6)	5731	86.5 (4957)	37.8 (2168)
Asthma (493)	92	40.2 (37)	33.7 (31)
Peptic ulcer (531-4)	628	68.3 (429)	54.3 (341)
Appendicitis (540-3)	39	48.7 (19)	30.8 (12)
Hernia (550-3)	206	34.5 (71)	24.3 (50)
Cirrhosis of liver (571)	176	77.3 (136)	64.2 (113)
Nephritis, nephrosis, and nephrotic syndrome (580-9)	1139	77.3 (880)	32.7 (372)
Spina bifida (741)	27	88.9 (24)	81.5 (22)
Intracranial injury (800-4, 850-4)	690	63.5 (438)	61.3 (423)
Fractured neck of femur (820)	992	25.4 (252)	16.8 (167)
Other fracture of femur (821)	148	17.6 (26)	13.5 (20)
Poisoning by drugs and medicaments (960-79)	171	38.0 (65)	36.8 (63)
Toxic effects of non-medicinal substances (980-9)	33	63.6 (21)	63.6 (21)

*Code or group of codes in the International Classification of Diseases (9th revision)

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Epidemiology • Volume 17, Number 1, January 2006

Comparing Underlying and Multiple Cause-of-Death Statistics

TABLE 1. A Comparison of Rankable Leading Causes of Death Reported in Underlying versus Multiple Cause-of-Death Data in the United States During 2000–2001

Ranking	Cause of Death	Underlying Cause-of-Death Data	Multiple Cause-of-Death Data	Underlying Cause of Death as a Percentage of Multiple Cause-of-Death Reports
1	Measles	2	2	100
2	Suicide	60,092	60,554	99
3	Homicide	37,223	37,571	99
4	Legal intervention	758	768	99
5	Meningococcal infection	411	434	95
*	Malignant neoplasms of trachea, bronchus, and lung	311,786	332,092	94
6	Arthropod-borne viral encephalitis	11	12	92
7	HIV	28,696	31,393	91
8	Malignant neoplasms	1,108,050	1,229,237	90
9	Pregnancy, childbirth, and the puerperium	822	916	90
*	Malignant neoplasms of breast	84,215	103,456	81
10	Whooping cough	29	37	78
11	Certain conditions originating in the perinatal period	28,004	35,895	78
12	Accidents	200,847	273,925	73
13	Aortic aneurysm and dissection	31,129	43,155	72
*	Malignant neoplasms of prostate	61,828	88,594	70
14	Congenital malformations, deformations, and chromosomal abnormalities	21,118	30,329	70
15	Chronic liver disease and cirrhosis	53,678	84,717	63
16	Scarlet fever/erysipelas	5	8	63
17	Malaria	15	24	63
18	Diseases of the heart	1,413,134	2,330,192	61
19	In situ/benign neoplasms, neoplasms of uncertain behavior	27,256	45,548	60
20	Alzheimer disease	103,423	172,844	60
21	Cerebrovascular diseases	331,663	557,448	59
22	Salmonella	70	128	55
23	Diseases of appendix	866	1,593	54
24	Tuberculosis	1,552	3,074	50
25	Viral hepatitis	10,994	22,037	50

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Ranking	Cause of Death	Underlying Cause-of-Death Data	Multiple Cause-of-Death Data	Underlying Cause of Death as a Percentage of Multiple Cause-of-Death Reports
26	Parkinson disease	32,234	65,655	49
27	Cholethiliasis and other disorders of gallbladder	5,780	11,835	49
28	Shigellosis and amebiasis	20	41	49
29	Chronic lower respiratory diseases	245,144	504,258	49
30	Infections of kidney	1,566	3,449	45
31	Hernia	3,047	6,737	45
32	Peptic ulcer	9,063	21,434	42
33	Inflammatory diseases of female pelvic organs	247	601	41
34	Meningitis	1,498	3,654	41
35	Pneumoconioses and chemical effects	2,297	5,667	40
36	Diabetes mellitus	140,805	431,641	33
37	Acute bronchitis and bronchiolitis	554	1,712	32
38	Operations of war	33	105	31
39	Syphilis	78	265	29
40	Influenza and pneumonia	127,458	437,523	29
41	Pneumonitis due to solids and liquids	33,952	116,621	29
42	Septicemia	63,538	277,815	23
43	Atherosclerosis	28,488	141,070	20
44	Nephritis, nephrotic syndrome, and nephrosis	76,795	398,559	19
45	Hyperplasia of prostate	872	5,390	16
46	Nutritional deficiencies	7,953	51,957	15
47	Anemias	9,137	91,937	10

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不同研究類型

描述型研究

橫斷分析

趨勢分析

相關型研究

伴隨分析

檢定分析

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描述型研究：橫斷分析

Eur J Epidemiol (2008) 23:327–334

The burden of diabetes-related mortality in France in 2002: an analysis using both underlying and multiple causes of death

Table 1 Numbers of deaths, crude rates and age-standardized rates of mortality in which diabetes is reported as the underlying cause or among the multiple causes of death, by sex and age

	Diabetes as the underlying cause			Diabetes as one of multiple causes			Ratio (B/A)
	Number of deaths (A)	Crude rate (/100,000)	Adjusted rate ^a (/100,000)	Number of deaths (B)	Crude rate (/100,000)	Adjusted rate ^a (/100,000)	
Men							
<45 years	84	0.5	0.4	162	0.9	0.8	1.9
45–54 years	236	5.7	5.7	671	16.2	16.1	2.8
55–64 years	480	16.7	16.8	1,543	53.7	54.2	3.2
65–74 years	1,300	56.3	55.1	4,033	174.6	170.8	3.1
75–84 years	1,878	141.3	139.5	5,427	408.2	402.7	2.9
≥85 years	1,006	324.7	324.7	2,528	816.0	816.0	2.5
<75 years	2,100	7.7	7.1	6,409	23.4	21.6	3.1
≥75 years	2,884	175.9	185.8	7,955	485.3	506.0	2.8
Overall	4,984	17.2	14.2	14,364	49.5	41.0	2.9

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描述型研究：橫斷分析

Soc Psychiatry Psychiatr Epidemiol (2012) 47:1977–1983

US regional differences in death rates from depression

Table 1 Numbers of deaths in 2005–2006 combined and age-standardized mortality rates (per 100,000) per year for depression (ICD-10 codes F32, F33) and schizophrenia (ICD-10 codes F20–29) using multiple causes (MC) versus underlying cause (UC) alone on death certificates of US residents, by Census Bureau region and division

Region/division	Depression					Schizophrenia				
	UC		MC		MC/UC	UC		MC		MC/UC
	No.	Rate	No.	Rate		No.	Rate	No.	Rate	
US	1,296	0.21	27,275	4.39	20.9	817	0.16	9,080	1.47	9.2
Northeast	269	0.21	4,612	3.62 ^a	17.2	161	0.15	1,485	1.20 ^a	8.0
New England	126	0.37 ^b	1,600	4.79 ^b	12.9	52	0.17	494	1.52	8.9
Mid Atlantic	143	0.15 ^a	3,012	3.21 ^a	21.4	109	0.14	991	1.09 ^a	7.8
Midwest	433	0.29 ^b	9,297	6.47 ^b	22.3	292	0.23 ^b	2,704	1.92 ^b	8.3
EN Central	279	0.28 ^b	5,792	5.89 ^b	21.0	169	0.19	1,678	1.73 ^b	9.1
WN Central	154	0.32 ^b	3,505	7.75 ^b	24.2	132	0.31 ^b	1,026	2.33 ^b	7.5
South	361	0.16 ^a	7,429	3.36 ^a	21.0	221	0.13	2,792	1.25 ^a	9.6
S Atlantic	212	0.17 ^a	392	3.18 ^a	18.7	108	0.11 ^a	1,480	1.21 ^a	11.0
ES Central	53	0.15 ^a	1,488	4.09 ^a	27.1	45	0.15	525	1.41	9.4
WS Central	96	0.16 ^a	2,039	3.33 ^a	20.8	68	0.15	787	1.26 ^a	8.4
West	233	0.18	5,937	4.55	25.3	143	0.15	2,099	1.58 ^b	10.5
Mountain	72	0.19	1,327	3.42 ^a	18.0	47	0.15	443	1.11	7.4
Pacific	161	0.18	4,610	5.02 ^b	27.9	96	0.15	1,656	1.78 ^b	11.9

Data on confidence intervals for each rate are available from the author, or by using software and databases available in Ref. [3]

^a Low rate relative to US rate

^b High rate relative to US rate

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描述型研究：橫斷分析

Soc Psychiat Epidemiol (2010) 45:837–842

Using multiple-cause-of-death data as a complement of underlying-cause-of-death data in examining mortality differences in psychiatric disorders between countries

Table 1 Number of deaths, deaths per 100,000 resident population (rate), rate ratios (RR) and 95% confidence interval (95% CI) between Taiwan and the US for psychiatric disorders according to underlying-cause-of-death data by age and sex, 2003–2005

	Taiwan		The United States		RR	95% CI
	Deaths	Rate	Deaths	Rate		
Psychiatric disorder						
≤44	355	0.8	9,958	1.8	2.3	2.1–2.4
45–64	383	2.6	19,984	9.4	3.7	3.3–3.8
≥65	1,270	20.1	163,244	149.7	7.5	7.1–7.5
Men	1,166	4.0	72,439	18.8	4.7	4.4–4.8
Women	842	3.2	120,747	23.8	7.5	7.0–7.5

Table 2 Number of deaths, deaths per 100,000 resident population (rate), rate ratios (RR) and 95% confidence interval (95% CI) between Taiwan and the US for psychiatric disorders according to multiple-cause-of-death data by age and sex, 2003–2005

	Taiwan		The United States		RR	95% CI
	Deaths	Rate	Deaths	Rate		
Psychiatric disorder						
≤44	1,033	2.2	54,854	9.8	4.4	4.1–4.5
45–64	1,119	7.5	179,645	84.7	11.3	10.6–11.3
≥65	3,616	57.1	782,340	717.4	12.6	12.2–12.6
Men	3,505	12.1	494,209	127.7	10.5	10.2–10.6
Women	2,263	8.4	522,630	103.9	12.3	11.8–12.4

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描述型研究：趨勢分析

AM J RESPIR CRIT CARE MED 1997;156:814-818.

Obstructive Lung Disease Deaths in the United States from 1979 through 1993

An Analysis Using Multiple-Cause Mortality Data

TABLE 2

TOTAL COUNTS OF DEATHS WITH OBSTRUCTIVE LUNG DISEASE (OLD, ICD-9 490 TO 493.9, 496) AND
COUNTS AMONG MEN AND AMONG WOMEN, AND DEATH RATES PER 100,000 POPULATION,
AGE-ADJUSTED TO THE 1980 POPULATION, BY YEAR DURING 1979-1993*

Year	Total Decedents with OLD	Age-adjusted OLD-related Mortality Rates	Male Decedents with OLD	Age-adjusted OLD-related Mortality Rates Among Males	Female Decedents with OLD	Age-adjusted OLD-related Mortality Rates Among Females
1979	116,650	52.6	84,412	96.3	32,238	24.5
1980	128,365	56.8	91,297	102.2	37,068	27.6
1981	133,918	58.1	93,507	102.7	40,411	29.6
1982	138,851	59.1	95,579	103.0	43,272	31.1
1983	150,776	63.0	101,850	107.8	48,926	34.4
1984	157,113	64.4	104,246	108.4	52,867	36.5
1985	168,241	67.7	109,925	112.4	58,316	39.5
1986	172,308	68.2	110,716	111.2	61,592	41.0
1987	176,870	68.7	111,457	110.0	65,413	42.7
1988	185,664	70.8	115,419	112.1	70,245	44.9
1989	193,131	72.4	117,062	111.8	76,069	47.8
1990	197,644	72.8	119,014	112.0	78,540	48.3
1991	204,081	73.6	120,366	110.5	83,715	50.5
1992	207,075	73.1	120,648	108.4	86,427	50.9
1993	223,929	77.5	128,105	112.8	95,824	55.4
Total	2,554,616 [†]	66.6	1,623,693	108.1	930,923	40.3

* From the Multiple-Cause Mortality Files, National Center for Health Statistics.

[†] 343 decedents with no age listed are excluded from this table.

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描述型研究：趨勢分析

J Clin Hypertens. 2004;6:675–681.

Trends in Hypertension-Related Death in the United States: 1980–1998

Table I. Trends in Age-Standardized and Age-Specific Death Rates for Hypertension as Contributory Cause of Death							
YEAR	NUMBER OF DEATHS	AGE-STANDARDIZED DEATH RATE (PER 100,000)	AGE-SPECIFIC DEATH RATES (YEARS)				PROPORTION OF DECEDENTS WITH HYPERTENSION AS THE UNDERLYING CAUSE (%)
			45–64 (%)	65–74 (%)	75–84 (%)	85+ (%)	
1980	109,379	183.1	22.6	28.6	31.0	17.8	25.3
1981	108,486	192.3	22.5	28.3	31.1	18.1	24.7
1982	108,806	188.9	22.0	28.0	31.4	18.6	24.7
1983	111,170	189.1	21.5	27.8	31.6	19.1	24.3
1984	111,675	185.9	21.1	28.0	31.7	19.2	23.9
1985	112,853	184.2	20.5	27.2	32.2	20.1	23.7
1986	113,332	180.2	19.8	27.4	32.4	20.5	23.4
1987	116,748	181.2	19.3	27.2	32.5	21.1	22.9
1988	121,718	184.8	18.6	26.5	33.0	21.9	22.3
1989	128,921	191.8	18.4	26.1	33.2	22.3	21.5
1990	132,854	192.5	17.5	25.9	33.5	23.1	21.3
1991	138,655	196.1	17.1	25.2	33.6	24.1	20.9
1992	145,573	208.9	16.8	24.7	33.3	25.2	20.7
1993	158,782	212.1	16.1	24.0	33.5	26.4	20.3
1994	167,613	218.7	15.9	23.5	33.3	27.3	20.1
1995	177,896	227.3	15.6	22.7	33.4	28.3	19.8
1996	185,417	232.6	15.6	21.8	33.4	29.2	19.8
1997	192,428	236.4	15.3	21.0	33.3	30.4	19.6
1998	200,128	243.7	15.3	20.4	33.4	30.9	19.5

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描述型研究：趨勢分析

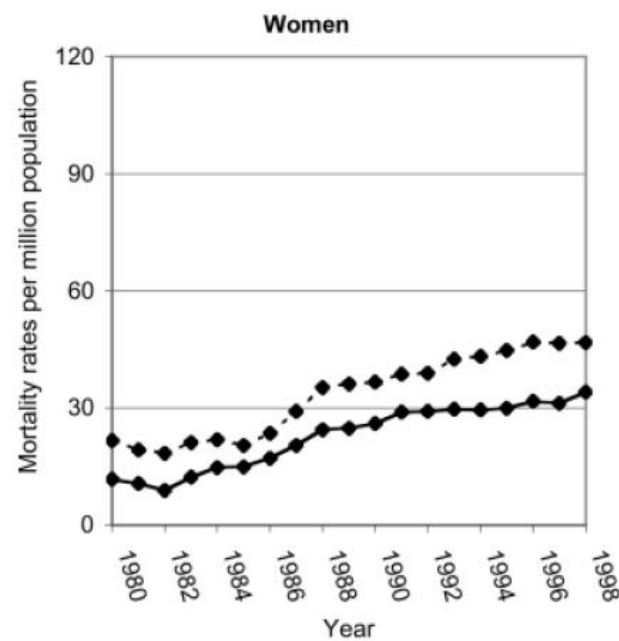
Journal of Public Health Vol. 26, No. 4, pp. 343–346

Alcohol as a certified cause of death in a 'middle England' population 1979–1999: database study

a) deaths certified as alcohol-related



--◆-- Mentions —●— Underlying cause



--◆-- Mentions —●— Underlying cause

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相關型研究：伴隨分析

The American Journal of Medicine (2006) 119, 163-165

Pulmonary Embolism as a Cause of Death in Patients Who Died with Cancer

Table 1 Deaths from pulmonary embolism in patients who died with cancer

Cancers	Deaths with cancer (number)	Deaths from PE with cancer (number)	Frequency of fatal PE among deaths with cancer	
			(%)	(95% CI)
Myeloproliferative, other lymphatic/hemapoetic	14 244	98	0.69	0.56-0.84
Uterus	114 740	456	0.40	0.36-0.44
Prostate	564 850	2199	0.39	0.37-0.41
Bladder	197 483	586	0.30	0.27-0.32
Lymphoma, lymphosarcoma, reticulosarcoma	377 939	1108	0.29	0.28-0.31
Brain	205 852	570	0.28	0.25-0.30
Breast (female)	781 385	2107	0.27	0.26-0.28
Rectum, rectosigmoid junction, anus	157 393	412	0.26	0.24-0.29
Colon	905 305	2274	0.25	0.24-0.26
Stomach	263 251	607	0.23	0.21-0.25
Ovary	233 013	504	0.22	0.20-0.24
Kidney	182 352	410	0.22	0.20-0.25
Cervix	86 807	183	0.21	0.18-0.24
Leukemia	348 316	701	0.20	0.19-0.22
Pancreas	469 500	740	0.16	0.15-0.17
Esophagus	183 346	289	0.16	0.14-0.18
Lip, oral cavity, pharynx	141 229	222	0.16	0.14-0.18
Trachea, bronchus and lung	2 544 481	3446	0.14	0.13-0.14
Liver, gallbladder, intra- & extrahepatic ducts	237 647	258	0.11	0.10-0.12
All cancer patients	8 009 133	17 170	0.21	0.21-0.22

PE = pulmonary embolism; CI = confidence interval.

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相關型研究：伴隨分析

Journal of Hepatology 42 (2005) 799–805

Liver disease as a major cause of death among HIV infected patients: role of hepatitis C and B viruses and alcohol

Table 2
Distribution of underlying causes of death according to Hepatitis C Virus (HCV) and Hepatitis B Virus (HBV) serostatus, Mortality 2000 study

	(a) HCV alone (n=235)		(b) HBV alone (n=64)		(c) HCV and HBV (n=36)		(d) Neither HCV nor HBV (n=487)	
End-stage liver disease ^a	72	31%	14	22%	16	44%	8	2%
AIDS	68	29%	24	38%	8	22%	292	60%
Cancer, extrahepatic AIDS-unrelated	20	9%	11	17%	1	3%	54	11%
Cardiovascular disease	19	8%	3	5%	3	8%	31	6%
Bacterial infection	16	7%	5	8%	3	8%	33	7%
Overdose	10	4%	—	—	2	6%	1	0%
Accident	6	3%	2	3%	—	—	6	1%
Suicide	8	3%	2	3%	1	3%	20	4%
Iatrogenic ^b	4	2%	—	—	1	3%	9	2%
Unknown	9	4%	1	2%	1	3%	10	2%
Other	3	1%	2	3%	—	—	23	5%

^a $P < 0.05$ for the proportion of end-stage liver disease among the four groups.

^b *Iatrogenic*: in the HCV-infected population, antiretroviral treatment (lactic acidosis) in 4 cases; in the HCV-HBV infected population, renal failure due to antiretroviral treatment ($n=1$); in patients free of hepatitis virus infection, antiretroviral treatment in 6 cases (lactic acidosis ($n=2$), pancreatitis ($n=1$), antiretroviral-related fulminant hepatitis ($n=2$); other adverse effects of antiretrovirals ($n=1$)), other treatments ($n=2$), hemothorax ($n=1$)).

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相關型研究：檢定分析

J Rheumatol 2008;35:1950–7)

Population-Level Influence of Rheumatoid Arthritis on Mortality and Recent Trends: A Multiple Cause-of-Death Analysis in France, 1970-2002

Table 3. Age- and sex-adjusted ratios of actual to expected number of pairs (O/E) of causes of death containing rheumatoid arthritis, for specified other causes in 1970–1972 and 2000–2002 (95% confidence intervals of O/E are given in parentheses, and number of pairs, O, in brackets). O/E > 1 indicates a positive association with RA.

	1970–1972	2000–2002
Number of death certificates mentioning RA	3684	3958
O/E > 1		
Infectious and parasitic diseases	1.59 (1.28–1.92) [95]	1.97 (1.78–2.16) [621]
Tuberculosis	1.38 (1.01–1.85) [42]	2.53 (1.44–3.91) [19]
Septicemia	2.58 (1.74–3.59) [30]	2.07 (1.83–2.32) [421]
Diseases of blood and blood-forming agents	1.83 (1.16–2.75) [21]	2.26 (1.92–2.63) [219]
Endocrine, nutritional, and metabolic diseases	1.96 (1.77–2.17) [380]	1.35 (1.27–1.53) [668]
Cushing's syndrome and adrenocortical insufficiency*	32.61 (21.7–46.9) [12]	9.92 (6.3–14.9) [24]
Amyloidosis*	25.77 (12.55–47.2) [9]	10.18 (6.3–15.6) [31]

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相關型研究：檢定分析

(J Glaucoma 2008;17:474-479)

Analysis of Glaucoma-related Mortality in the United States Using Death Certificate Data

TABLE 3. ORs Measuring the Association Between Glaucoma and Selected Conditions on United States Death Certificates, Adjusting for Age, Race/Ethnicity, and Sex

Disease/Condition	Number (%) Among Glaucoma Cases (n = 15,228)	Number (%) Among Nonglaucoma Controls (n = 32,407,086)	Adjusted OR (95% CI)
Cardiovascular disease	9454 (62.08)	16,149,084 (49.83)	1.23 (1.19-1.27)
Malignant neoplasms	3150 (20.69)	8,420,498 (25.98)	1.00 (0.96-1.04)
Diabetes mellitus	2831 (18.59)	2,728,634 (8.42)	2.60 (2.50-2.71)
Hypertension	5529 (36.31)	2,906,054 (8.97)	4.89 (4.73-5.05)
Chronic obstructive pulmonary disease	1628 (10.69)	2,614,140 (8.07)	1.39 (1.32-1.47)
Asthma	189 (1.24)	153,950 (0.48)	3.14 (2.72-3.62)
Alzheimer disease	1075 (7.06)	786,100 (2.43)	1.82 (1.71-1.94)
Parkinson disease	592 (3.89)	387,316 (1.20)	2.59 (2.39-2.81)
Dementia	1132 (7.43)	622,794 (1.92)	2.28 (2.15-2.43)
Accidents (all types)	802 (5.27)	1,808,260 (5.58)	1.45 (1.35-1.55)
Cataract	228 (1.50)	2006 (0.01)	154.87 (134.62-178.17)
Macular degeneration	140 (0.92)	3801 (0.01)	43.28 (36.51-51.31)

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相關型研究：檢定分析

Am. J. Trop. Med. Hyg., 83(2), 2010, pp. 422–426

Strongyloidiasis-Related Deaths in the United States, 1991–2006

TABLE 2
Comorbidity data for strongyloidiasis mortality in the United States, 1991–2006*

Health condition	All cases (n = 345) and controls (n = 1,726) 1991–2006						Later cases (n = 155) and controls (n = 775) 1999–2006	
	Strongyloidiasis deaths (cases)		Non-strongyloidiasis deaths (controls†)		Matched odds ratio		Matched odds ratio	
	No.	%	No.	%	OR	95% CI	OR	95% CI
COPD	99	28.7	159	9.2	4.0	3.0–5.4	1.2	0.7–1.9
HIV	43	12.5	60	3.5	4.6	2.7–7.9	2.8	1.3–6.0
Hematologic malignancies	27	7.8	49	2.8	2.8	1.7–4.6	1.3	0.7–2.6
Lymphoma	14	4.1	39	2.3	3.1	1.8–5.3	1.9	1.0–3.5
Arthritis	16	4.6	35	2.0	2.2	1.2–4.0	1.2	0.5–2.8
Diabetes	17	4.9	161	9.3	0.5	0.3–0.8	0.3	0.2–0.7
Malignant neoplasms	59	17.1	536	31.1	0.4	0.3–0.6	0.3	0.2–0.4
Severe complications								
Septicemia	65	18.8	87	5.0	4.1	2.9–5.8	2.0	1.2–3.3
Shock (without trauma)	22	6.4	43	2.5	2.7	1.6–4.6	2.5	0.8–8.0

*OR = odds ratio; CI = confidence interval; COPD = chronic obstructive pulmonary disease; HIV = human immunodeficiency virus.

† Controls were selected from non-strongyloidiasis-related deaths and matched by sex, race/ethnicity, age (five-year age ranges), and U.S. geographic region of death. We attempted to find five matched controls for each case. Two cases were excluded from the matched odds ratio analysis because of incomplete values needed for matching, and 5 cases (1.4%) had less than five matched controls. These cases were still included in the matched odds ratio analysis.

Better Information Better Actions

**感謝聆聽
敬請指教**

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