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## Mortality of physicians

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#### MORTALITY OF PHYSICIANS

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Submitted in Partial Fulfillment for the Degree of Doctor of Medicine

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Omaha, Nebraska

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#### FOREWARD

The following charts and tables present the results of a study as to the cause of death of American male physicians with a comparison in some aspects to that of the American white male.

In this study the causes of death of 6,592 physicians were used as listed under DEATHS in the Journal of The American Medical Association. Only male cases in which the cause of death was listed were used. The results are not expected to be highly accurate as there were some cases in which no cause of death was listed, and these could not be used in this study. It is assumed that some of these "no cause" deaths would fall under headings such as suicide, alcoholism, and drug addiction which have undesireable social connotations. This is exemplified by the fact that not a single cause of death was listed as suicide, and yet among American white males there are 38 of these deaths per 100,000 deaths.

All statistics relating to the U. S. white male were found in Vital Statistics of the United States.

Although some inaccuracies are inevitable, the fact remains that many interesting and important concepts and comparisons may be derived from such a study. The problems involved and the precautions necessary in collecting and interpreting statistical information have been extremely enlightening. My experience in this study showed me that a great many useful statistics can be derived from simple medical data.

#### EXPECTATION OF LIFE FOR PHYSICIANS

Present Age	Expectation of Life in Years	Present Age	Expectation of Life in Years
25	43.5	50	21.5
26	42.6	51	20.7
27	41.7	52	20.0
28	40.7	53	19.2
29	39.8	54	18.5
30	38.9	55	17.9
31	37.9	56	17.2
32	37.0	57	16.6
33	36.1	58	15.9
34	35.1	59	15.3
35	34.2	60	14.7
36	33.3	61	14.1
37	32.4	62	13.6
38	31.5	63	13.0
39	30.6	64	12.4
77 73 71 70	29.7 28.9 28.0 27.2 26.3	65 66 67 68 69	11.9 11.3 10.8 10.3 9.9
45	25.5	70	9•4
46	24.7	71	8•9
47	23.8	72	8•5
48	23.0	73	8•0
49	22.3	<b>7</b> 4	7•6

Based upon the records of living physicians and the deaths of active and retired physicians for the period 1938-1942 on file with the American Medical Association.

Reprinted from: Dublin, L. I., and Spiegelman, M.: The Longevity and Mortality of American Physicians, 1938-1942. J. A. M. A. 134: 1211-1213 (Aug. 9), 1947.

EXPECTATION OF LIFE
Physicians and White Male Population

Expectation of Life Physicians	Present Age	Expectation of Life White Male
43.5 (years)	25	43.3 (years)
34.2	35	34.4
25.5	45	25.9
17.9	55	18.4
11.9	65	12.1

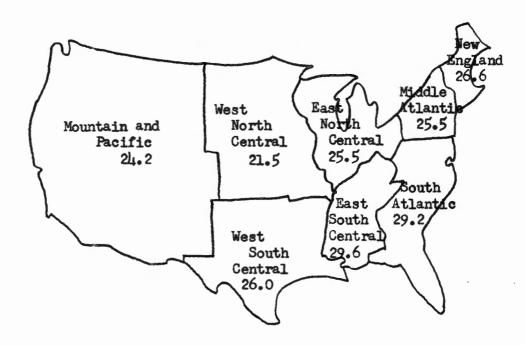
Young physicians have only a slightly greater expectation of life than the general white male population. By mid-life, this small advantage is lost.

Reprinted from: Dublin, L.I., and Spiegelman, M.: The Longevity and Mortality of American Physicians, 1938-1942. J.A.M.A. 134: 1211-1215 (Aug. 9), 1947.

#### GEOGRAPHIC VARIATIONS IN MORTALITY

## Deaths per 1,000 Physicians

35 and over



The death rates are lowest among physicians in the Northern States of the Midwest and highest among those in the Southeastern States. This geographic variation in mortality conforms closely with that of the general population.

Reprinted from: Dublin, L.I., and Spiegelman, M.: The Longevity and Mortality of American Physicians, 1938-1942. J.A.M.A. 134: 1211-1215 (Aug.9), 1947.

#### TEN LEADING CAUSES OF DEATH OF PHYSICIANS

		PERCENT OF TOTAL
RANK	CAUSE OF DEATH	CAUSE KNOWN DEATHS
1.	Diseases of the heart and blood vessels (including cerebral vascular accidents, aortic aneurysms and arteriosclerosis)	67.97
2.	Neoplasms (including leukemia)	13.90
3.	Accidents (including automobile)	4.10
4.	Pneumonia and influenza	3.10
5.	Diseases of prostate (excluding cancer)	0.79
6.	Cirrhosis .	0.62
7-	Nephritis	0.53
8.	Duodenal ulcer (all complications)	0.35
9•	Pancreatitis	0.32
10.	Tuberculosis	0.24
	All other causes	8.08
	Total des	the 100.00

The ten leading causes of death among physicians account for 91.92% of all physician deaths.

#### CAUSES OF DEATH

Cause of Death  Physicians have a higher mortality from:	% of Series Deaths	% of U. S. White Male Deaths
Coronary disease and ASHD	42.70	30,50
Cerebral vascular accidents	13.60	8.30
Automobile accidents	3.20	3.05
Pneumonia	3.10	2.35
Aortic abdominal aneurysms	1.38	0.36
Cirrhosis	0.62	0.33
Anemias	0.23	0.17
Physicians have a lower mortality from:  Accidents (excluding automobile, airplane and drownings)	0.15	3.42
Tuberculosis	0.24	1.12
Neoplasms	13.90	15.30
Hypertensive disease	2.84	3.75
Prostatic diseases (excludin cancer)	g 0.79	1.43
Nephritis	0.53	1.13
Duodenal ulcer	0.35	0.48

Physicians would appear to have higher death rates from the degenerative diseases than the U.S. White Male, but much lower death rates from some infectious diseases and surgical conditions.

### CAUSES OF DEATH

Rank	Cause	No. of Cases in Series	% of Series Deaths	% of U. S. White Male Deaths
**1.	Coronary disease and ASHD	2807	42.70	30.50
2.	Neoplasms	915	13.90	15.30
**3 <b>.</b>	Cerebral vascular accidents	895	13.60	8.30
4.	Arteriosclerosis (excluding aortic	300	4.55	4.90
5.	aneurysms) Accidents (all types)	270	4.10	7.10
**6.	Pneumonia	203	3.10	2.35
7.	Hypertension	187	2.84	3•75
8.	Congestive heart failure	154	2.34	400-000 000 000
**9.	Aortic abdominal aneurysms	91	1.38	0.36
10.	Myocarditis	76	1.15	40 Miles 44
11.	Pulmonary embolus	72	1.09	ma na na na
12.	Prostatic disease (excluding cancer)	52	0.79	1.43
<b>**</b> 13.	Cirrhosis	41	0.62	0.33
14.	Nephritis	35	0.53	1.13

#### 8

## (Continued)

Rank	Cause		No. of Cases in Series	% of Series Deaths	% of W. S. White Male Deaths
15.	Duodenal ulcer		23	0.35	O <sub>*</sub> 48
16.	Pancreatitis		21	0.32	00 MB 700 NB
17.	Mesenteric thrombosis		16	0.24	400 CO CO CO
18.	Tuberculosis		16	0.24	1.12
**19.	Anemias		15	0.23	0.17
20.	All other causes		494	7.48	
		Total	6592	100.00	

\*\*Those diseases in which U. S. Physicians' death rate is higher than the U. S. White Male.

Although neoplasms are the second ranking cause of death among physicians, the death rate is below that of the U.S. White Male. This is probably due to better opportunities for early diagnosis and for prompt treatment.

#### NEOPLASMS

Series Cases
915 (13.9% of all deaths)

U. S. White Males
114,275 (15.3% of all deaths)

Total neoplasms: (including Lymphatics and Hematopoietic tissues)

Breakdown

	V	DIGARGOWI	4	
Organ (type)	Total No. in Series	% of Total Neoplasms	% of Total Deaths in Series	% of Total Deaths in U.S.White Male
Nonspecific	226	24.7	3.435	erit van too Carries
Lung	133	<b>14.</b> 6	2.027	2.589
**Prostate	132	14.4	2.005	1.590
**Pancreas	74	8.1	1.121	0.794
Stomach	68	7.4	1.037	1.694
Colon	63	6.9	1.045	1.438
##Rectum	50	5.5	0.956	0.772
Leukemia	42	4.6	0.637	0.747
Bladder	35	3.8	0.531	0.605
Brain	22	2.4	0.334	0.501
**Hodgkins (specified)	18	2.0	0.274	0.223
Multiple myeloma	15	1.6	0.228	

## NEOPLASMS (Continued)

Organ (type)	Total No. in Series	% of Total Neoplasms	% of Total Deaths in Series	% of Total Deaths in U.S.White Male
Esophagus	.6	0.7	0.091	took was feer one step
Osteogenic sarcoma	6	0.7	0.091	date and that date and
Lymphosarcoma	4	0.4	0.061	mai mga may dalih dala
Liver	4	0.4	0.061	-
Reticulum cell sarcoma	3	0.3	0.045	discrete for diff day
Testicle	3	0.3	0.045	displant and displants
Sarcoma	2	0.2	0.031	105 are 400 feet 606
Miscellaneous (one each)	9	0.9	0.135	100 AN 100 100 ID
Total	915	100.0	13.900	

\*\*Those organs or neoplasms in which Physicians' death rate is higher than the U.S. White Male.

Physicians have a higher death rate from cancer of the rectum, prostate and pancreas; however, U. S. white males have a higher incidence of cancer deaths due to lung, stomach, colon and bladder, as well as many other types of neoplasms.

#### NEOPLASMS AS TO SYSTEMS INVOLVED

System		% of All Neoplasms
Digestive organs		29.0
Genital organs		14.7
Respiratory system		14.6
Mematopoietic and lymphatics		9.2
Urinary organs		3.8
Nervous system and tissues		2.4
Other specified organs		1.6
Unspecified organs		<u>24.7</u>
	Total	100.0

The digestive organs are by far the most frequent sites of cancer in physicians; cancers of the genital organs rank next.

#### LEUKEMIA

Total cases in series: 42

All types and stages considered collectively.

Breakdown as to Specialty.

Specialty		No. of Deaths
•		
General practitioner		18
Radiologists		6
Surgeons		6
Obstetrician-Gynecologists		5
Pediatricians		2
Ophthalmologists		2
Health officers	•	1
Professors		1
Unknown specialty		1
	Total	42

There are approximately 38 times as many General Practitioners as there are Radiologists in the U. S.; however, only 3 times as many deaths are reported among General Practitioners as being due to Leukemia.

#### CARDIOVASCULAR-RENAL DISEASES

	·	% of all Physician Deaths	% of U.S. White Male Deaths
1.	Coronary disease and ASHD	42.70	30.50
2.	Cerebral vascular accidents	13.60	8.29
3•	General arteriosclerosis	4.55	4.90
4.	Hypertensive disease	2.84	3 <b>-</b> 75
5•	Other CVR diseases	4. 28	4.12
	Percent of all deaths due to CVR diseases	67.97	51.56
	All other causes of d	leath 32.03	Jt8•JtJt

Cardiovascular-renal deaths are 16.41% higher in male physicians than in the U. S. white male population.

#### ACCIDENTS AS CAUSE OF DEATH

Type	No. of Cases in Series	% of Series Deaths	% of Series Accidents	% of White Male Deaths	% of U.S. White Male Accidents
All accidents	270	4.10		7.10	-
***					
		Breakdo	<u>m</u>		
Automobile accidents	208	3.20	77.0	3.05	42.9
Drowning accidents	32	0.45	11.9	0.45	6.3
Airplane accidents	20	0.30	7.4	0.18	2.5
All other accidents	10	0.15	3.7	3.42	48-3
Total	270	4.10	100.0	7.10	100.0

Although no definite crude death rate for U. S. Physicians has been determined in this study, it is assumed that the rate would be very nearly the same as for the U. S. White Male because of their nearly equal life expectancies. Assuming the rates to be the same, it may be stated that accidental deaths account for 2.95% more deaths among the U. S. White Male than in the U. S. Male Physician. However, the % of accidental deaths resulting from automobile and drowning accidents is nearly twice that of the U. S. White Male, and airplane accidents approximately three times greater than that of the U. S. White Male. The % of accidental deaths from all other types of accidents combined is more than thirteen times greater in the U. S. White Male group.

CAUSE OF DEATH

AS TO

AGE GROUP

## RANKING CAUSE OF DEATH BY AGE GROUP

Rank by Age	lst	2nd	3rd	Цth
25-34	coronary disease	automobile accident **	other type accidents	neoplasms
35 <del>-4</del> 4	coronary disease	neoplasms	automobile accident	cerebral vascular accidents
45-54	coronary disease and ASHD	neoplasms	automobile accident	cerebral vascular accidents
55 <b>-</b> 64	coronary disease and ASHD	cerebral vascular accidents	neoplasms	automobile accident
65 <b>-</b> 74	coronary disease and ASHD	cerebral vascular accidents	neoplasms	hypertensive CVR diseases
75-84	coronary disease and ASHD	cerebral vascular accidents	neoplasms	general arterio- sclerosis
85-104	coronary disease and ASHD	cerebral vascular accidents	neoplasms	pneumonia

<sup>\*\*</sup>Coronary disease accounts for nearly 11% more deaths in this age group than does all accidents combined.

Coronary disease and ASHD rank highest as a cause of death in all age groups of physicians.

Cancer ranks high as a cause of death among physicians from age 35 upwards.

Cerebral vascular accidents are responsible for more deaths than cancer after the age of 55.

## AGE GROUP (25-34)

	Cause of Death	Total no. in 25-34 age group	% of total in 25-34 age group
1.	Coronary disease (youngest age 28)	30	46.9
2.	Automobile accident	174	21.9
3•	Airplane accident	9	14-1
4.	Neoplasm leukemia 4 Hodgkins 2 lung 1 lymphosarcoma 1	8	12.6
5.	Pneumonia	2	3.1
6.	Pulmonary edema	1	1.6
	Total in age grow	ıp 64	100.0

Total series cases 6592

% of total deaths in series that this age group represents - 1%.

### AGE GROUP (35-44)

	Cause of Death	Total no. in 35-44 age group	% of total in 35-44 age group
1.	Coronary disease	84	37.9
2.	Neoplasm brain leukemia nonspecific stomach pancreas osteogenic sarcoma reticulum cell sarc bladder lip	14 11 6 4 3 3 . 2 1	20.3
3.	Automobile accident	29	13.1
4.	Cerebral wascular accide hemorrhage embolus	nt 15 13 2 15	6.8
5.	Rheumatic heart disease	12	5-4
6.	Drowning	11	5.0
7.	Pulmonary embolus	8	3.6
8.	Glomerulonephritis	4	1.8
9.	Airplane accident	3	1.3
10.	Cirrhosis	3	1.3
11.	Pancreatitis	2	0.9
12.	Pneumonia	2	0.9
13.	Total in age grow	s 6592 in series that this ag	1.8 100.0 ge group

## AGE GROUP (45-54)

	Cause of Death	Total no. in 45-54 age group	% of total in 45-54 age group
l.	Coronary disease	334	61.0
2.	Neoplasm nonspecific 16 stomach 14 pancreas 11 colon 11 lung 9 brain 8 leukemia 7 liver 1 malignant lymphoma 1 malignant melanoma 1 pituitary gland 1 polycythemia vera 1 thyroid 8		15.0
3.	Automobile accidents	33	6.0
4.	Cerebral vascular accidents  hemorrhage 18 nonspecific 11 thrombosis		6.0
5.	Drowning	16	2.8
6.	Pneumonia	13	2.3
7.	Congestive heart failure	7	1.3
8.	Abdominal aortic aneurys	em 14	0.7
9•	Airplane accident	3	0.5
10.	Pancreatitis	3	0.5
u.	Duodenal ulcer	2	0.3

### AGE GROUP (45-54) (Continued)

	Cause of Death	Total no. in 45-54 age group	% of total in 45-54 age group
12.	Hemorrhage esophageal varices	2	0.3
13.	Miscellaneous (one each	) <u>16</u>	2.8
	Total in age group	548	100.0
	Total series cases	6592	

% of total deaths in series that this age group represents - 8.4%.

## AGE GROUP (55-64)

	Cause of Death	Total no. in 55-64 age group	% of total in 55-64 age group
1.	Coronary disease and ASHD	504	51.6
2.	Cerebral vascular accidents hemorrhage nonspecific thrombosis embolus	165 104 27 22 12 165	16.9
3.	Neoplasms nonspecific lung colon multiple myeloma prostate stomach bladder leukemia Hodgkins pancreas esophagus liver reticulum cell sarcoma squamous cell cancer	158 67 33 12 12 11 8 4 3 2 2 1 1 1 1	16.2
4.	Automobile accidents	. 39	4.0
5•	Abdominal aortic aneurysm	18	1.8
6.	Panereatitis	16	1.6
7•	Hypertensive disease	15	1.5
8.	Congestive heart failure	374	1.4
9•	Prostatic disease (excluding cancer)	; 7	0.7
10.	Pulmonary embolus	7	0.7
11.	Pneumonia	5	0.5

# AGE CROUP (55-64) (Continued)

	Cause of Death	Total no. in 55-64 age group	% of total in 55-64 age group
12.	Aplastic anemia	3	0.3
13.	Miscellaneous (one each)	27	2.8
	Total in age group	978	100,00
	Total series cases	6592	

% of total deaths in series that this age group represents - 14.8%.

## AGE GROUP (65-74)

	Cause of Death	Total no. in 65-74 age group	% of total in 65-74 age group
1.	Coronary disease and ASHD	868	49.0
2.	nonspecific thrombosis embolus	264 127 72 56 9	14.9
3•	Neoplasm nonspecific lung prostate colon pancreas stomach bladder esophagus leukemia chest tongue	234 56 46 31 30 29 25 10 3 2 1	13.2
4.	Hypertensive disease	76	4.3
5.	Congestive heart failure	54	3.1
6.	Pneumonia	43	2• կ
7.	General arteriosclerosis (e cluding abdominal aneurysms		2.3
8.	Cirrhosis	29	1.6
9•	Pulmonary embolus	23	1.3
10.	Abdominal aortic aneurysms	18	1.0
11.	Automobile accidents	17	0.9
12.	Mesenteric thrombosis	16	0.9

# AGE GROUP (65-74) (Continued)

	Cause of Death	Total no. in 65-74 age group	% of total in 65-74 age group
13.	Duodenal ulcer	13	0.7
14.	Myocarditis	13	0.7
15.	Glomerulonephritis	8	0.4
16.	Amyotrophic lateral sclerosis	7	0.4
17.	Pulmonary emphysema	7	0.4
18.	Parkinsonism	6	0.3
19.	Prostatic disease (excluding cancer)	5	0.3
20.	/	30	1.7
	Total in age group	1772	100.0
	Total series cases	6592	

% of total deaths in series that this age group represents - 26.9%.

## AGE GROUP (75-84)

	Cause of Death	Total no. in 75-84 age group	% of total in 75-84 age group
l.	Coronary disease and ASHD	801	39•5
2.	thrombosis	311 06 98 93 14	15•3
3•	prostate lung colon pancreas bladder Hodgkins leukemia stomach multiple myeloma osteogenic sarcoma esophagus liver lymphosarcoma mouth palate	294 55 50 43 37 29 20 14 12 10 3 3 2 2 2 2	14.4
4.	General arteriosclerosis (excluding abdominal aneurysms)	- 101	4.9
5.	Hypertensive disease	92	4.5
6.	Automobile accident	64	3.2
7.	Pneumonia	62	3.1
8.	Congestive heart failure	1414	2.2
9•	Myocarditis	44	2.2
10.	Prostatic disease (excluding cancer)	40	2.0

## AGE GROUP (75-84) (Continued)

	Cause of Death	Total no. in 75-84 age group	% of total in 75-84 age group
11.	Abdominal aortic aneurysms	36	1.8
12.	Pulmonary embolus	28	1.4
13.	Nephritis	23	1.1
14.	Intestinal obstruction	16	0.7
15.	Tuberculosis	16	0.7
16.	Senility	13	0.6
17.	Anemia aplastic a. 11 pernicious a. 1 12	12	0.5
18.	Cirrhosis	9	0.4
19.	Duodenal ulcer	8	0.4
20.	Miscellaneous (one each)	21	1.1
	Total in age group	2035	100.0
•	Total series cases	6592	

<sup>%</sup> of total deaths in series that this age group represents - 30.8%.

## AGE GROUP (85-94)

	Cause of Death	Total no. in 85-94 age group	% of total in 85-94 age group
1.	Coronary disease and ASHD	150	24-4
2•		107 0 4 3	17.4
3•	Neoplasm prostate colon nonspecific stomach leukemia testicle sarcoma	94 0 3 6 7 3 3 2	15•3
4.	Pneumonia	73	11.9
5•	General arteriosclerosis (ex- cluding abdominal aneurysms)	. 67	10.9
6.	Congestive heart failure	27	4.4
7.	Senility	20	3•3
8.	Chronic myocarditis	19	3.1
9•	Abdominal aortic aneurysms	15	2-4
10.	Automobile accident	12	2.0
11.	Chronic bacterial endocarditi	.s 7	1.1
12.	Pulmonary embolus	6	1.0.
13.	Hypertensive disease	4	0.7
14.	Miscellaneous (one each)	14	2.3
	Total in age group	615	100.0
	Total series cases	6592	

% of total deaths in series that this age group represents - 9.31%.

## AGE GROUP (95-104)

	Cause of Death	Total no. in 95-104 age group	% of total in 95-104 age group
1.	Coronary disease and ASHD (oldest 104 years)	36	76.5
2.	Congestive heart failure	8	17.0
3.	Pneumonia		6.5
	Total in age group	47	100.0
	Total series cases	6592	

% of total deaths in series that this age group represents - 0.714%.

#### CONCLUSION

Young physicians have a slightly greater expectation of life than the general white male population. By mid-life, this small advantage is lost. The death rates are lowest among physicians in the Northern States of the Midwest and highest among those in the Southeastern States.

Physicians have a considerably higher death rate from cardiovascular diseases than the U. S. white male. On the other hand, the death rate is lower in those conditions in which early recognition and treatment is essential, such as tuberculesis, prostatic diseases, cancer, and peptic ulcers.

Cancer ranks high as a cause of death in physicians from age 35 upwards. Cancer of the prostate and rectum has a higher death rate among physicians than the U.S. white male. These two areas are quite easily accessible to examination and yet they represent 20% of the neoplastic deaths among physicians. The digestive organs are by far the most frequent sites of cancer in physicians.

The U. S. white males have a greater overall accidental death rate than do physicians. Physicians have a greater death rate in respect to automobile and airplane accidents. No comparison of suicidal death rates could be made, as none were recorded for physicians, probably because of the undesirable social connotation.

# CONCLUSION (Continued)

This study further emphasizes the replacement needs of the medical profession. The untimely death of a physician represents an important loss, both of service and of investment necessary to enter the field of medicine.

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