

SUPPLEMENTAL DIGITAL CONTENT 1

Table 1. Risk factors for dementia newly acquired in the quarter of hospitalization for the intensive care cohort and general population controls

Risk Factors for Dementia	Diagnoses newly acquired during the index quarter	
	Critical Care Cohort	Matched General Population Controls
	N=10,348 n (%)	N=10,348 n (%)
Cerebrovascular accident	861 (8.3)	45 (0.4)
Cerebrovascular disease	1147 (11.1)	137 (1.3)
Myocardial Infarction	1362 (13.2)	71 (0.7)
Congestive heart failure	1922 (18.6)	125 (1.2)
Valvular disease	1651 (16.0)	149 (1.4)
Pulmonary circulation disease	697 (6.7)	37 (0.4)
Peripheral vascular disease	1245 (12.0)	152 (1.5)
Hypertension	1772 (17.1)	497 (4.8)
Depression	593 (5.7)	92 (0.9)
Diabetes	741 (7.2)	153 (1.5)
Hypoglycemia	315 (3.0)	39 (0.4)
Chronic renal failure	873 (8.4)	169 (1.6)
Head trauma	315 (3.0)	16 (0.2)
Chronic pulmonary disease	1605 (15.5)	184 (1.8)
Hypothyroidism	471 (4.6)	149 (1.4)
Obesity	406 (3.9)	55 (0.5)
Weight loss	768 (7.4)	50 (0.5)
Fluid and electrolyte disorders	2717 (26.3)	180 (1.7)
Deficiency Anemias	1826 (17.6)	231 (2.2)
Alcohol abuse	191 (1.8)	13 (0.1)
Drug abuse	43 (0.4)	NA
Epilepsy	95 (0.9)	NA
Parkinson's Disease	49 (0.5)	11 (0.1)
Rheumatoid arthritis/ collagen vascular diseases	165 (1.6)	53 (0.5)

NA = not available due to small sample size

Table 2. Multivariable model of Hazard Ratio for receiving a dementia diagnosis during three years of follow-up for intensive care cohort versus general population controls adjusting for known risk factors for dementia in the year prior to the index hospitalization

Variables	HR	95% CI	P Value
Matched General Population Controls	<i>ref</i>		
Received intensive care	1.43	(1.32, 1.54)	<0.001
Age (yrs)			
66-69	<i>ref</i>		
70-74	1.46	(1.24, 1.71)	<0.001
75-79	2.40	(2.07, 2.79)	<0.001
80-84	3.68	(3.18, 4.26)	<0.001
≥85	5.81	(5.01, 6.73)	<0.001
White, non-Hispanic	<i>ref</i>		
Black, non-Hispanic	1.67	(1.47, 1.89)	<0.001
Other	1.10	(0.92, 1.31)	0.30
Male	<i>ref</i>		
Female	1.09	(1.01, 1.18)	0.02
Pre-existing risk factors for dementia			
No history of condition/disease	<i>ref</i>		
Cerebrovascular disease	1.52	(1.38, 1.68)	<0.001
Congestive heart failure	1.16	(1.05, 1.27)	0.002
Depression	1.64	(1.45, 1.85)	<0.001
Parkinson's disease	2.55	(2.09, 3.12)	<0.001
Diabetes	1.13	(1.04, 1.23)	0.006
Fluid and electrolyte disorders	1.19	(1.07, 1.31)	0.001
Alcohol abuse	2.20	(1.61, 2.99)	<0.001
Hypoglycemia	1.28	(1.06, 1.55)	0.009
Weight loss	1.26	(1.09, 1.46)	0.002

Notes:

Abbreviations: HR=hazard ratio, CI=confidence intervals.

Table 3. Multivariable model of Hazard Ratio for receiving a dementia diagnosis during three years of follow-up for intensive care cohort versus general population controls adjusting for known risk factors for dementia in the year prior to the index hospitalization quarter as well as diagnoses accrued during the index hospitalization

Variables	HR	95% CI	P Value
Matched General Population Controls	<i>ref</i>		
Received intensive care	1.16	(1.05, 1.27)	0.002
Age (yrs)			
66-69	<i>ref</i>		
70-74	1.46	(1.25, 1.72)	<0.001
75-79	2.42	(2.09, 2.81)	<0.001
80-84	3.71	(3.21, 4.29)	<0.001
≥85	5.90	(5.09, 6.84)	<0.001
White, non-Hispanic	<i>ref</i>		
Black, non-Hispanic	1.64	(1.45, 1.86)	<0.001
Other	1.07	(0.90, 1.28)	0.43
Male	<i>ref</i>		
Female	1.10	(1.02, 1.18)	0.02
Pre-existing risk factors for dementia			
No history of condition/disease	<i>ref</i>		
Cerebrovascular disease	1.47	(1.33, 1.62)	<0.001
Congestive heart failure	1.17	(1.06, 1.28)	0.001
Depression	1.61	(1.42, 1.82)	<0.001
Hypoglycemia	1.31	(1.08, 1.58)	0.005
Parkinson's disease	2.61	(2.14, 3.18)	<0.001
Fluid and electrolyte disorders	1.16	(1.04, 1.28)	0.006
Alcohol abuse	2.18	(1.60, 2.98)	<0.001
Weight loss	1.26	(1.09, 1.46)	0.002
Diabetes (post 6 months of follow-up)*	1.15	(1.05, 1.26)	0.003
Epilepsy (post 18 months of follow-up)*	2.64	(1.67, 4.16)	<0.001
Deficiency anemias (post 6 months of follow-up)*	1.13	(1.02, 1.25)	0.02
Newly accrued risk factors for dementia during the hospitalization with critical care			
No newly accrued condition/disease	<i>ref</i>		
Cerebrovascular accident	1.94	(1.61, 2.35)	<0.001
Cerebrovascular disease	1.30	(1.03, 1.64)	0.03
Fluid and electrolyte disorders	1.14	(1.02, 1.27)	0.02
Drug abuse	3.23	(1.67, 6.27)	<0.001
Weight loss (up to 24 months of follow-up)*	1.49	(1.16, 1.92)	0.002
Head Trauma (up to 18 months of follow-up)*	1.66	(1.14, 2.42)	0.008
Diabetes (post 6 months of follow-up)*	1.49	(1.15, 1.95)	0.003
Renal Failure	1.29	(1.09, 1.52)	0.002
Acute organ failure – Neurologic	2.08	(1.49, 2.90)	<0.001
Infection	1.21	(1.09, 1.34)	<0.001

Notes:

Abbreviations: HR=hazard ratio, CI=confidence intervals.

*Time dependent variables were added for these covariates: diabetes (first 6 months of follow-up HR=0.98, P=0.85), epilepsy (first 18 months of follow-up HR=1.37, P=0.22), deficiency anemias (first 6 months of follow-up HR=1.01, P=0.88), diabetes (newly accrued) (first 6 months of follow-up HR=1.05, P=0.85), weight loss (newly accrued) (after 24 months HR=0.60, P=0.19), and head trauma (newly accrued) (after 18 months HR=1.54, P=0.09).

Table 4. Multivariable model of Hazard Ratio for receiving a dementia diagnosis during three years of follow-up for intensive care cohort versus general population controls adjusting for known risk factors for dementia in the year prior to the index hospitalization quarter as well as during the quarter of hospitalization

Variables	HR	95% CI	P Value
Matched General Population Controls	<i>ref</i>		
Received intensive care	1.09	(1.00, 1.20)	0.06
Age (yrs)			
66-69	<i>ref</i>		
70-74	1.47	(1.26, 1.73)	<0.001
75-79	2.43	(2.09, 2.82)	<0.001
80-84	3.64	(3.15, 4.22)	<0.001
≥85	5.79	(4.99, 6.72)	<0.001
White, non-Hispanic			
Black, non-Hispanic	1.67	(1.48, 1.89)	<0.001
Other	1.11	(0.93, 1.32)	0.27
Male			
Female	1.08	(1.00, 1.17)	0.04
Pre-existing risk factors for dementia			
No history of condition/disease	<i>ref</i>		
Cerebrovascular disease	1.57	(1.42, 1.73)	<0.001
Congestive heart failure	1.23	(1.11, 1.36)	<0.001
Depression	1.72	(1.52, 1.95)	<0.001
Hypoglycemia	1.29	(1.07, 1.55)	0.01
Parkinson's disease	2.52	(2.06, 3.08)	<0.001
Fluid and electrolyte disorders	1.25	(1.12, 1.39)	<0.001
Alcohol abuse	2.13	(1.56, 2.90)	<0.001
Weight loss	1.25	(1.08, 1.45)	<0.01
Diabetes (after 6 months of follow-up)*	1.12	(1.02, 1.24)	0.02
Epilepsy (after 18 months of follow-up)*	2.56	(1.62, 4.03)	<0.001
Deficiency anemias (post 6 months of follow-up)*	1.16	(1.05, 1.28)	<0.01
Newly accrued risk factors for dementia during the quarter of hospitalization with critical care			
No newly accrued condition/disease	<i>ref</i>		
Cerebrovascular accident	1.43	(1.21, 1.69)	<0.001
Cerebrovascular disease	1.43	(1.24, 1.65)	<0.001
Congestive heart failure	1.23	(1.09, 1.39)	<0.01
Depression	1.76	(1.50, 2.08)	<0.001
Parkinson's disease	2.02	(1.30, 3.14)	<0.01
Fluid and electrolyte disorders	1.23	(1.11, 1.38)	<0.01
Alcohol abuse	1.86	(1.34, 2.59)	<0.01
Epilepsy	2.23	(1.58, 3.14)	<0.001
Head Trauma	1.33	(1.05, 1.70)	0.02
Renal Failure (12 months of follow-up)*	1.27	(1.03, 1.57)	0.03
Peripheral vascular disorder	1.15	(1.02, 1.30)	0.02

Notes:

Abbreviations: HR=hazard ratio, CI=confidence intervals.

*Time dependent variables were added for these covariates: diabetes (first 6 months of follow-up HR=1.07, P=0.42), epilepsy (first 18 months of follow-up HR=1.30, P=0.30), and deficiency anemias (first 6 months of follow-up HR=1.03, P=0.74), and renal failure (years 2 and 3 of follow-up HR=1.04, P=0.73).

Table 5. Distribution of the number of dementia diagnoses identified during the three years of follow-up for patients who received at least one diagnosis of dementia.

	Total N	Number of dementia diagnoses during 3 years of follow-up, N (%)			
		1	2	3	>3
Matched controls	1,266	376 (29.7)	159 (12.6)	124 (9.8)	607 (47.9)
ICU patients	1,648	544 (33.0)	278 (16.9)	164 (10.0)	662 (40.2)