

# 以多重死因資料比較台灣美國腦中風 併發吸入性肺炎之趨勢

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# Stroke Statistics

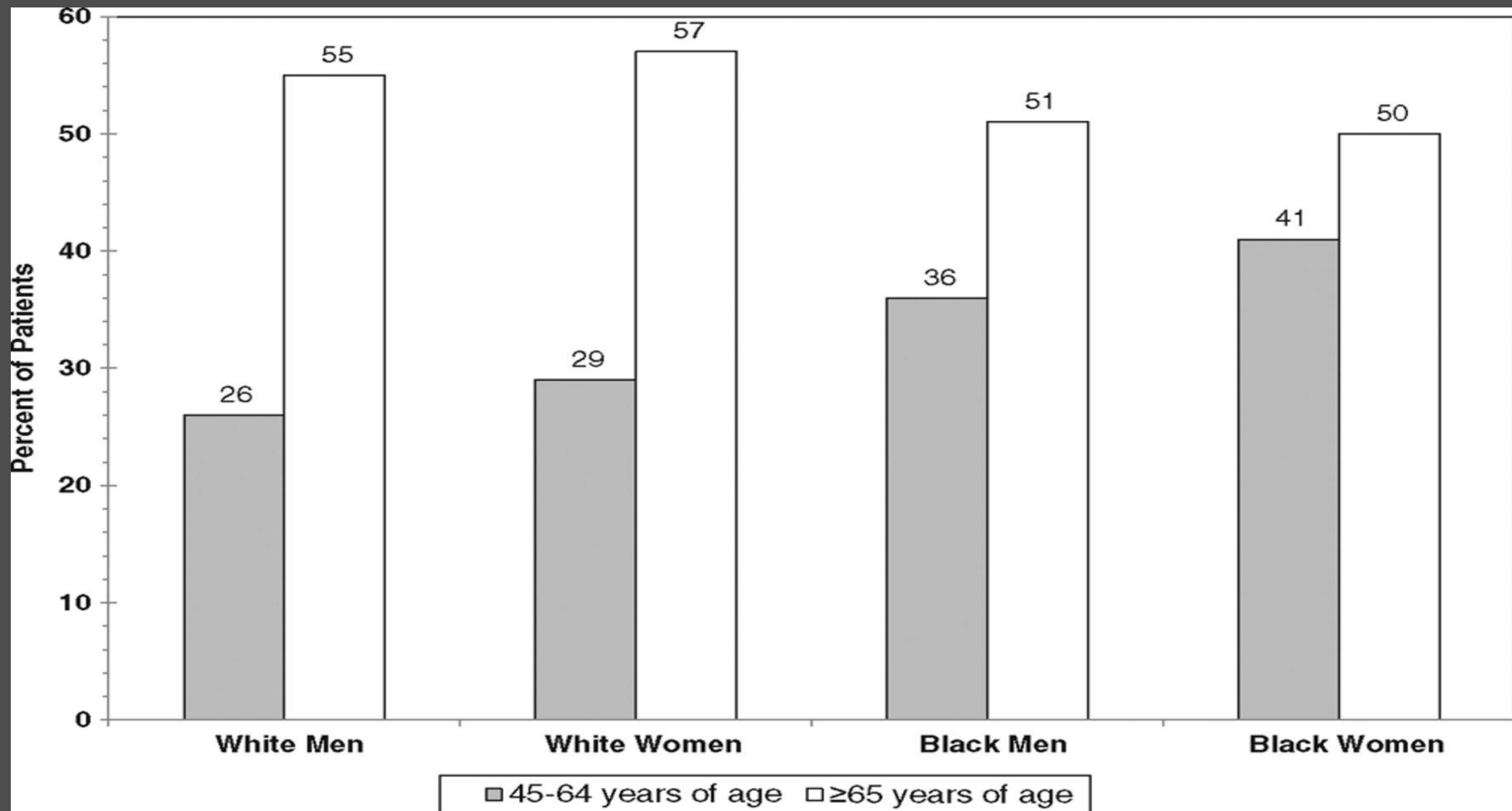
## --A Report From the American Heart Association

- Approximately **56%** of stroke deaths in 2009 occurred out of the hospital.
- 30-day mortality rate varied by age: **9%** in patients 65 to 74 years of age, **13.1%** in those 74 to 84 years of age, and **23%** in those  $\geq 85$  years of age.
- Among Medicare patients discharged from the hospital after stroke,  $\approx$ **45%** return directly home, **24%** are discharged to inpatient rehabilitation facilities, and **31%** are discharged to skilled nursing facilities.

# Stroke Statistics

- Among ischemic stroke survivors who were  $\geq 65$  years of age, the following disabilities were observed at 6 months after stroke :
  - 50% had some hemiparesis
  - 30% were unable to walk without some assistance
  - 46% had cognitive deficits
  - 35% had depressive symptoms
  - 19% had aphasia
  - 26% were dependent in activities of daily living
  - 26% were institutionalized in a nursing home

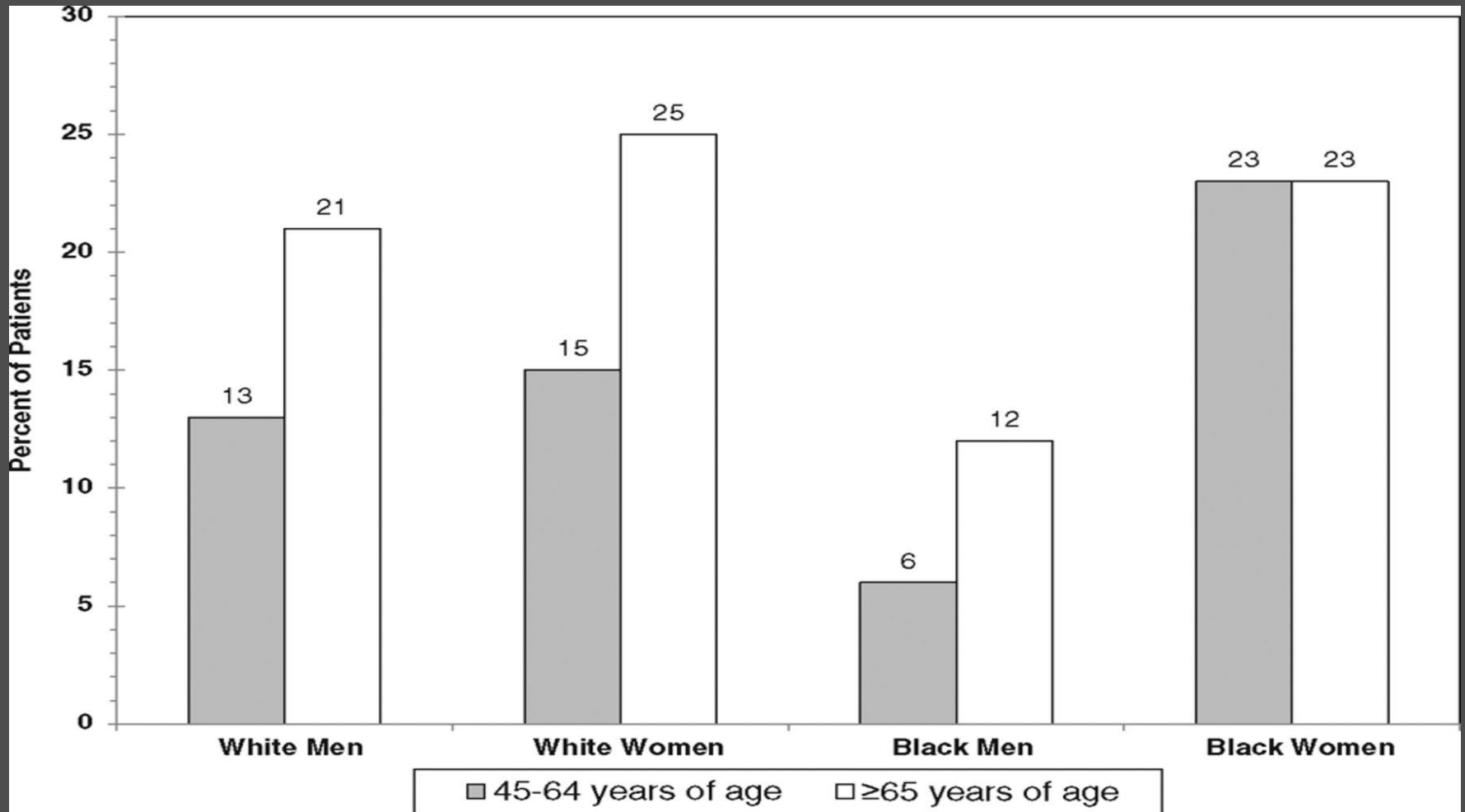
# Proportion of patients dead within 5 years after first stroke



Go A et al. Circulation 2013;127:e6-e245



# Proportion of patients with recurrent stroke in 5 years after first stroke

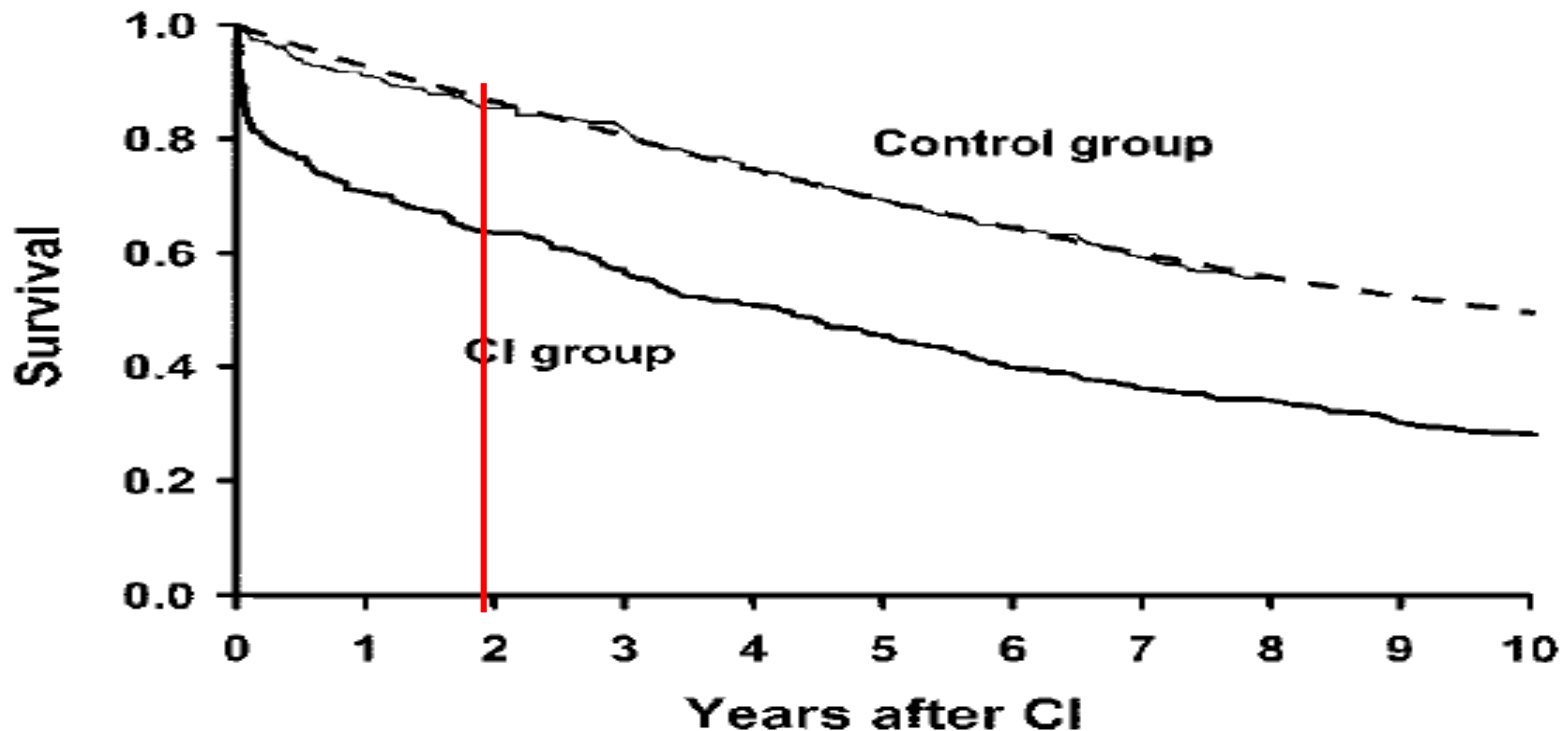


Go A et al. Circulation 2013;127:e6-e245

# Cause-Specific Mortality After First Cerebral Infarction -- A Population-Based Study

*Stroke*. 2003;34:1828

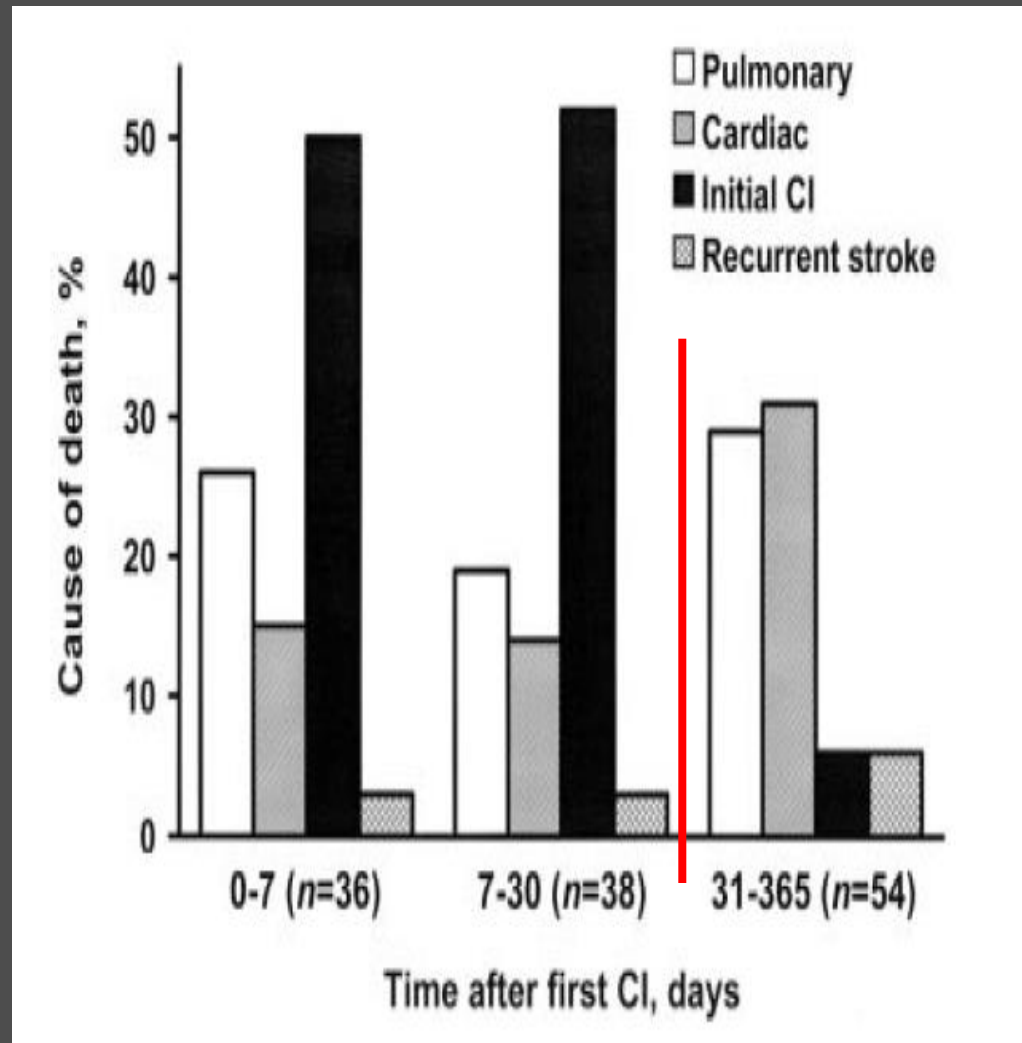
- The mortality rate among stroke patients was highest during the first month after CI but remained increased compared with controls for at least 2 years



# Cause-Specific Mortality After First Cerebral Infarction -- A Population-Based Study

*Stroke*. 2003;34:1828

- More than **50%** of deaths within the first month were attributed directly to the initial CI
- In patients who survived the first month after CI, cardiac and pulmonary causes together accounted for **54%** of the 1-year mortality.
- Mortality due to recurrent stroke accounted for only **5%** of the 1-year mortality.



# Cause-Specific Mortality After First Cerebral Infarction -- A Population-Based Study

*Stroke*. 2003;34:1828

- In the first month after CI, mortality resulted predominantly from neurologic complications.
- Later mortality remained high because of respiratory and cardiovascular causes
- To improve long-term survival after CI, aggressive management of pulmonary and cardiac disease is as important as secondary stroke prevention.

# Complications and Outcome After Acute Stroke

## Does Dysphagia Matter?

*Stroke. 1996; 27: 1200*

- Dysphagia after acute stroke are common, with a reported incidence as high as **47%**
- Patients with an abnormal swallow (dysphagia) on bedside assessment had a higher risk of chest infection ( $P=.05$ ) and a poor nutritional state ( $P<.001$ ).
- The presence of dysphagia was associated with an increased risk of death ( $P=.001$ ), disability ( $P=.02$ ), length of hospital stay ( $P<.001$ ), and institutional care ( $P<.05$ ).
- When other factors were taken into account, dysphagia remained as an independent predictor of outcome only with regard to mortality.

## Reporting of Aspiration Pneumonia or Choking as a Cause of Death in Patients Who Died With Stroke

Chia-Yu Chang, Tain-Junn Cheng, Ching-Yih Lin, Jen-Yin Chen, Tsung-Hsueh Lu and Ichiro Kawachi

*Stroke*. 2013;44:1182

- **Methods**—We used multiple-cause mortality data for the years 2001 to 2010 (CDC WONDER) to identify death certificates with mention of stroke, AP, and choking for analysis.
- **Results**—of 2424 379 death certificates with mention of stroke in the United States between 2001 and 2010
- **5.1%** (n=124 503) reported AP as a cause of death, and **1.5%** (n=36 997) reported choking as a cause of death.
- The analysis to autopsy-confirmed cases, the frequency decreased to **1.3%** (555/42 732) and **1.3%** (541/42 732), respectively.
- The adjusted odds ratios of reporting AP or choking as a cause of death were higher among **men**, increased with **age**, and were higher among decedents who died in **a nursing home/long-term care**.

**Table 1. Frequency and Adjusted OR and 95% CIs of Reporting AP or Choking as a COD on Death Certificates With Mention of Stroke by Year, Sex, Age, Race, and Place of Death in the United States, 2001 to 2010**

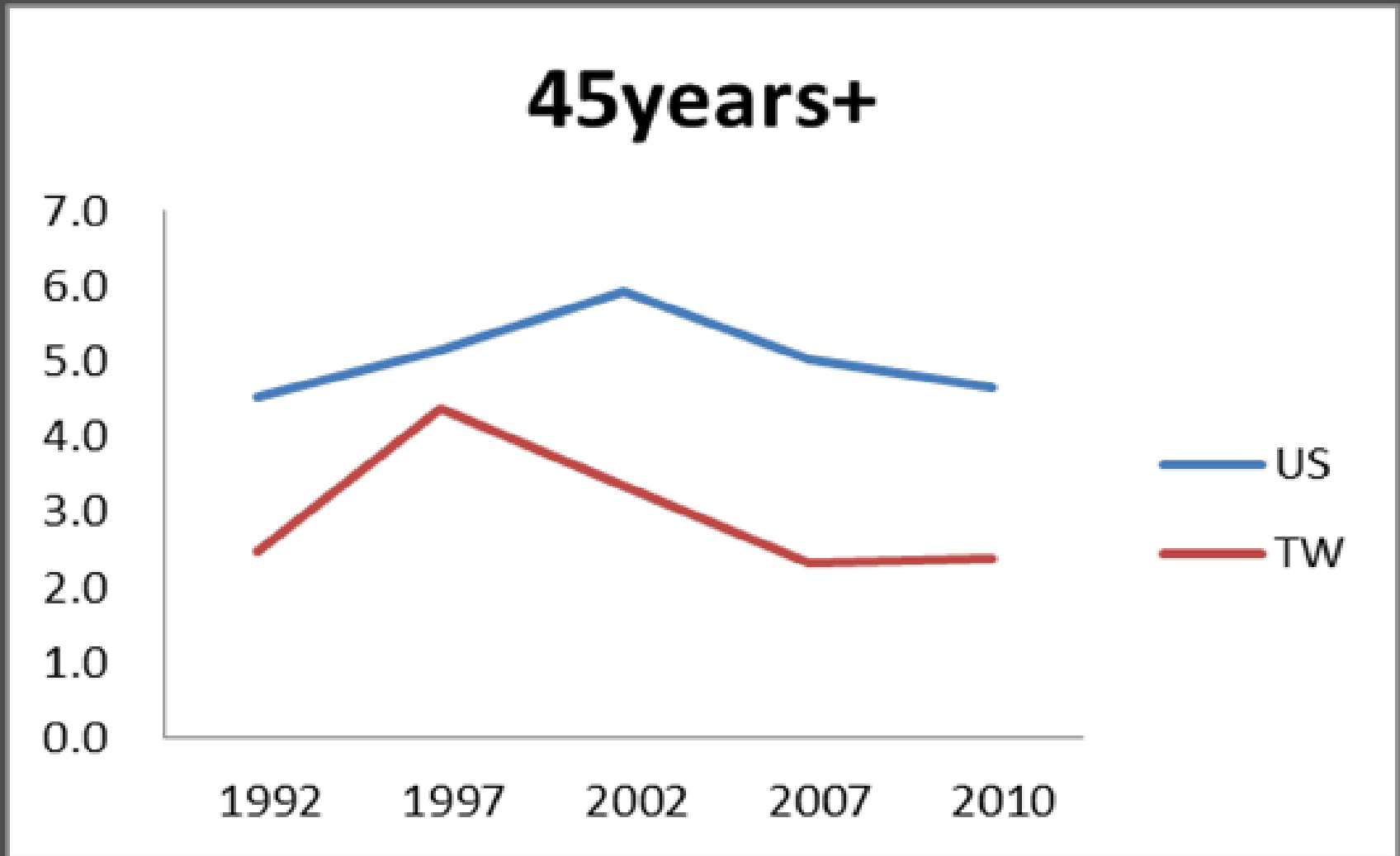
	With Mention of Stroke	Reporting AP as COD				Reporting Choking as COD			
		n	%	OR	95% CI	n	%	OR	95% CI
Total	2 424 379	124 503	5.14			36 997	1.53		
Year									
2001–2002	548 075	32 088	5.85	1.00		9197	1.68	1.00	
2003–2004	517 733	28 494	5.50	0.95	0.93–0.97	8302	1.60	0.96	0.94–0.99
2005–2006	474 030	23 942	5.05	0.88	0.86–0.89	7425	1.57	0.95	0.92–0.98
2007–2008	451 056	20 831	4.62	0.81	0.80–0.83	6457	1.43	0.88	0.85–0.91
2009–2010	433 485	19 148	4.42	0.79	0.78–0.81	5616	1.30	0.80	0.77–0.83
Sex									
Men	999 956	65 777	6.58	1.78	1.76–1.80	18 923	1.89	1.62	1.59–1.65
Women	1 424 423	58 726	4.12	1.00		18 074	1.27	1.00	
Age									
0–44 y	55 232	622	1.13	0.40	0.37–0.44	390	0.71	0.75	0.67–0.83
45–64 y	272 877	7358	2.70	1.00		2572	0.94	1.00	
65–74 y	347 617	16 534	4.76	1.87	1.82–1.92	5078	1.46	1.56	1.49–1.64
≥75 y	1 748 590	99 988	5.72	2.59	2.53–2.65	28 956	1.66	1.89	1.81–1.97
Race									
White	2 051 594	106 781	5.20	1.00		31 841	1.55	1.00	
Black	304 617	13 790	4.53	1.00	0.98–1.02	4217	1.38	1.00	0.97–1.03
Others	68 168	3932	5.77	1.18	1.15–1.22	939	1.38	0.95	0.89–1.01
Place of death									
Inpatient	1 065 818	63 358	5.94	1.00		16 498	1.55	1.00	
NH/LTC	783 431	43 675	5.57	0.85	0.84–0.86	14 055	1.79	1.10	1.07–1.12
Home	325 116	8817	2.71	0.41	0.40–0.42	3193	0.98	0.61	0.58–0.63
Others	250 014	8653	3.46	0.56	0.55–0.57	3251	1.30	0.84	0.81–0.87

AP indicates aspiration pneumonia; CI, confidence interval; COD, cause of death; NH/LTC, nursing home/long-term care; and OR, odds ratio.

# Frequency and adjusted odds ratio of aspiration pneumonia (AP) as a cause of death on death certificates with mention of stroke in the US and Taiwan, 1992–2011

With mention of stroke			Reporting AP as COD in US				Reporting AP as COD in Taiwan			
	US	Taiwan	No	%	OR	95%CI	No	%	OR	95%CI
Year										
1992	255789	16010	11298	4.4	0.98	0.95-1.01	397	2.5	1.25	1.08-1.44
1997	281749	16832	14240	5.1	1.12	1.09-1.15	663	3.9	1.93	1.70-2.20
2002	273761	16471	15947	5.8	1.30	1.27-1.33	464	2.8	1.33	1.16-1.52
2007	228124	17521	11086	4.9	1.08	1.05-1.11	359	2.0	0.93	0.80-1.07
2010.2011*	218647	18003	9892	4.5	1.00		406	2.3	1.00	
Sex				~5%				~2.7%		
Male	519154	48968	33194	6.4	1.82	1.79-1.85	1543	3.2	1.69	1.54-1.85
Female	738916	35869	29269	4.0	1.00		746	2.1	1.00	
Age (years)										
0-44	29953	3481	329	0.2	0.41	0.37-0.46	26	0.2	0.40	0.26-0.59
45-64	133582	16263	3538	1.8	1.00		293	1.3	1.00	
65-74	198081	22073	8975	2.1	1.78	1.71-1.86	622	2.1	1.57	1.37-1.81
75-84	419667	29634	23537	4.9	2.34	2.26-2.43	922	6.9	1.92	1.68-2.19
85+	476787	13386	26084	5.5	2.50	2.41-2.59	426	3.2	2.22	1.90-2.59

# Trend of reporting AP as a cause of death in the age above 45 years old since 1992 to 2011



# Proposed Future Study

- Pulmonary cause (pneumonia and chronic obstructive pulmonary disease) of death in patients who died with stroke
- Cardiac cause (fatal myocardial infarction, fatal arrhythmia, and congestive heart failure) of death in patients who died with stroke
- Trend of major causes of death in patients who died with stroke in United States and Taiwan