

Delirium in the Elderly

Camila Vitar G, M.D

Epidemiology of Aging

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Experience of Delirium

- *“I was already feeling a bit unstable in my mind [. . .] reinforcing that I’m crazy [. . .] I was really worried I was going crazy. It was terrifying”*
- *“That just happens in older people; don’t worry about it”*

Weir E, O’Brien AJ. Don’t go there – It’s not a nice place: Older adults’ experiences of delirium. *Int J Ment Health Nurs*. 2018.

Inouye SK. Delirium—A Framework to Improve Acute Care for Older Persons. *J Am Geriatr Soc*. 2018;66(3):446–51.

Definition

- Acute confusional state characterized by:
 - Inattention
 - Impaired cognition
 - Psychomotor disturbances
 - Fluctuating course

But what about:

- *Duration?*
- *Severity?*
- *Minimum thresholds?*
- *Fluctuation?*

Epidemiology in elderly people

- Prevalence hospitalized older adults:
 - 20% to 50% in general medical–surgical units
 - 70% to 80% in intensive care units
- High rate of mortality:
 - 24 to 76% die within 1 year of the index episode
- Costs the U.S. health care system:
 - > \$150 billion every year
- Predictor of poor patient outcomes
 - Cognitive and functional decline
 - Longer lengths of stay
 - Institutionalization

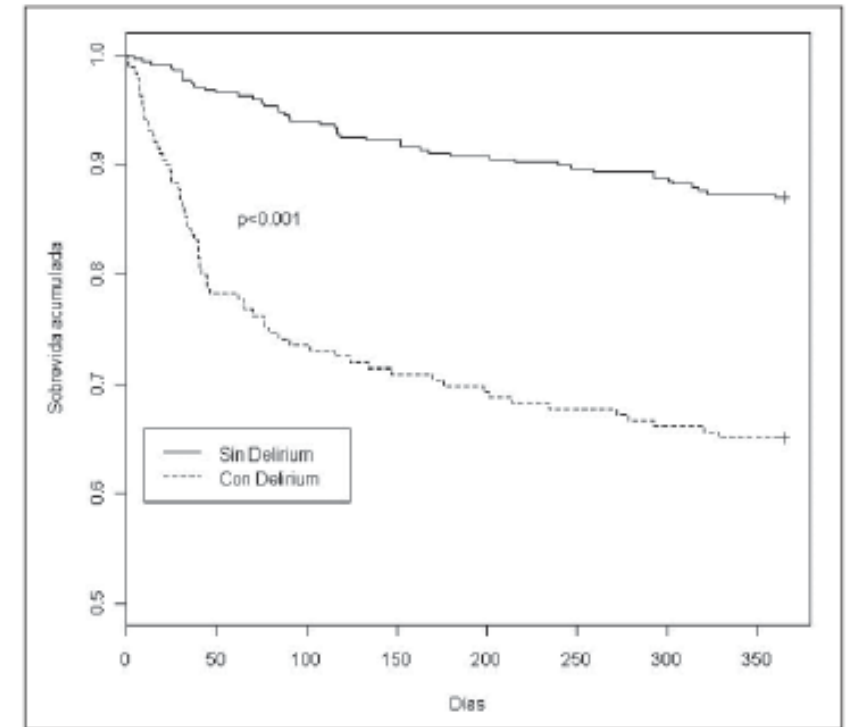


Figura 1. Sobrevivida al año según presencia de *Delirium*.

Inouye SK, Westendorp RG, Saczynski JS. Delirium in elderly people. *Lancet*. 2014;383:911-22.

Siddiqi N, House AO, Holmes JD. Occurrence and outcome of delirium in medical in-patients: a systematic literature review. *Age Ageing*. 2006;35:350-64.

Carrasco M, Accatino-Scagliotti L, Calderón J, Villarroel L, Marín PP, González M. Impacto del delirium en pacientes de edad avanzada hospitalizados: Un estudio prospectivo de cohortes. *Rev Med Chil*. 2012;140(7):847-52.

Who gets Delirium?

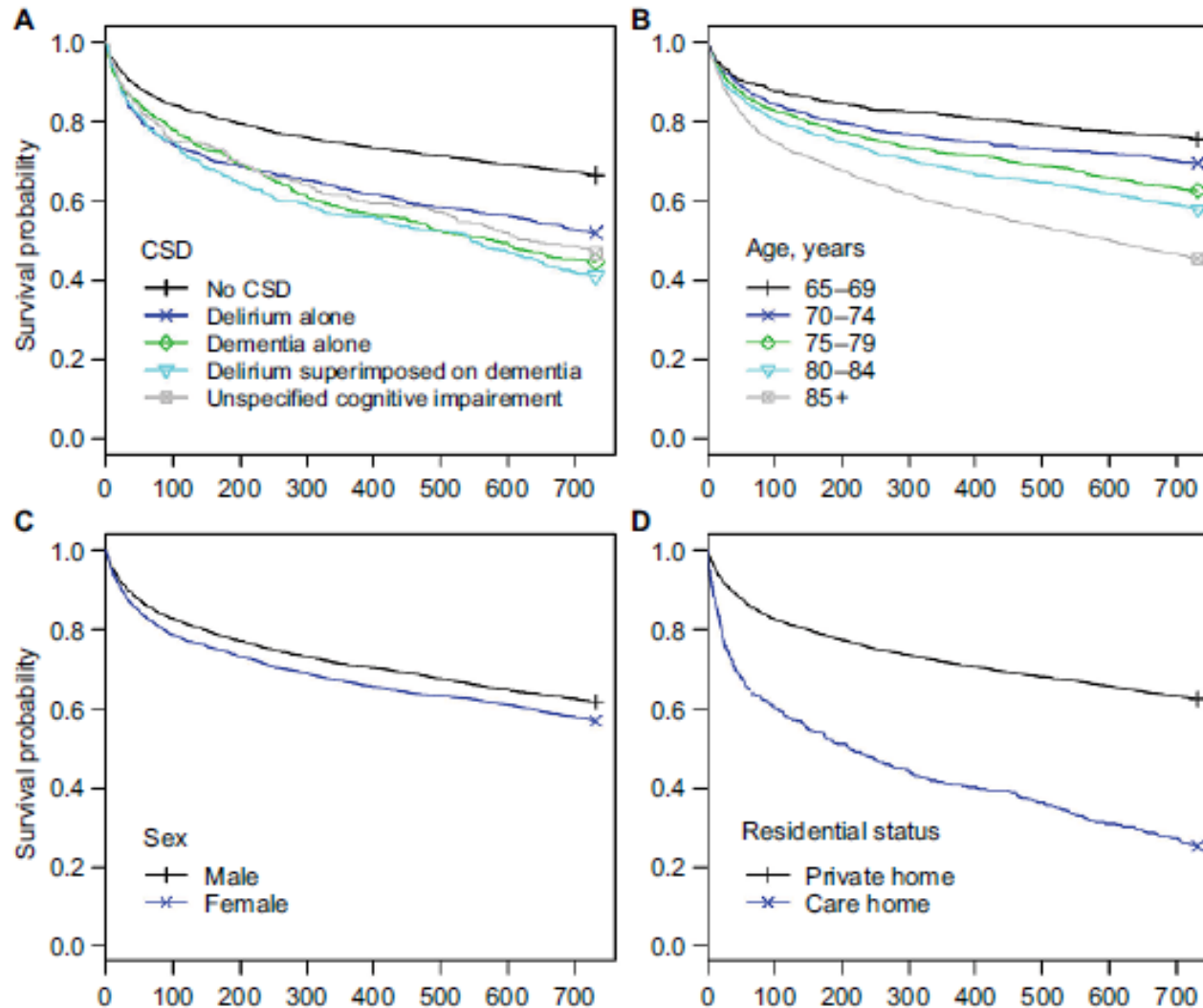
PREDISPOSING FACTORS	PRECIPITATING FACTORS
• Demographic characteristics • Cognitive status • Functional status • Sensory impairment • Decreased oral intake • Drugs • Coexisting medical conditions	• Drugs • Primary neurologic diseases • Intercurrent illnesses • Surgery (POD): Hip fracture-Cardiac • Environmental: pain, ICU, catheter • Prolonged sleep deprivation

Association with Cancer

Table 3 Final neurological diagnoses in geriatric group with cancer and neurological symptoms, compared to non-geriatric patients

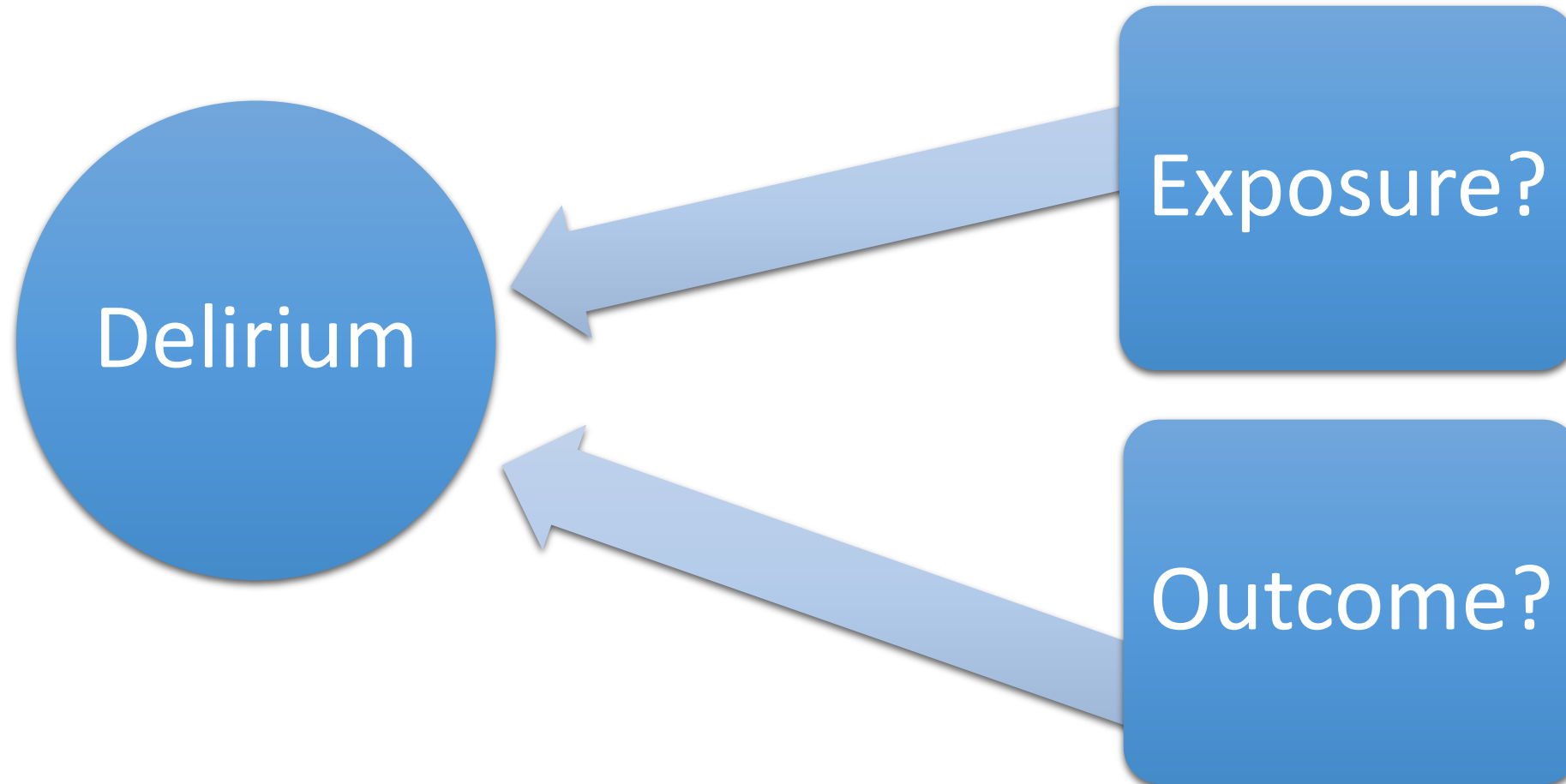
	Total <i>n</i> = 4282	Patients > 65 years of age <i>n</i> = 1149 (27%)	Patients < 65 years of age 3133 (73%)	<i>p</i>	RR (95% CI)
No. of neurologic Dx					
1 <i>n</i> (%)	1636 (54)	547 (67)	1476 (67)	0.7	1.02 (0.9–1.2)
>1 <i>n</i> (%)	1379 (46)	264 (33)	728 (33)	0.8	0.9 (0.9–1.1)
Primary headache <i>n</i> (%)	583 (14)	105 (9)	478 (15)	<0.01	0.6 (0.5–0.7)
→ Abnormal movements <i>n</i> (%)	177 (4)	116 (10)	61 (2)	<0.01	5.2 (3.8–7.0)
Peripheral neuropathy <i>n</i> (%)	663 (15)	177 (15)	486 (16)	0.9	0.9 (0.8–1.2)
Epilepsy/seizures <i>n</i> (%)	396 (9)	67 (6)	329 (11)	<0.01	0.5 (0.4–0.7)
→ Stroke <i>n</i> (%)	288 (7)	109 (9)	179 (6)	<0.01	1.6 (1.3–2.1)
CNs metastases <i>n</i> (%)	670 (16)	117 (10)	553 (18)	<0.01	0.5 (0.4–0.6)
Primary tumor of CNs <i>n</i> (%)	213 (5)	41 (4)	172 (5)	0.01	0.6 (0.5–0.9)
Other <i>n</i> (%)	129 (3)	26 (2)	103 (3)	0.08	0.7 (0.4–1.1)
→ Peripheral vertigo <i>n</i> (%)	124 (3)	51 (4)	73 (2)	0.03	1.9 (1.3–2.7)
→ Dementia <i>n</i> (%)	131 (3)	96 (8)	35 (1)	<0.01	7.5 (5.1–10.9)
Vertebral metastases <i>n</i> (%)	251 (6)	49 (4)	202 (6)	0.07	0.6 (0.5–0.9)
→ Degenerative spine disorder <i>n</i> (%)	164 (4)	58 (5)	106 (3)	0.01	1.5 (1.1–2.04)
Neuroinfection <i>n</i> (%)	85 (2)	15 (1)	70 (2)	0.05	0.5 (0.3–1.0)
Delirium <i>n</i> (%)	228 (5)	88 (8)	140 (4)	<0.01	1.7 (1.3–2.2)
Skull metastases <i>n</i> (%)	60 (1)	11 (1)	49 (2)	0.1	0.6 (0.31–1.7)
Psychiatric condition <i>n</i> (%)	79 (2)	16 (1)	63 (2)	0.1	0.69 (0.4–1.2)
Paraneoplastic neurological syndrome <i>n</i> (%)	41 (1)	7 (<1)	34 (1)	0.1	0.5 (0.2–1.23)

Association with Dementia



Hapca S, Guthrie B, Cvorovic V, Bu F, Rutherford AC, Reynish E, et al. Mortality in people with dementia, delirium, and unspecified cognitive impairment in the general hospital: Prospective cohort study of 6,724 patients with 2 years follow-up. *Clin Epidemiol.* 2018;10:1743-53.

Methods challenge: Confounding



Association with Sarcopenia

- > Sarcopenia  > Delirium
- Elevated concentrations of inflammatory markers
 - Activation of brain microglia
- Neurocognitive changes characteristic of delirium



Table 2

Adjusted Cox regression model estimates of the Prevalence Ratios of sarcopenia on admission to acute geriatric wards.

	Model 1		Model 2		Model 3	
	PR	p	PR	p	PR	p
Delirium on admission (yes/no)	1.76	0.0031	1.78	0.0020	1.66	0.0114
Age, years						
≤80	—	—	0.57	0.0003	0.76	0.0634
80-85	—	—	0.84	0.2581	0.96	0.8122
>85	—	—	1		1	(Ref.)
Marital status						
Unmarried	—	—	1.30	0.5069	1.23	0.5825
Married	—	—	0.84	0.6267	0.81	0.5301
Widowed	—	—	0.87	0.7020	0.88	0.6959
Divorced	—	—	1	(Ref.)	1	(Ref.)
ADL total score	—	—	—	—	0.98	0.5754
IADL total score	—	—	—	—	0.93	0.0060
SPMSQ total score	—	—	—	—	0.95	0.0640
Body mass index						
<18.5	—	—	—	—	2.53	<0.0001
18.5-25	—	—	—	—	1.70	<0.0001
≥25	—	—	—	—	1	(Ref.)
Previous stroke	—	—	—	—	1.51	0.0098
Chronic heart failure	—	—	—	—	1.31	0.0371
Diabetes	—	—	—	—	0.93	0.6228

Bellelli G, Zambon A, Volpato S, Abete P, Bianchi L, Bo M, et al. The association between delirium and sarcopenia in older adult patients admitted to acute geriatrics units: Results from the GLISTEN multicenter observational study. *Clin Nutr.* 2018;37(5):1498–504.

Association with **Frailty**

- Common pathophysiological pathway?
 - Altered inflammatory status
- Delirium as a clinical consequence of frailty in older people?
- Is Delirium a marker of pre –existing frailty?
- Biomarkers?