Società Italiana di Gerontologia e Geriatria

14° Corso Infermieri 28-29 Novembre 2013

SIMPOSIO: Delirium
29 novembre 2013

Delirium superimposto a demenza

Giuseppe Bellelli

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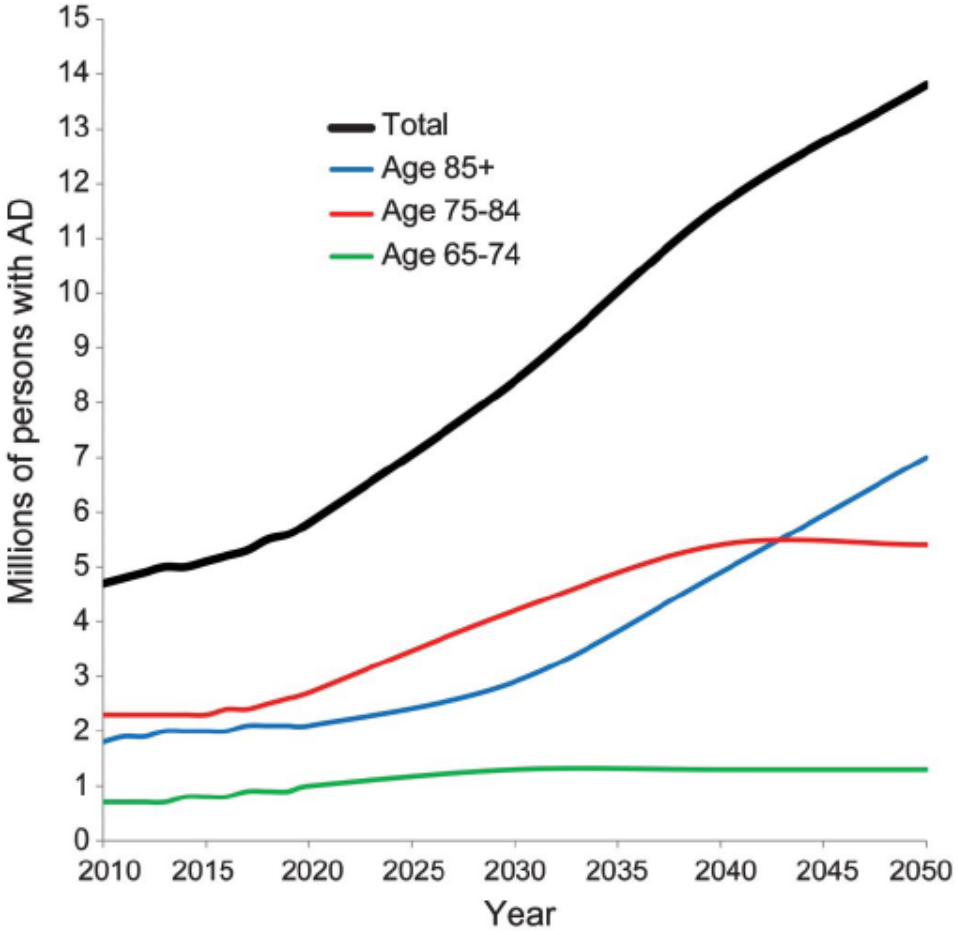
UNIVERSITÀ DEGLI STUDI DI MILANO BICOCCA

Gruppo di ricerca geriatrica

Estimated number of people with Alzheimer disease (AD) in the United States in 2010 and projections through 2050

Figure 1 Estimated number of people with Alzheimer disease (AD) in the United States in 2010 and projections through 2050



Hebert L, Neurology 2013

Table 1 Cohort characteristics ($n = 617$)

Variables	
Gender, female: %	59.0
Age, years: %	
70–79	37.1
80–89	43.5
90+	19.5
Place of residence, %	
Private home	71.0
Sheltered housing	7.6
Residential home	6.8
Nursing home	14.7
Mini-Mental State Examination score, %	
24–30	52.1
16–23	22.8
0–15	25.1
DSM–IV criteria met for dementia, %	
No	57.6
Yes	42.4
Known diagnosis of dementia prior to index admission, %	21.1
Functional Assessment Staging score, %	
1. No functional impairment	42.8
2–5. Subjective functional deficit, objective functional deficit, difficulties with activities of daily living	29.2
6a–c. Help required putting on clothes, toileting or bathing	11.1
6d–e. Urinary and faecal incontinence	10.3
7a–f. Speaks 5–6 words, speaks 1 word, can no longer walk, sit up, smile, hold up head	6.5
Charlson score, mean (s.d.)	2.8 (2.1)
Acute Physiology and Chronic Health Evaluation II score, mean (s.d.)	12.1 (3.7)

Dementia in the acute hospital: prospective cohort study of prevalence and mortality

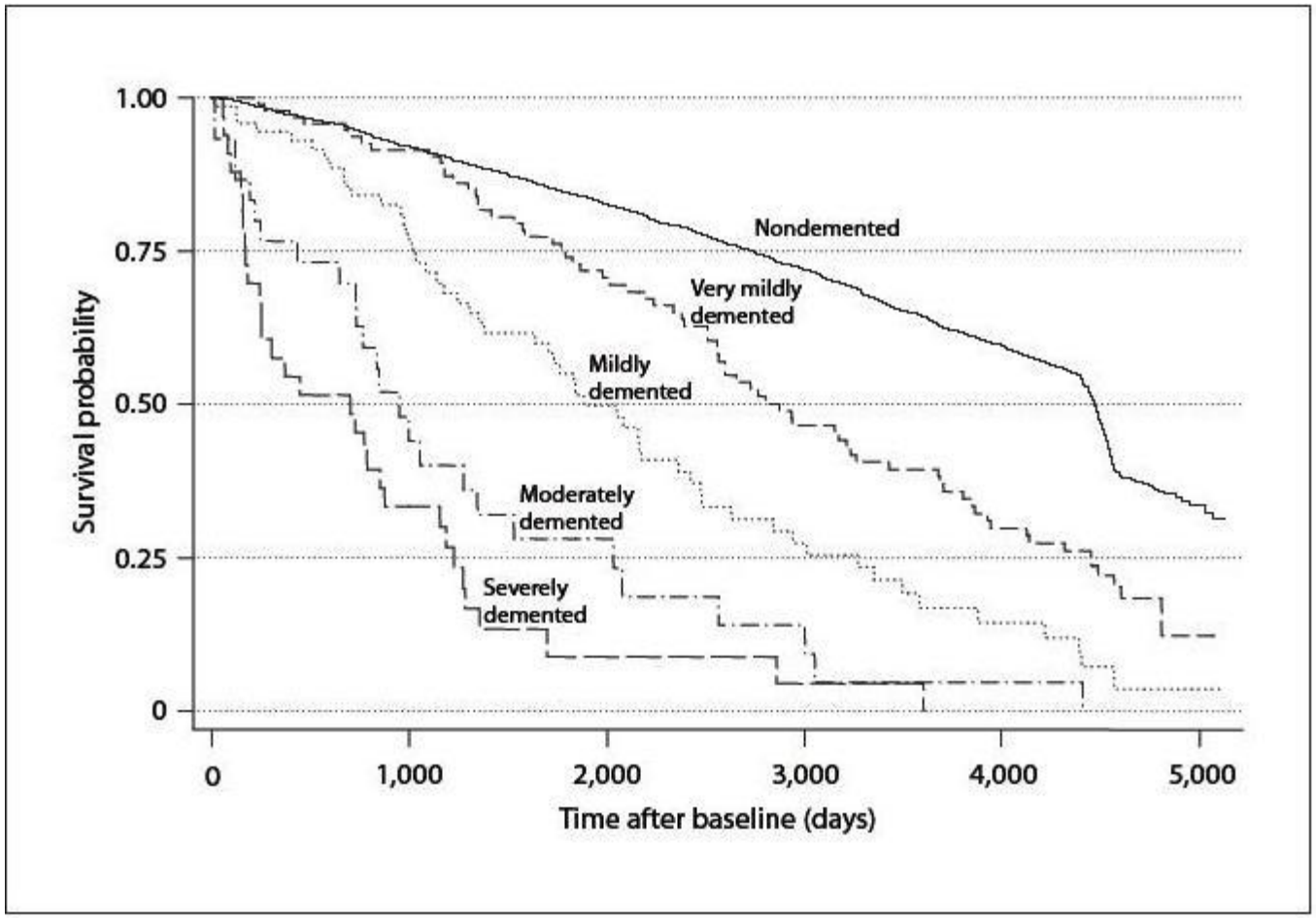
Elizabeth L. Sampson, Martin R. Blanchard, Louise Jones, Adrian Tookman and Michael King

Results

Of the cohort, 42.4% had dementia (only half diagnosed prior to admission). In men aged 70–79, dementia prevalence was 16.4%, rising to 48.8% of those over 90. In women, 29.6% aged 70–79 had dementia, rising to 75.0% aged over 90. Urinary tract infection or pneumonia was the principal cause of admission in 41.3% of the people with dementia. These individuals had markedly higher mortality; 24.0% of those with severe cognitive impairment died during admission adjusted mortality risk 4.02, 95% CI 2.24–7.36).

BJPsych The British Journal of Psychiatry (2009) 195, 61–66. doi: 10.1192/bjp.bp.108.055335

Very mild to severe dementia and mortality: a 14-years follow-up-study- The Odense study



Andersen K, Dement Geriatr Cogn Disord 2010

Delirium superimposto a demenza (DSD)

- condizione clinica in cui il delirium si sovrappone ad una condizione di demenza già pre-esistente in accordo con i criteri diagnostici più utilizzati

Fick, 2002; Boland 1998, Korn-Lubetzk, 2007
Bellelli, 2007, Bellelli, 2010, Morandi 2013

Le difficoltà nella diagnosi del DSD

- L'incidenza di delirium nei pazienti ospedalizzati con demenza è superiore al 65%, motivo per cui una diagnosi di DSD non è da escludere ma è, anzi, altamente probabile
- La depressione può anche essere confusa
  - con una forma di DSD ipocinetico
  - Nonconvulsive status epilecticus
  - Lewy Body dementia

Fick, 2002; Boland 1998, Korn-Lubetzk, 2007

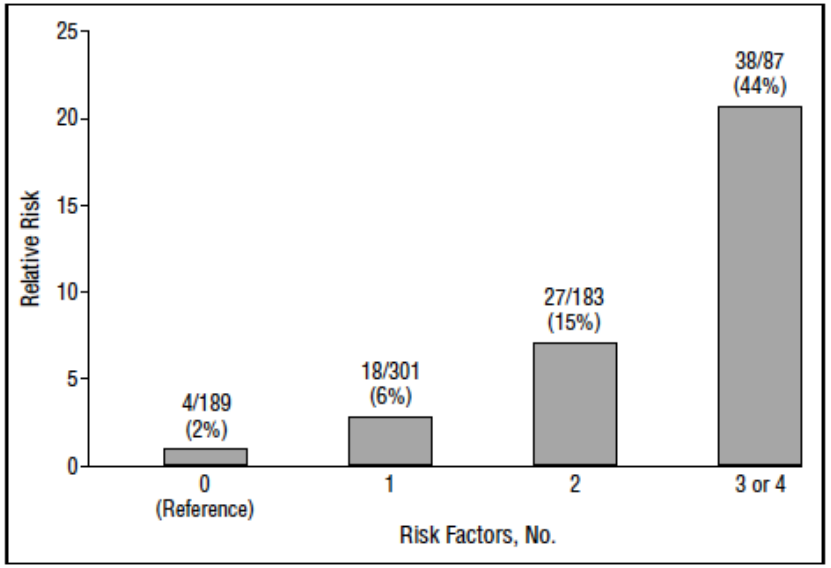
Nurses' Recognition of Delirium and Its Symptoms

Comparison of Nurse and Researcher Ratings

Sharon K. Inouye, MD, MPH; Marquis D. Foreman, PhD, RN; Lorraine C. Mion, PhD, RN; Karol H. Katz, MS; Leo M. Cooney, Jr, MD

Table 5. Final Independent Risk Factors Associated With Underrecognition of Delirium by Nurses in 760 Patients*

Variable	Adjusted OR (95% CI)
Hypoactive delirium	7.4 (4.2-12.9)
Age ≥80 y	2.8 (1.7-4.7)
Vision impairment	2.2 (1.2-4.0)
Dementia	2.1 (1.2-3.7)



Caratteristiche cliniche di 1102 pazienti anziani ricoverati consecutivamente presso ACE unit S Gerardo hospital

Sesso, femminile%	58.4
Età, anni: %	84.3±7.9
70-79	22.7
80-89	55.0
90+	22.2
proveniente da RSA	7.6
Diagnosi di demenza pre-esistente all'ospedalizzazione	31.6
Delirium all'ammissione	24.0
DSD (delirium superimposto a demenza	60.6
Delirium isolato	39.4
Mini Mental State Examination score, % (n= 821)	
24-30	41.9
16-23	29.4
0-15	28.7
Malnutrition, Mini Nutritional Assessment < 8	36.6
SOFA score, ≥ 4, %	20.6

Bellelli et al, unpublished

Perché è importante diagnosticare il DSD?

ONLINE FIRST

Delirium Among P...ry

Alden L. Gross, PhD... MD, PhD;
Douglas Tommet, M... D, MPH

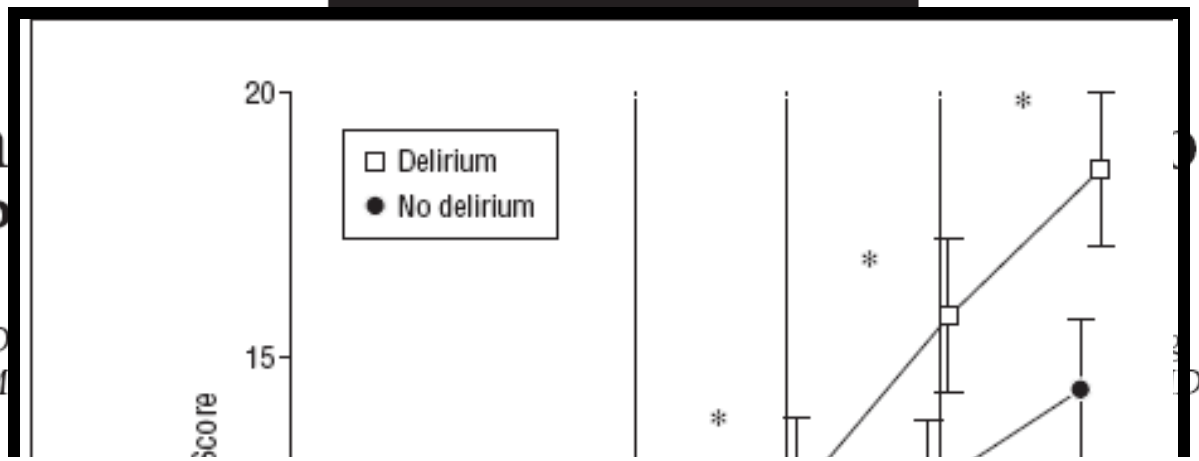


Table 4. Comparison of Changes in Cognitive Scores During Follow-up Periods Among 263 Patients in the MADRC Hospitalized Cohort

Variable[a]	Blessed IMC Points (95% CI) per Year[b]			
	Preindex	Postindex 1	Postindex 2	Long-term Follow-up
Delirium group (n = 148)				
Observed	1.7 (1.2 to 2.2)	2.1 (1.6 to 2.6)	1.7 (1.3 to 2.1)	2.2 (1.7 to 2.7)
Adjusted model	1.4 (0.7 to 2.1)	3.1 (2.1 to 4.1)	3.2 (2.6 to 3.8)	3.1 (2.5 to 3.7)
No delirium group (n = 115)				
Observed	0.9 (0.5 to 1.3)	1.3 (0.8 to 1.8)	0.9 (0.4 to 1.4)	1.7 (1.2 to 2.2)
Adjusted model	0.8 (0.3 to 1.3)	1.4 (0.2 to 2.6)	2.0 (1.3 to 2.7)	1.9 (1.4 to 2.4)
Group difference (N = 263)[c]				
Observed	0.8 (-0.1 to 1.7)	0.8 (0.1 to 1.6)	0.8 (0.0 to 1.7)	0.5 (-0.7 to 1.7)
Adjusted model	0.6 (-0.1 to 1.3)	1.7 (0.3 to 3.1)	1.2 (0.5 to 2.1)	1.2 (0.5 to 1.8)

Abbreviations: Blessed IMC, Blessed Dementia Rating Scale information-memory-concentration section (higher Blessed IMC scores indicate poorer cognitive function); MADRC, Massachusetts Alzheimer Disease Research Center.

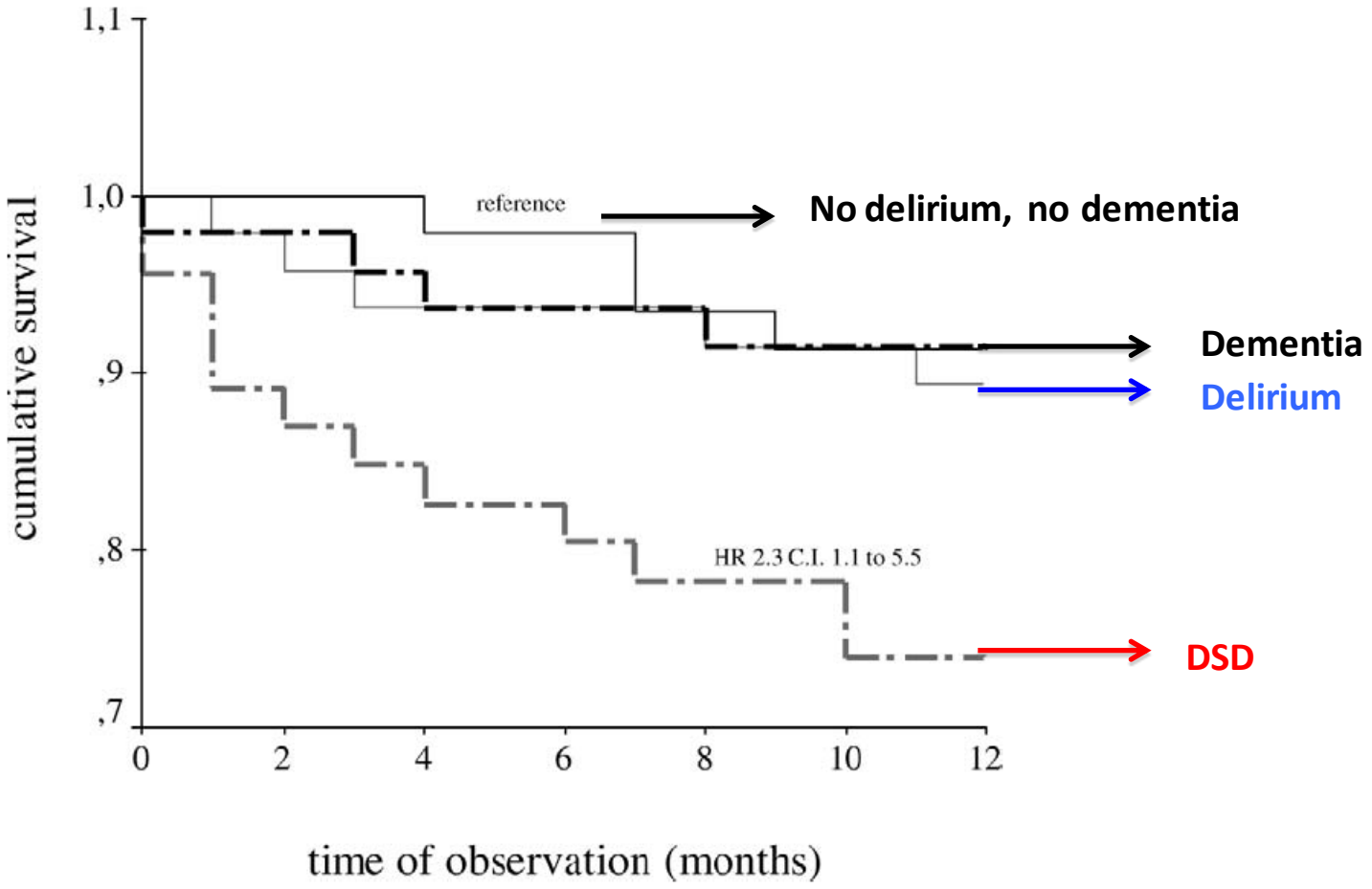
[a] Adjusted models are adjusted for age, sex, years of education, family history of Alzheimer disease, dementia severity, number of comorbidities, and duration of Alzheimer disease symptoms before diagnosis.

[b] Preindex is years before index hospitalization, Postindex 1 is years 0 to 1, Postindex 2 is years 1 to 2, and Long-term Follow-up is years 2 to 5.

[c] Group differences in Blessed IMC score between delirium and no delirium groups.

Arch Intern Med 2012;156:848-856

DSD e mortalità



Bellelli G, et al. J Gerontol A BiolSciMedSci 2007;62:1306-1309

Tiziana Torpilliesi[1,2], Giuseppe Bellelli[1,2], and Marco Trabucchi[2,3]

Delirium superimposed on dementia is more predictive of adverse outcomes than dementia alone

Table 1 Characteristics of 2340 patients admitted to a Rehabilitation and Aged Care Unit between 2002–2006

	No Del–No Dem ($n=1450$)	Dem alone ($n=573$)	Del alone ($n=108$)	DSD ($n=209$)	p
Age, years	77.2 ± 6.9	81.3 ± 6.6	79.4 ± 6.5	83.2 ± 7.0	0.000
Female, *n* (%)	1072 (19.3)	442 (77.1)	79 (73.1)	149 (71.3)	0.311
Living alone, *n* (%)	559 (39.0)	177 (31.1)	56 (26.8)	56 (26.8)	0.000
Transferred from acute hospital wards, *n* (%)	541 (38.2)	155 (28)	71 (67.6)	118 (57.3)	0.000
Body Mass Index (BMI), kg/cm^2	26.1 ± 14.5	24.3 ± 4.7	23.7 ± 4.6	22.8 ± 11.9	0.000
Charlson comorbidity index	2.3 ± 2.1	3.7 ± 2.1	3.0 ± 2.7	3.7 ± 2.2	0.000
Barthel Index (1 month before) (0–100)	87.4 ± 18.4	71.7 ± 25.1	83.7 ± 22.4	67.6 ± 25.5	0.000
Barthel Index on admission (0–100)	64.3 ± 24.3	50.5 ± 27.7	42.7 ± 25.9	27.5 ± 21.5	0.000
Mini Mental State Examination (0–30)	25.6 ± 4.0	18.7 ± 5.6	22.3 ± 5.9	14.8 ± 6.1	0.000
No. of drugs on admission	5.2 ± 2.4	5.1 ± 2.3	5.9 ± 2.9	5.5 ± 2.6	0.019
No. of drugs on discharge	4.8 ± 2.0	4.7 ± 1.9	4.4 ± 1.7	4.4 ± 2.1	0.006
Total length of stay, days	22.8 ± 9.5	23.2 ± 9.0	27.5 ± 12.2	27.1 ± 10.7	0.000
Institutionalized at discharge, *n* (%)	55 (3.8)	41 (7.2)	12 (11.3)	42 (20.4)	0.000

Int J Geriatr Psychiatry 2010; **25**: 433–436.

Mixed-effect logistic regression on the effect of DSD on walking dependence at rehabilitation discharge and at 1-year follow-up (2462 patients, Ancelle della Carità hosp, Cremona)

Variables	Odds Ratio	95% Confidence Interval	P value
No delirium no dementia	Ref.		
-Dementia	3.45	2.39-4.97	0.000
- Delirium	4.31	2.08-8.94	0.000
- DSD	15.50	5.62-42.67	0.000
Age	1.03	1.02- 1.04	0.000
Length of stay	1.05	1.05- 1.08	0.000
Charlson Index	1.35	1.19- 1.53	0.000
Walking dependence pre-admission	8.25	6.50-10.45	0.000
PCR admission, (mg/dl)	1.14	1.02- 1.27	0.02
Effect of diagnosis on change over time	0.71	0.58-0.71	0.000
Change over time (slope)	0.72	0.59-0.87	0.000

Morandi et al. submitted JAMDA

Journal of Gerontology: MEDICAL SCIENCES
2005, Vol. 60A, No. 6, 748–753

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Delirium Superimposed on Dementia in a Community-Dwelling Managed Care Population: A 3-Year Retrospective Study of Occurrence, Costs, and Utilization

Donna M. Fick,[1,2,3] Ann M. Kolanowski,[3] Jennifer L. Waller,[1] and Sharon K. Inouye[4]

Table 2. Paid Costs and Utilization in U.S. Dollars by Matched Comparison Groups

	DSD ($N = 699$)		Dementia Only ($N = 699$)		Delirium Only ($N = 699$)		Control ($N = 699$)		Overall
Cost and Utilization Variable	Mean	(*SD*)	Mean	(*SD*)	Mean	(*SD*)	Mean	(*SD*)	*p* Value
Total cost, $	9566*†‡	(18232)	7557	(13056)	9422	(23341)	4766	(6644)	<.001
Facility cost, $	5582*‡	(14215)	3654	(9212)	5312	(18751)	2471	(4565)	<.001
Provider cost, $	2603‡	(3754)	2303	(5779)	2407	(3497)	1630	(2070)	<.001
Prescription cost, $	1067‡	(3103)	1309	(3152)	1368	(3581)	424	(1497)	<.001
Inpatient admissions, No.	3.1	(4.0)	2.0	(3.1)	2.6	(3.3)	1.4	(2.6)	<.001
Outpatient visits, No.	5.7	(7.8)	5.6	(7.4)	5.8	(7.4)	4.7	(5.8)	0.021
Office visits, No.	44	(39)	49	(42)	55	(44)	56	(50)	<.001
Emergency room visits, No.	3.1*†‡	(4.2)	2.2	(4.0)	2.2	(3.0)	1.2	(2.2)	<.001
Skilled nursing home visit stays, No.	0.5*†‡	(1.7)	0.2	(0.9)	0.2	(1.0)	0.0	(0.3)	<.001
Filled prescriptions, No.	28	(72)	37	(75)	39	(86)	14	(42)	<.001
Unique prescriptions, No.	4	(10)	6	(11)	6	(11)	2.6	(7.4)	<.001

I costi medi totali in un periodo di 3 anni erano di $9,565 per il gruppo DSD, 7,556 per il gruppo con sola demenza, $9,422 per il gruppo con solo delirium e $4,765 per il gruppo di controllo.

Come migliorare il (ri)conoscimento del DSD

Think delirium (DSD)

“Il delirium dovrebbe essere sospettato in ogni paziente ospedalizzato per malattia acuta (o cronica riacutizzata) con pre-esistente diagnosi di demenza. Nel dubbio, è meglio escludere (dapprima) la presenza di delirium che attribuire lo stato confusionale alla demenza, e “fallire” nel riconoscimento del DSD

Validation of the 4AT for delirium detection a new instrument for rapid delirium screening: a study in 234 hospitalised older people

Giuseppe Bellelli, Alessandro Morandi, Daniel Davis, Paolo Mazzola, Renato Turco, Simona Gentile MD, Tracy Ryan, Helen Cash, Fabio Guerini, Tiziana Torpilliesi, Francesco Del Santo, Marco Trabucchi, Giorgio Annoni, Alasdair MacLullich

Popolazione: **pazienti over 70 ricoverati presso la SC Clinicizzata di Geriatria dell'Ospedale San Gerardo (Monza) ed il Dipartimento di Riabilitazione della Clinica Ancelle (Cremona)**

Reference standard per la diagnosi di delirium: DSM-IV-TR

Age Ageing 2013; In Press

Cerchiare la risposta

[1] ALLERTA

Questo test include pazienti che possono essere considerati soporosi (per esempio pazienti per il quale sia difficile svegliarsi e/o che sono evidentemente soporosi durante questo test) oppure agitati/iperattivi. Osservare il paziente. Se dorme, provare a svegliarlo parlandogli o con un leggero tocco sulla spalla. Chiedere ai pazienti di dichiarare il proprio nome ed indirizzo per collaborare alla valutazione.

Normale (completamente attento,ma non agitato durante tutta la valutazione)	**0**
Moderata sonnolenza per meno di 10 secondi dopo il risveglio, poi normale	**0**

[2] AMT4

Età ,data di nasci

4 o più: possibile delirium +/- deterioramento cognitivo (necessarie informazioni più dettagliate);
1-3: possibile deterioramento cognitivo (altri test necessari);
0: improbabile delirium o deterioramento cognitivo (ma delirium può essere presente se il punto 4 è incompleto)

[3] ATTENZIONE

Chiedere al paziente: "per favore, mi dica i mesi dell'anno in ordine contrario, partendo da dicembre""
Per aiutare l'iniziale comprensione della domanda, è consentito un suggerimento come : "qual è il mese prima di dicembre?"

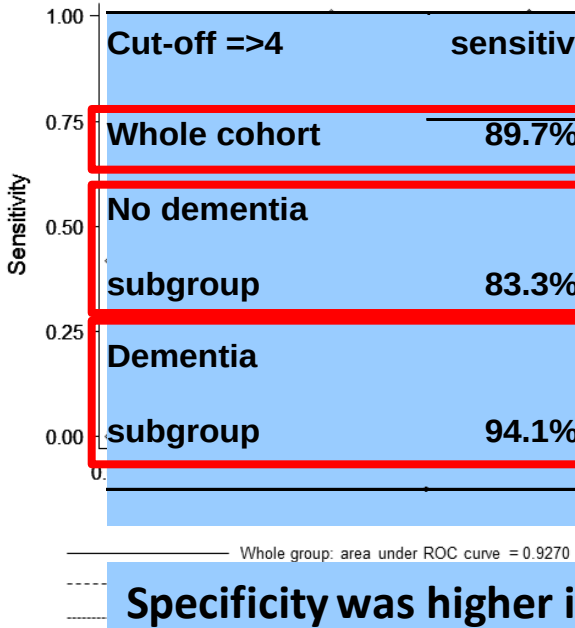
Mesi dell'anno al contrario	nomina senza errori 7 mesi o più	**0**
	inizia, ma nomina meno di 7 mesi / si rifiuta di iniziare	**1**
	test non effettuabile (poiché il paziente è indisposto, assonnato o disattento)	**2**

[4] ACUTO CAMBIAMENTO O DECORSO FLUTTUANTE

Dimostrazione di evidente cambiamento o andamento fluttuante in: attenzione, comprensione o altre funzioni mentali (ad esempio. paranoia, allucinazioni)che si sono presentate nelle ultime 2 settimane e che sono ancora presenti nelle ultime 24 ore

No	**0**
Si	**4**

Caratteristiche dello strumento



Cut-off =>4	sensitivity	specificity	LR+	LR-	AUROC
Whole cohort	89.7%	84.1%	5.624	0.123	0.927
No dementia subgroup	83.3%	91.3%	9.615	0.183	0.921
Dementia subgroup	94.1%	64.9%	2.682	0.091	0.891

Specificity was higher in the subgroup of patients without dementia, while sensitivity was higher in those with dementia

DSD: non solo testa ma attenzione anche al movimento!

Are Fluctuations in Motor Performance a Diagnostic Sign of Delirium?

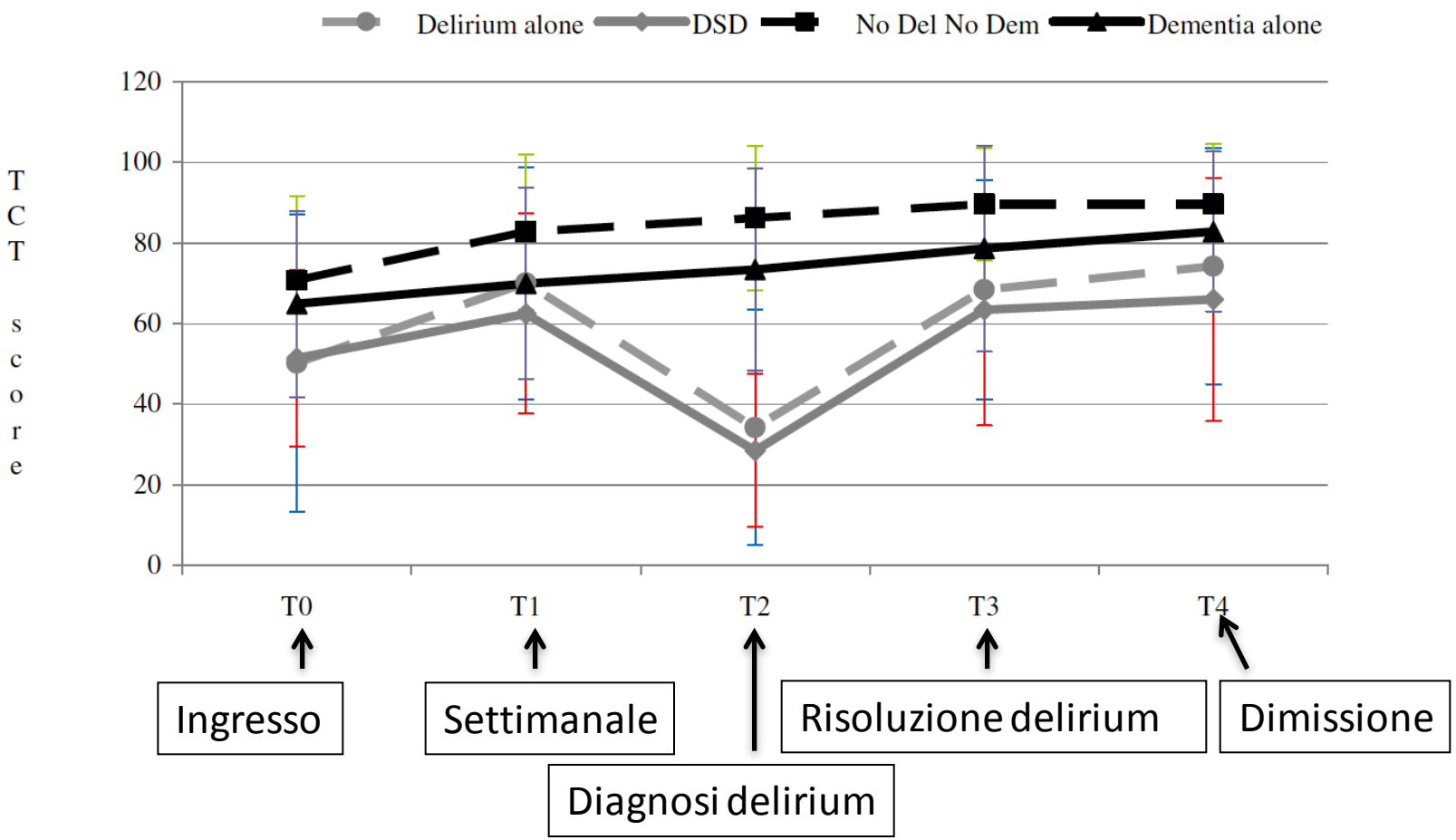
Giuseppe Bellelli, MD, Salvatore Speciale, MD, Sara Morghen, PsyD, Tiziana Torpilliesi, MD, Renato Turco, MD, and Marco Trabucchi, MD

Table 1. *Baseline Characteristics of the 4 Study Groups*

	Delirium Alone (n = 15)	DSD (n = 15)	No Del–No Dem (n = 15)	Dementia Alone (n = 15)	*P*
Demographics					
Age, y	81.4 ± 6.2	84.8 ± 6.8	79.3 ± 4.6	83.2 ± 5.6	.06
Female, n (%)	11 (73.3)	10 (66.7)	10 (66.7)	12 (80.0)	.82
Education, y	5.8 ± 3.3	5.7 ± 2.1	6.2 ± 2.8	4.4 ± 1.4	.22
Living alone, n (%)	3 (20.0)	3 (20.0)	8 (53.3)	6 (40.0)	.14
Biological and somatic health status					
Body Mass Index, kg/m^2	23.9 ± 4.0	22.7 ± 4.2	25.8 ± 3.6	24.4 ± 4.6	.25
Albumin serum levels, g/dL	3.3 ± 0.3	3.3 ± 0.5	3.6 ± 0.3	3.2 ± 0.9	.20
No. of drugs on admission	6.0 ± 2.0	6.5 ± 2.0	5.9 ± 2.2	6.0 ± 3.0	.89
Charlson comorbidity index	2.0 ± 1.9	3.6 ± 1.8^{c}	1.3 ± 1.4^{b}	2.8 ± 1.8	.007
Primary diagnosis, n (%)					
Postorthopedic surgery	2 (13.3)	3 (20.0)	3 (20.0)	1 (6.7)	.74
Neurological and musculoskeletal gait disorders	2 (13.3)	3 (20.0)	1 (6.7)	1 (6.7)	
Cardiologic and respiratory diseases	11 (73.3)	9 (60.0)	11 (73.3)	13 (86.7)	
Mini Mental State Examination (0–30)	23.2 ± 2.4^{b,c,d}	12.0 ± 4.8^{a,c,d}	27.2 ± 1.2^{a,b,d}	17.8 ± 4.4^{a,b,c}	<.005
Clinical Dementia Rating Scale (0–5)	0.7 ± 0.6^{b}	2.1 ± 1.0^{a,c}	0.03±1.2^{b,d}	1.4 ± 0.9^{c}	<.005
Barthel Index on admission (0–100)	49.0 ± 25.6^{c}	34.7 ± 23.6^{c,d}	79.9 ± 12.1^{a,b}	64.5 ± 17.4^{b}	<.005
Total length of rehabilitation stay, days	40.2 ± 11.6	38.4 ± 14.3	31.2 ± 7.6	35.8 ± 10.8	.16

JAMDA 2011 Oct;12:578-83

Trunk control score e delirium

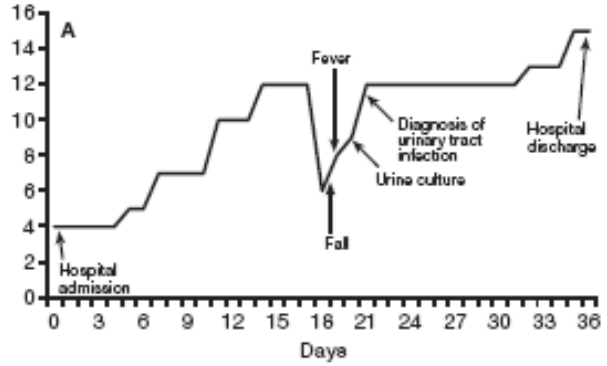


Bellelli et al. JAMDA 2011 Oct;12:578-83

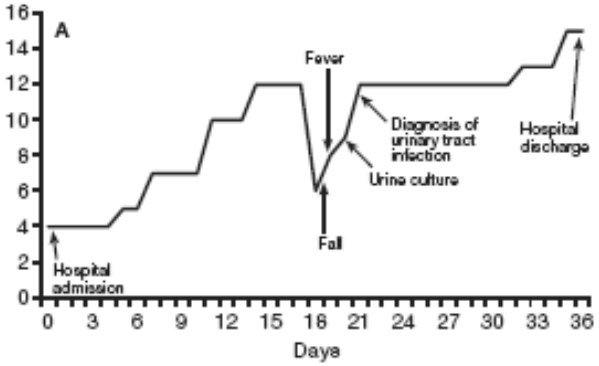
A sudden decline in mobility status as an early sign of acute infection in elderly patients: evidence from three case reports

Giuseppe Bellelli[1,2], Fabio Guerini[2,3], Anna Paola Cerri[1] and Marco Trabucchi[2,4]

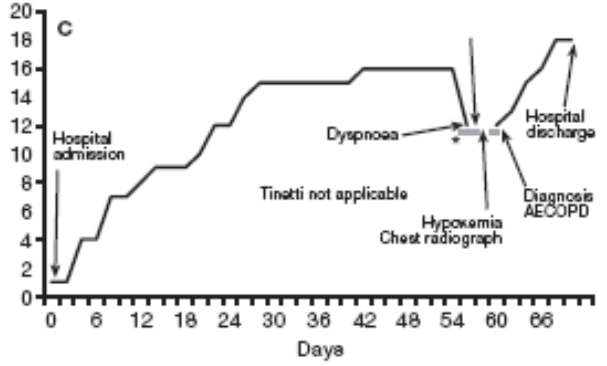
[1]Department of Clinical and Preventive Medicine, University of Milano-Bicocca, Milan Geriatric Clinic, San Gerardo University Hospital, Monza, [2]Geriatric Research Group, Brescia, [3]Department of Rehabilitation and Aged Care, Ancelle della Carità Hospital, Cremona, [4]University Tor Vergata, Rome, Italy



Functional trend measured with Tinetti scale before and after UTI



Functional trend measured with 6'WT before and after pneumonia



Functional trend measured with Tinetti scale before and after AECOPD

Aging Clin Exp Res vol 24 No 3

Conclusioni

- Il DSD è una condizione di frequente nella pratica clinica;
- Poiché la prevalenza delle forme di demenza crescerà nei prossimi anni è ragionevole ipotizzare che il DSD sarà sempre più di frequente riscontro negli ospedali ed in tutti i luoghi di cura con pazienti anziani
- Il DSD Impatta in modo significativo su outcomes a lungo e breve termine (cognitività e mortalità)
- Il 4AT potrebbe essere uno strumento utile per standardizzare l'approccio diagnostico al DSD
- Le alterazioni repentine dello stato funzionale possono essere utilizzate come strumento clinico (segnapassi) per sospettare la presenza di DSD in pazienti anziani con grave deficit cognitivo

http://www.europeandeliriumassociation.com
http://www.psicogeriatria.it/congressi/