

Centre for Research in Geriatric Medicine

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*THE ISSUE OF DEMENTIA IN THE ACUTE  
HOSPITAL SETTING*

**Catherine Travers, Len Gray, Gerard Byrne, Nancy Pachana**

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THE UNIVERSITY  
OF QUEENSLAND  
AUSTRALIA

# *Study Aims*

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- To determine the incidence and prevalence of dementia among patients admitted to acute public hospitals in and around Brisbane, Australia.
- What happens to patients with dementia when they are admitted?
- Do their outcomes differ from same-aged patients without dementia?

*In addition:*

- How well do hospitals respond to the needs of patients with dementia?

# *Method*

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493 patients aged 70 years and older, consecutively admitted to one of four Brisbane acute public hospitals recruited into the study.

Recruitment was undertaken from November 2008 – May 2010.

## *Inclusion criteria*

>70 years, admitted to an acute care ward for an expected admission of at least 48 hours or more,

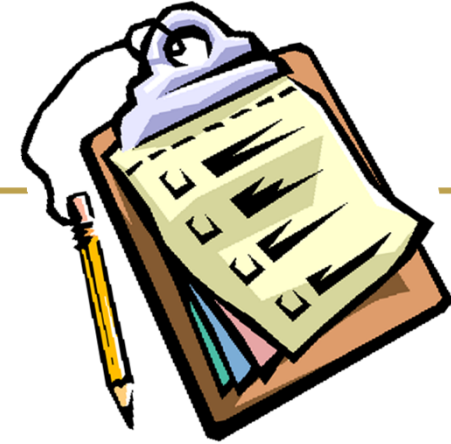
Recruitment occurred Monday – Friday due to Assessor availability,

Patients were assessed within 24 hours of their admission.



## *Measures included:*

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- InterRAI Acute Care (AC)
- Mini Mental Status Examination (MMSE)
- Confusion Assessment Method (CAM)
- Vulnerable Elders Survey – 13
- Delirium Rating Scale – Revised (DRS-R98)
- Geriatric Depression Scale – 5
- Informant Questionnaire for Cognitive Decline in the Elderly (IQCODE)
- Neuropsychiatric Inventory
- Adverse events assessed daily – pain, falls, continence,
- 28 day telephone follow-up – re-admission, death

# *Diagnosis of Cognitive Impairment*

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A two-step process was adopted to determine whether a patient had cognitive impairment.

## Step 1:

A preliminary decision was made using the patients test scores:

- (i) Likely pre-morbid dementia (MMSE  $\leq$  20 AND CAM = 0);
- (ii) No likely pre-morbid dementia (MMSE  $\geq$  24); or
- (iii) Uncertain (MMSE missing; MMSE 21-23; MMSE  $\leq$  20 AND CAM  $\geq$  1)

# *Geriatrician Review*

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## Step 2:

To assess the reliability of this initial classification, a subset of cases were independently reviewed by two geriatricians.

Similarly, the geriatrician determined whether the patient had a delirium at admission, or subsequently

- (i) Likely delirium
- (ii) Delirium not likely

# Results

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**Total Participants = 493**

Females = 288 (58.4%); Males = 205 (41.6%)

Average age = 80.4 years (SD = 6.5)  
(range = 70 - 99 years)

General medical wards = 293 (59.4%);  
Surgical wards = 140 (28.4%); Orthopaedic wards = 59 (12.0%)

MMSE Average = 24.8 (SD = 4.9) range = 0 – 30;  
Unable to complete = 22

Likely pre-morbid dementia = 99 (20.0%)  
Pre-morbid dementia not likely = 394 (80.0%)

# Results



	Likely Pre-morbid Dementia (n = 99)	Pre-morbid Dementia not likely (n = 394)
Age (average)	84.6 (SD = 5.9)	79.3 yrs (SD = 6.2); p = 0.000**
Gender	F = 65 (65.7%); M = 34 (34.3%)	F = 223 (56.6%), M = 171 (43.4%). n.s.
Marital status	Married n = 38 (39.2%) Widowed n = 48 (49%) Never married n = 6 (6.1%) Sig other n = 0 Sep/Divorced n = 6 (6.1%)	Married n = 172 (44%) Widowed n = 135 (34.5%) Never married n = 36 (9.2%) Sig other n = 7 (1.8%) Sep/Divorced n = 38 (8.7%); n.s.
Level of education	Primary level n = 16 (20.5%) Secondary level n = 49 (62.8%) Certificate/Trade n = 11 (14.1%) Tertiary n = 2 (2.6%)	Nil formal n = 2 (0.5%) Primary level n = 33 (9%) Secondary level n = 247 (67.5%) Certificate/Trade n = 63 (17.2%) Tertiary n = 21 (5.7%); p = 0.04*

\*p < 0.05; \*\*p<0.001



# Results



Measure	Likely Pre-morbid dementia (n = 99)	Pre-morbid dementia not likely (n = 394)
Primary language = English	English n = 90 (92.8%) Other n = 7 (7.2%)	English n = 364 (92.4%) Other n = 29 (7.4%); n.s.
MMSE (average)	17.7 (SD = 6.3)	26.3 (SD = 2.9); p = 0.000**
Geriatric Depression Scale-5	1.3 (SD = 1.3)	0.81 (SD = 1.2); p = 0.003*
Vulnerable Elders Survey-13	7.6 (SD = 2.6)	4.6 (SD = 3.2); p = 0.000**
Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE)	4.2 (SD = 0.7) n = 44	3.3 (SD = 0.6); p = 0.000* n = 125
Neuropsychiatric Questionnaire - Premorbid	7.2 (SD = 5.6) n = 45	2.9 (SD = 4.1); p = 0.000** n = 166

\*p < 0.05; \*\*p < 0.001

# Results



Measure	Likely Pre-morbid dementia (n = 99)	Pre-morbid dementia not likely (n = 394)
<b>Admitted from:</b>		
Private accommodation	n = 72 (72.7%)	n = 359 (91.1%)
RAC Low Care	n = 5 (5.1%)	n = 17 (4.3%)
RAC high Care	n = 19 (19.2%)	n = 7 (1.8%)
Other	n = 3 (3%)	n = 11 (2.9%); p = 0.000**
<b>Activities of Daily Living Scale</b>		
0 Independent	n = 39 (39.8%)	n = 318 (81.3%)
1 Supervision required	n = 9 (9.2%)	n = 18 (4.6%)
2 Limited impairment	n = 14 (14.3%)	n = 27 (6.9%)
3 Extensive assistance required '1'	n = 15 (15.3%)	n = 11 (2.8%)
4 Extensive assistance required '2'	n = 8 (8.2%)	n = 3 (0.8%)
5 Dependence	n = 12 (12.2%)	n = 14 (3.6%)
6 Total dependence	n = 1 (1.0%)	n = 0; p = 0.000**
InterRAI IADL-Performance Scale	29.5 (SD = 15.8)	14.5 (SD = 13.3); p = 0.000**
IADL – Capacity	34.0 (SD = 14.7); n = 74	16.6 (SD = 14.5); p = 0.000**; n= 330

# Adverse Events



	Likely Pre-morbid dementia (n = 99)	Pre-morbid dementia not likely (n = 394)
Delirium at admission	n = 19 (19.2%)	n = 18 (4.6%); p = 0.000**
Pressure ulcer at admission	n = 6 (6.4%)	n = 12 (3.1%); n.s.
Delirium during admission	n = 16 (16.2%)	n = 13 (3.3%); p = 0.000**
Premorbid bladder incontinence		
Frequently	n = 30 (30.3%)	n = 28 (7.1%)
Sometimes	n = 17 (17.2%)	n = 43 (10.9%); p = 0.000**
Bladder incontinence at admission		
Frequently	n = 19 (19.4%)	n = 28 (7.1%)
Sometimes	n = 13 (13.3%)	n = 39 (9.9%); p = 0.000*
Falls during admission	n = 8 (8.2%)	= 14 (3.5%); p = 0.05

\*p < .05; \*\*p < 0.001

# Discharge

	Likely Pre-morbid dementia ( n= 99)	Pre-morbid dementia not likely (n = 394)
Length of stay (days)	13.6 (SD = 13.1) (range 1-68 days)	9.7 (SD = 9.8); (range 1-79 days); p = 0.001*
Discharged to same level of care a higher level of care	64 (67.4%) 11 (11.6%)	310 (80.7%) 14 (3.6%); p = 0.002*
<b>28 days post discharge</b> Readmitted to hosp within 28 days Deceased	n = 12 (12.2%)  n = 1 (1.0%)	n = 52 (13.2%)  n = 5 (1.3%) n.s.

\*p< 0.001

# *Factors predicting adverse outcomes*

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<b>Adverse event</b>	<b>Significant predictors</b>
Incident delirium	Diagnosis of dementia; $p = 0.001^*$ ; OR = 4.6
Death in hospital	Functional ability; $p = 0.003^*$ ; OR = 1.6
Readmission to hospital within 28 days following discharge	No variables significant
Falls in hospital	MMSE; $p = 0.007^*$ ; OR = 0.9 Female gender; $p = 0.03$ ; OR = 0.33

\* $p < 0.05$ ; \*\* $p < 0.001$

# Conclusions

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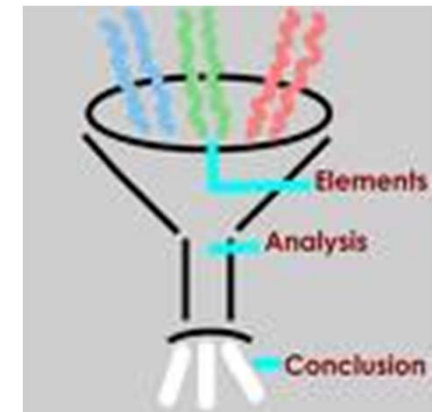
Around 20.0% of patients were considered to have dementia.

An additional 6% of patients had delirium at admission or developed delirium.

Thus, 26% of patients had cognitive impairment.

Patients with likely pre-morbid dementia were:

- more likely to have a delirium at admission and to develop a delirium during the hospital admission,
- had longer lengths of hospital stays, and
- were more likely to be discharged to a higher level of care.



There was no difference in outcomes at 28 days following discharge.

# *Any Questions?*

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