

# Admissions to hospital from residential aged-care facilities in southern Adelaide (1999-2005).

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# Background

- Interface between residential aged-care facilities (RACFs) and acute care.
- Risks for residents (infection, injury, behavioural etc).
- Difficulties for acute care institutions (limited resources - beds).
- Challenges for RACFs (access to GPs, skill level of RNs, resources etc).

# Background

What is really happening, how often, to whom and for what conditions?

*(scarcity of information)*



# Previous research

## Australian

- P Finucane et al (1999 and 2000). Both studies at Flinders Medical Centre (FMC). Prospective studies of 300 referrals to FMCs emergency department and subsequent 184 admissions over 3 months (*4.9 admissions/100 RACF beds – fractured hips, infections and ischaemic heart disease*).
- J Finn et al. Retrospective cohort of 541 RACFs residents transferred by ambulance to Royal Perth Hospital ED over 6 months (*8.3% of all ED presentations, 60% admitted and 60% avoidable*).

# Previous Research

International – explored both resident and facility determinants of presentation and admission to acute care.

- M Carter and F Porell (2003). Analysis of 3 years of Medicaid case-mix data from 527 nursing homes. Facility characteristics such as nursing staff patterns, profit status and chain affiliation are significantly related to risk of hospitalisation.

- *WH Barker et al (1994)*. Retrospective analysis of matched nursing home and hospital discharge data (*387 admissions per 1000 resident years, pneumonia and hip fracture*).
- Lack of population based information is due to the absence of matched RACF and hospital admission data.

# Aims

- To determine the rate of admissions to FMC from RACF.
- To describe resident and RACF characteristics associated with hospital admission.
- To determine if there are any trends.

# Methods

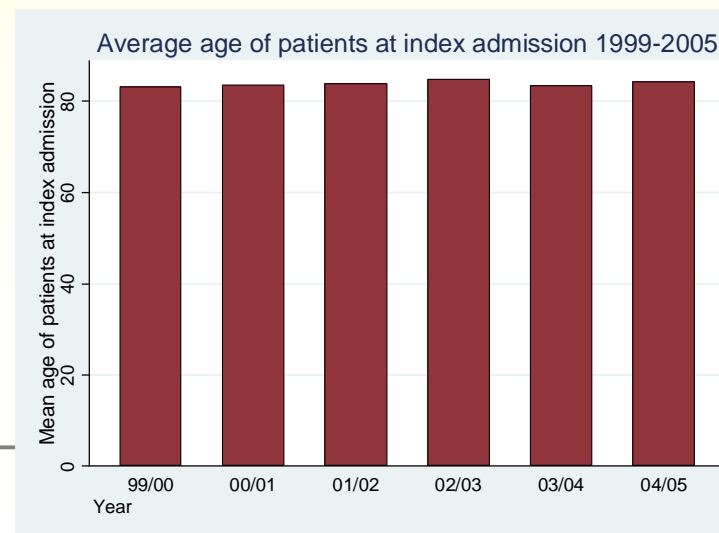
- Data was retrospectively collected from over 3300 admissions to FMC from RACFs between July 1999 and June 2005.
- Matched to Commonwealth data (name, DOB and facility).
- Collaboration between SAHS, Commonwealth Department of Health and FMC.

- Information regarding RACF bed numbers and occupancy rates sourced either directly from the Department or from government reports.
- Analysed using STATA® (V9) data analysis and statistical software.

# Results

- 2130 residents had 3310 admissions.
- 64% had a single admissions.
- <5% had four or more admissions.
- 34% were male.
- Average age = 83.9 yrs (median 85).

Figure 1: The average age at index admission to FMC from RACF by year.



- 65.25% RCS 'high care' before and 67.95% after.
- Over the study period 1634 residents in the cohort died, of which 275 (12.91%) died in hospital.
- All but 5% of admissions were classified as emergency.

## Results: Principle diagnosis

- The five most common categories of diagnoses accounted for 68% of the admissions – injuries, Cardiovascular diseases, resp diseases, digest diseases and genitourinary diseases respectively.
- The broad category of mental health accounted for only 3.87% (128) of primary diagnoses.

# 10 most common diagnoses

	Principle Diagnosis	Frequency		Principle diagnosis	Frequency
1.	Fractured femur/pelvis	329	6.	UTIs	113
2.	Pneumonia	184	7.	Type 2 Diabetes*	91
3.	IHD (mostly acute)	158	8.	CVD	91
4.	CHF *	154	9.	Injuries to the head	70
5.	COPD*	150	10.	Pneumonitis (solids/liquids)	60

\*Including acute exacerbations

• If add together dementia, delirium and Alzheimer's = 115 (sixth most common diagnosis)

## Results: Comorbidities

- Co-exist with primary diagnosis (coded from up to 24 diagnoses on admission – excluding primary diagnosis).
- Charlson Comorbidity Index (CCI) – “a patient’s medical baggage.” Twenty-one comorbid conditions and corresponding weights.

## Most common Charlson comorbidities

Condition in Charlson Index	Number (%) of patients	Ranking
Dementia	1209 (36.35)	1
Hypertension	964 (29.12)	2
Congestive Heart Failure	735 (22.10)	3
Chronic IHD/Angina	701 (21.18)	4
Chronic pulmonary disease	503 (15.20)	5

- Diabetes listed as mild to moderate or with chronic complications – if add together ranked as 5<sup>th</sup> comorbidity.
- For all admissions, the CCI was rated <5 (not severe) for 91.45%. For first admission the CCI was <5 for 93.19%.

## Results – admissions and length of stay

- Admissions rose steadily from 405 in 99/00 to 743 in 04/05.
- Average length of stay varied by about 1 day (range 6.12 – 7.15 days) – no apparent trend.
- 78% of admissions were index admissions in first year.
- Following years around 60 to 65%.

# Admissions

Figure 2: Number of beds in Metropolitan South health region at end June by year.

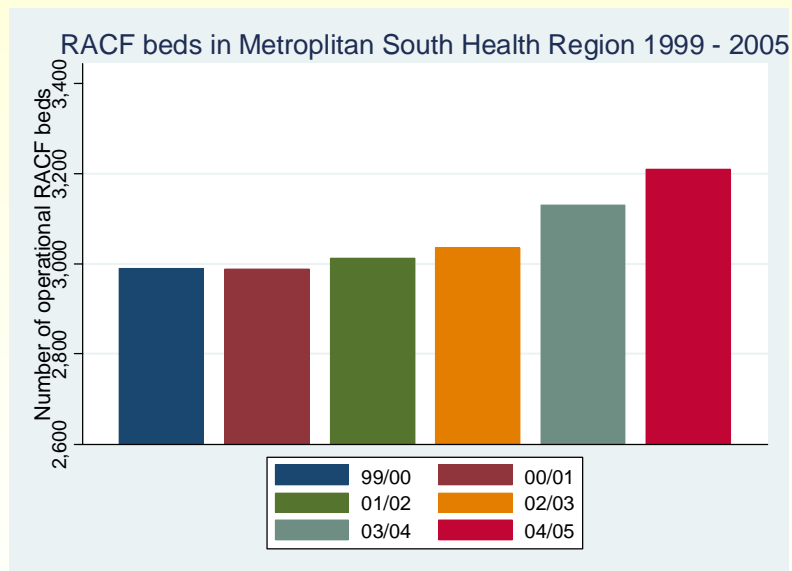
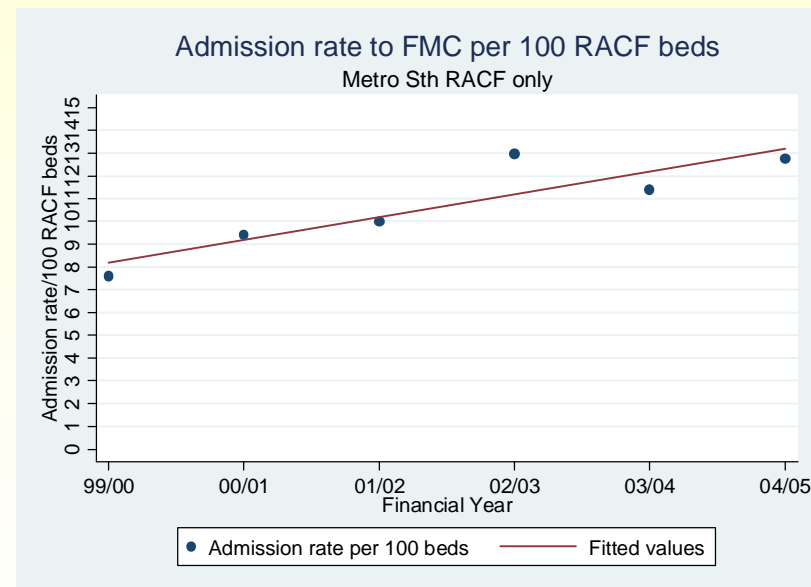


Figure 3: Admission rate to Flinders Medical Centre per 100 RACF beds in the Metropolitan South Health Region.



# Length of stay

Figure 4: Distribution of length of stay (days) for all admissions

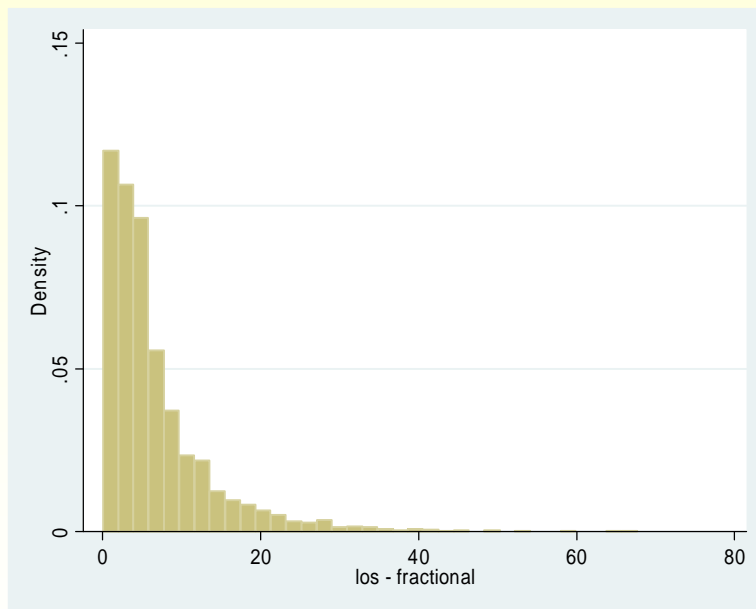
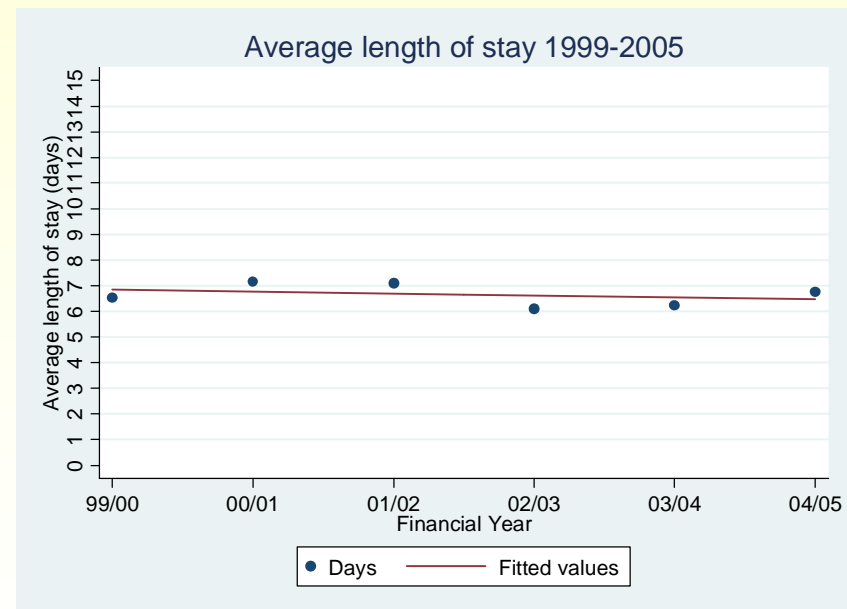


Figure 5: Average length of stay (fractional) in days 1999-2005 for all admissions.



# Admissions and Separations

## Days of the week

Figure 6: Frequency of admissions by days of the week.

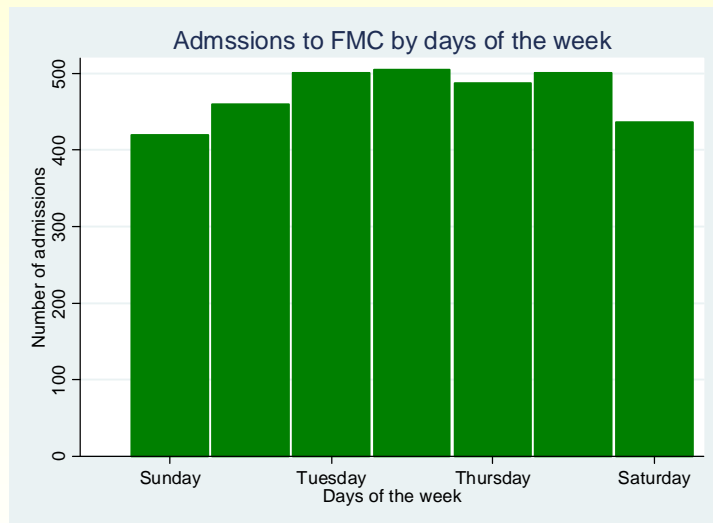
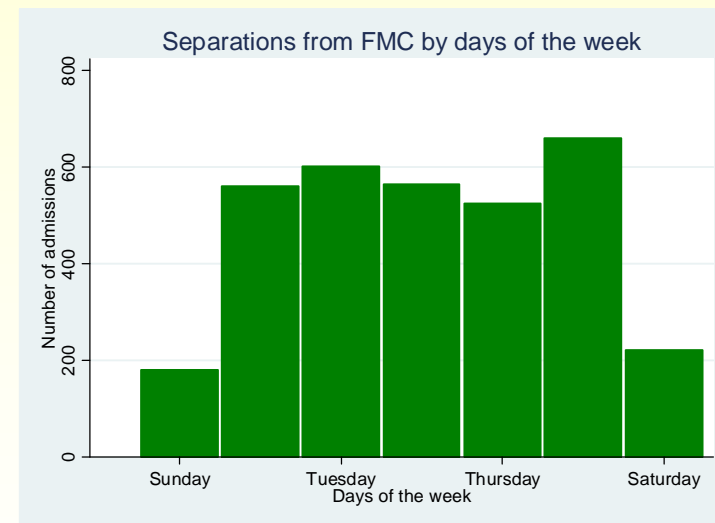


Figure 7: Frequency of separations by days of the week.

(Separation rate significantly lower at week ends than week days – 65.5%  $P < 0.001$ ).



# Discussion

- A 70% increase in admissions over 6 years - apparent increasing trend (*Metropolitan South Health region only*).
- SA RACF occupancy rates 97.7% and 97.0% for 2004 and 2005.
- 99/00 rate of 7.6/100 beds is higher than Finucane's rate of 4.9/100 hostel or nursing home beds.
- Most frequent primary diagnoses same as reported by Finucane – hip fracture, pneumonia and IHD.

# Falls and fractures

- Resident cohort has many of the risk factors for falling (age, medicines, poor vision, osteoporosis etc).
- Majority of cohort with fractured femur had a fall prior to admission.
- Over 65% were classified as 'high care' by RCS - fraility
- LOS was significantly higher compared to all other diagnoses (8.6 days compared to 6.4 days  $P < 0.001$ ).
- Does not appear to be a trend in the rate of fractured femur (??not driving trend in increasing admission rate??).

# Infections

- Pneumonia, pneumonitis and UTIs were the most common infections.
- Similar rates reported by Finucane.
- Other studies report infections responsible for up to 12% of RACFs admissions and result in mortality ~40% of cases.
- Potential for management in the RACF setting.

# Benchmark?

- There is a lack of information on what is an acceptable rate of admission.
- Different opinions on what is an avoidable and/or appropriate admission.
- Growing consensus around the Ambulatory Sensitive Conditions (ASC) – diabetes, COPD, vaccine preventable infections etc.
- Study provides a benchmark for what is happening at FMC (*build on Finucane's work*). Several initiatives been implemented since 2005 – follow up data to compare (e.g. hip protectors, Aged care GP Panels etc).

# Future analysis

- Trend analysis - rate of admissions and individual diagnoses.
- What is driving the increase in admissions?
- Collect more data 05/06 onwards to compare.