



## Medication adherence 1 month after hospital discharge in medical inpatients

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Annual conference & Medicare Expo on Primary Healthcare  
The Oberoi, Dubai, UAE  
Dr Brendan Mitchell



<http://www.mybabygifts.com.au/images/hospitals/the-northern-hospital-eping.jpg>



<http://www.hassell.com.au/en/cms-projects/detail/gold-coast-university-hospital-396>

# Background



- Definition: Medication adherence is the degree to which patients take medications as prescribed
- Non-Adherence:
  - To prescription medications typically reported as 20–50%<sup>1–6</sup>
  - Is associated with increased rates of disease, death, hospital admissions and cost to healthcare systems.<sup>7–9</sup>
  - Predictors of nonadherence include poor health, cognitive impairment, asymptomatic disease, inadequate follow up, side effects, non-belief in therapy, polypharmacy, complex regimens, poor relationship with physicians and medication cost
- Majority of data from overseas studies

# Aims



## Primary:

- To determine the rate of adherence to medications after discharge from acute general medical hospital admission

## Secondary:

- Identify factors that may be associated with non-adherence
- Describe medication changes during hospital admission and in the post-discharge period

# Methods



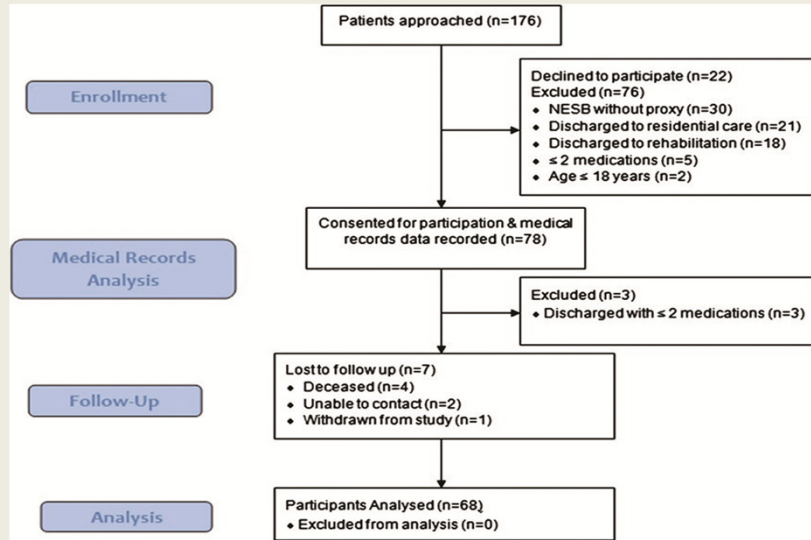
- Prospective cohort study
- Patients discharged from medical wards
- Participants were identified by a list of potential discharges generated by hospital administration and sampled consecutively
- Exclusion criteria:
  - *discharge to residential care facility or rehabilitation*
  - *patients with two or less medications*
  - *patients  $\leq 18$  years of age*
  - *person managing medications unable to speak English*
- Admission & discharge medications and demographic info obtained from medical records
- Follow up of participants was conducted via telephone call by a single researcher 30-40 days after discharge

# Methods



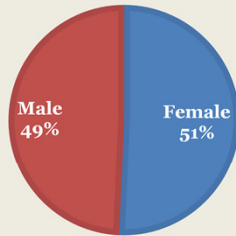
- At follow up medication regimens were compared to discharge medications
  - If changes were made it was determined whether these were intentional or unintentional
  - For intentional non-adherence, patients were asked to identify the primary reason for the change
- Other data including outpatient appointments, GP follow up, representation/readmission to hospital also collected at this time
- Predictors of non-adherence were evaluated using binary logistical regression
- Multiple logistical regression was undertaken for the primary dependent variable (non-adherence to regular medications at follow up) - Variables with a P-value of  $<0.05$  or approaching  $0.05$  in the univariate analysis were candidates in the multivariate analysis using a Forced Entry Method

# Methods

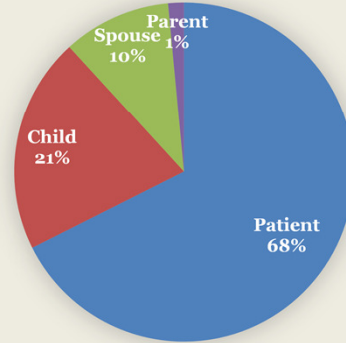


# Demographics

## GENDER



## PERSON RESPONSIBLE FOR MEDICATIONS



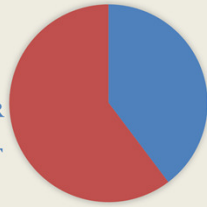
**AGE:** 69.5 ( $\pm 1.67$ ) years

**LENGTH OF STAY:** 6.97 ( $\pm 5.48$ ) days

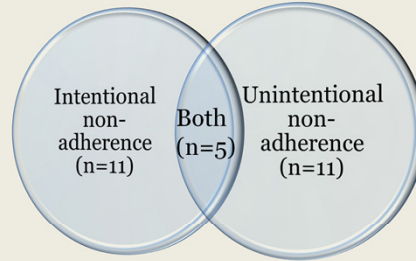
# Results

## MEDICATION ADHERENCE AT ONE MONTH FOLLOW UP

[CATEGORY NAME]  
[PERCENT AGE]  
(n=41)



[CATEGORY NAME]  
[PERCENT AGE]  
(n=27)



## REASONS CITED FOR INTENTIONAL NON-ADHERENCE

- Unnecessary
- Adverse effects
- Dose too low to be effective
- Too many medications





# Results



**Table 2** Multivariate analysis of patient factors and non-adherence to regular medications 1 month after discharge

Variable	Adherent (n = 41)	Non-adherent (n = 27)	Adjusted OR (95% CI)	Adjusted P-value
Age (years), mean $\pm$ SD	70.5 $\pm$ 2.1	67 $\pm$ 3.2	0.97 (0.92–1.02)	0.196
Age-adjusted Charlson co-morbidity index, mean $\pm$ SD	5.3 $\pm$ 0.4	5.5 $\pm$ 0.5	1.24 (0.92–1.68)	0.155
Carer responsible for medications, n (%)	17 (41.5)	5 (18.5)	0.20 (0.05–0.83)	0.027*
Chemist blister pack, n (%)	13 (31.7)	3 (11.1)	0.22 (0.05–1.03)	0.054
Discharge medications, mean $\pm$ SD	9.3 $\pm$ 0.6	9.9 $\pm$ 0.8	1.11 (0.96–1.29)	0.169

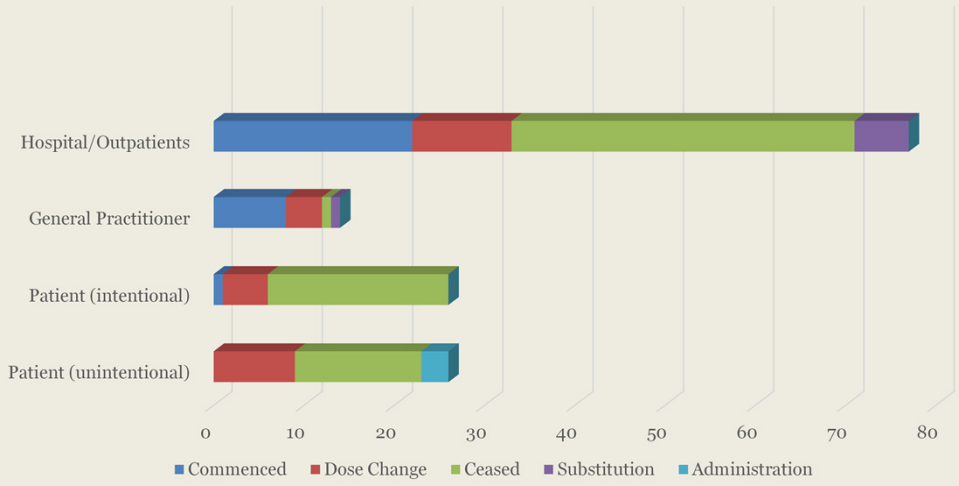
\*  $P < 0.05$ . CI, confidence interval; OR, odds ratio; SD, standard deviation.

- Using multivariate analysis, presence of a carer responsible for medications was associated with significantly lower non-adherence (odds ratio (OR) 0.20 (0.05–0.83),  $P = 0.027$ ) when adjusted for age, co-morbidities, chemist blister pack and total number of discharge medications

# Results

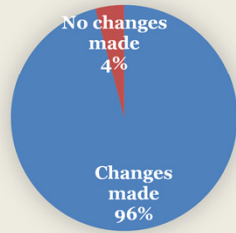


## MEDICATION CHANGES IN THE POST-DISCHARGE PERIOD

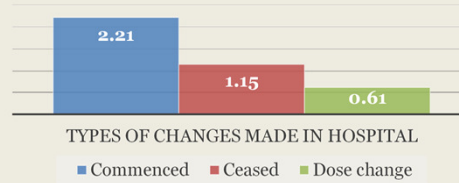


# Results

## CHANGES TO MEDICATIONS DURING HOSPITAL ADMISSION



## Average number of changes per type in hospital



**Average Medications on Admission:** 8.40 ( $\pm 4.24$ )

➤ **Average Medications on Discharge:** 9.48 ( $\pm 4.13$ )

➤ **Average Medications at Follow Up:** 8.62 ( $\pm 3.77$ )

# Discussion



- The rate of adherence to medications is suboptimal and is consistent with prior overseas studies
- Non-adherence to medications was observed to be equally attributable to intentional and unintentional non-adherence
- Having a carer responsible for medications may improve adherence
  - Accounted for approximately one third of our patient population; all of whom were immediate family members
  - Involving family where there is consent to do so may be an effective strategy in improving adherence
  - Generalisability of these findings is limited by the dependence of other variables in these patients (eg cognitive and/or functional impairment)
  - Foebel et al. (10) found the presence of a caregiver at home significantly improved medication adherence in patients with heart failure and mild cognitive impairment

# Discussion



- **The most commonly cited reason for intentional non-adherence was that the medication was “unnecessary”**
  - Demonstrates that belief in therapy may be an predictor of adherence
  - If patients do not understand the benefits of a medication, and/or the detriment of not taking the medication they are more likely to be non-adherent
  - Particularly true for asymptomatic disease (eg Hypertension, hypercholesterolaemia)
- **Only two thirds of patients visited their GP in the month after discharge from hospital**
  - Most effective strategies for improving non-adherence involve regular monitoring, follow up and feedback
  - Ensuring patients see their family doctor soon after discharge may improve adherence to new medications through reinforcement

# Discussion



- **Polypharmacy was overwhelmingly common**
  - Average did not reflect the true average as the study excluded patients taking  $\leq 2$  medications
  - Some patients taking  $>20$  medications
  - Average increased from admission  $\rightarrow$  discharge and admission  $\rightarrow$  follow up
  - Admission to internal medicine service is the ideal time for medication reconciliation and to rationalise medication regimens
- **Not all non-adherence is detrimental**
  - Eg. Large numbers of patients prescribed gastric acid suppressants which are continued long term <sup>11</sup>
  - If patients identify that a medication is unnecessary where the doctor has failed to do so, then this is likely to be a positive outcome
  - Ideally, it should prompt discussion with their physician and regular review of their medications, rather than self-management of medications

# Limitations



- **Limitations**

- Over the counter & complimentary medicines not included (as they are not reliably documented)
- Unable to include non-English speaking participants
- Relatively small sample size

## Take Home Messages



- *40% of patients were non-adherent to one or more regular medications one month after discharge from hospital*
- *Intentional and unintentional non-adherence were equally attributable*
- *Having a carer responsible for medications may be associated with a significant improvement in non-adherence*
- *Hospital admission is the ideal time for medication reconciliation and rationalisation of medication regimens*
- *Only 67% of patients visited their family doctor in the month following discharge from hospital*
- *Need to involve patients and their families in their care, rather than the traditional model of prescribing medications and assuming they will take them*



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