

# Discharge planning and support

*What works best in optimising  
patient outcomes?*

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# Definition

- In-hospital and/or post-discharge interventions performed (at least partly) by hospital-based health professionals explicitly targeted at smoothing the transition from hospital to home and/or preventing or diminishing problems after discharge
- Aim to reduce LOS, readmission, discharge to institutional care, dependency or loss of functional capacity, mortality, symptoms, adverse events, carer stress, patient dissatisfaction, use and costs of health services

# Why the need for such interventions?

- Increasing admissions of elderly patients with multiple chronic/complex diseases
- Shortened hospital stays
  - Discharging earlier and ?sicker
- High rates of adverse events and readmission caused by:
  - Inadequate needs assessment
  - Insufficient patient/carer education and support
  - Conflicting perceptions of self-efficacy
  - Medication errors
  - Discontinuity in patient care
  - Poor communication and information transfer
  - Missed or delayed follow-up

# Why the need for such interventions?

- Factors predictive of unplanned readmission
  - Age  $\geq$  80 yrs 1.8
  - Previous admission <30 dys 2.3
  - $\geq$ 5 co-morbidities 2.6
  - History of depression 3.2
  - **Absence of patient/family education 2.3**

Marcantonio et al Am J Med 1999

- Living alone
- Cognitive impairment
- Advanced stage illnesses
- Longer index LOS

Fethke et al Med Care 1986  
Corrigan & Martin Health Serv Res 1992  
Smith et al J Clin Epidemiol 2000

# Why the need for such interventions?

- **Patient/carer perceptions of discharge process**

- **Poor communication and consultation by staff**
  - 10% not told purpose of medications
  - 44% not told of side effects to look for
  - 41% not told of what danger signals to look for suggesting relapse
- **Inadequate notice of discharge**
- **Little assessment of home circumstances**
- **Inadequate involvement in discharge arrangements**
- **Uncertainty around co-ordination of services**

Jewell J Adv Nurs 1993  
McWilliam Int J Qual  
Health Care 1994  
Healthcare Commission  
2006

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- **Staff perceptions of discharge process**

- **Lack of appropriate staff, patient and carer education about discharge processes**
- **Difficulty with procuring community services**
- **Lack of feedback on outcomes of discharge processes**
- **General process issues**

Grimmer et al Aust Health Rev 1999

# Discharge readiness

- Prospective study 147 medical-surgical patients
  - Greater discharge readiness and younger age predictive of fewer readmissions
  - Predictors of discharge readiness
    - Not living alone
    - Level of care co-ordination
    - *Quality of discharge teaching*
      - *Amount of content received*
      - *Nurse skill in teaching delivery*

# Discharge readiness

- Assessment of:
  - physiologic stability
  - competency (cognitive and psychomotor) of the patient and family to carry out self-care management regimens
  - perceived self-efficacy to carry out self-care management regimens
  - availability of social support
  - access to health care and community resources

# Conflicting evidence of effectiveness

- “Discharge planning and support teams are cost effective and should be in place universally”<sup>1</sup>
- “The impact of discharge planning on readmission rates, hospital length of stay, and health outcomes is uncertain”<sup>2</sup>
- “In general the evidence is a mixture of benefit, deficit and uncertainty due to the complexity and variability of interventions and methodological problems with evaluations”<sup>3</sup>

1. O'Neill & Meade, Centre for Health Service Studies, University of Kent, 2001

2. Shepperd et al, Cochrane Database Syst Rev 2004

3. Ali & Rasmussen, New Zealand Health Technology Assessment Report Vol 7, 2004

# Why such disagreement?

- Heterogeneity in
  - Intervention
  - Outcome measures
  - Patient population
  - Study selection
  - Analytic methods

# Literature review

- Search 1990-2008
  - Pub Med, Cochrane, EPOC, CINAHL
  - Discharge planning; hospital discharge; patient discharge
  - Controlled trials or systematic reviews
  - Outcome measures: LOS, readmission, discharge destination, functional capacity, QOL, mortality
- Studies grouped:
  - Single intervention sole or predominant
  - Multi-component interventions
- Meta-analytic results used where reported
- Emphasis on consistency and generalisability for general medical patients

# Literature review

## Studies excluded

- Formal comprehensive geriatric assessment
- Specialised in-patient rehabilitation
- Highly condition-specific interventions
  - Eg. early mobilisation strategies following orthopaedic surgery
  - Eg. home-based rehabilitation following stroke
- Condition-specific clinical pathways
- Acute hospital care in the home
- Day hospital care
- Post-acute care programs for surgical patients
- Palliative care programs
- Transitional care packages providing community-based allied health support

# Literature review

2776 articles; 378 review articles

Key systematic reviews

- O'Neill & Meade, Centre for Health Service Studies, University of Kent, 2001
- Shepperd et al, Cochrane Database Syst Rev 2004
- Ali & Rasmussen, New Zealand Health Technology Assessment Report Vol 7, 2004
- Parker et al. Health Technol Assess 2002; 6: 1-183
- Richards & Coast J Health Serv Res Policy 2003; 8: 171-179
- Mistiaen et al, BMC Health Serv Res 2007; 7: 47-65

**Studies which focus on one sole or  
predominant intervention**

# Screening of individuals at high risk of discharge failure

- Standardised screening tools
  - Cognitive function, ADL, IADL, depression, nutrition, social support, continence, co-morbidity
    - Hospital Admission Risk Profile (HARP)
    - Identification of Seniors at Risk (ISAR)
    - Care Complexity Prediction Instrument

Hoogerduijn et al J Clin Nurs 2007

- 3 reviews<sup>1-3</sup>
- No significant effects on:
  - LOS
  - Discharge destination
  - Dependency
  - Functional status
  - Readmission

1. Parker et al Health Technol Assess 2002
2. Day & Rasmussen New Zealand Health Technol Assess Report 7, 2004
3. Richards & Coast J Health Serv Res Policy 2003

# Multidisciplinary teams and rounds

- Controlled trial, 1538 patients<sup>1</sup>
  - Enhanced access to allied health services with proactive information sharing and explicit discharge goals
  - Trend to shorter LOS (0.5 day)
  - Reduced mortality (3.9% vs 6.4%)
  - Less functional decline; improved health status
  - No impact on readmissions
- RCT, 1102 patients<sup>2</sup>
  - Interdisciplinary rounds
  - Shorter LOS (by 0.6 day) with reduced costs
  - No results reported re readmission, discharge destination

1. Mudge et al. Intern Med J 2006  
2. Curley et al. Med Care 1998

# Discharge planning protocols

- 11 RCTs; n=5351
- No impact on:
  - Mortality
  - LOS
  - Readmission rates
  - Discharge destination
  - Overall health care costs
- 2 trials: increased patient satisfaction

# Educational interventions

- 2 reviews<sup>1,2</sup>
- No impact on:
  - LOS
  - Discharge destination
  - Dependency
  - Readmissions
- Conflicting results re functional and emotional status

1. Parker et al Health Technol Assess 2002
2. Richards & Coast J Health Serv Res Policy 2003

# Discharge care plans

- RCT 189 patients<sup>1</sup>
  - No effects on readmissions, LOS, physical QOL
  - Improved patient satisfaction and mental QOL
  - Improved GP satisfaction and communication
  
- For 40 percent of patients, one or more components of discharge plan not implemented as planned, more so among low-income patients<sup>2</sup>

1. Preen et al Int J Qual Health Care 2006

2. Proctor et al Health Soc Work 1996

# Liaison nurses, discharge co-ordinators, case managers

- RCT 654 elderly patients<sup>1</sup>
  - Case managers and post-discharge services
  - No impact on mortality, readmissions
  - Improved QOL scores with fewer total hospital days and lower costs at 12 months
- Controlled trial 302 patients<sup>2</sup>
  - No impact on overall LOS, readmissions
  - 3 day shorter LOS for high risk patients
- Controlled trial 824 elderly patients<sup>3</sup>
  - Case management approach to discharge planning
  - No impact on mortality, readmission rates
  - Fewer institutionalisations at 90 days (15% vs 28%)
- Controlled trial 2733 elderly patients<sup>4</sup>
  - No impact on LOS, readmissions
- Review of 12 trials<sup>5</sup>
  - No impact on LOS, readmissions
- Review of 15 trials elderly patients<sup>6</sup>
  - 8/15 showed fewer readmissions and/or fewer hospital days
  - 3/11 showed fewer ED presentations

1. Lim et al Med J Aust 2003
2. Hickey et al J Eval Clin Pract 2000
3. Steeman et al Int J Qual Health Care 2006
4. Sivaram et al Acad Med 1997
5. Kim & Soeken Nurs Res 2005
6. Chiu & Newcomer Prof Case Manag 2007

# GP input into discharge planning

- RCT 364 patients
- High risk frail elderly
- No impact on LOS, readmissions, destination
- Improved use of community services
- Greater discharge consultation with patient/carers

# Nurse-led discharge

## No controlled trials

- 80% admissions are short stay
- Increased weekend discharges by 40.6%
- No increase in readmission rate
- Average LOS decreased by 0.3 days
- Improved staff satisfaction and morale

Anthony & Hudson-Barr J Nurs Admin 1998

Lees Nurs Times 2004

Rooney Nurse Led Discharge and In reach Report. 2006

# Self-management teaching/coaching

- 750 patients  $\geq 65$  yrs
- Self-management; transition coaching
  - Medication self-management
  - Personal health record
  - Timely follow-up with GPs and specialists
  - Knowledge of complications and how to respond
- Results:
  - Lower readmission rates
    - 30 days: 8% vs 12%  $p=0.05$
    - 90 days: 17% vs 23%  $p=0.04$
  - Lower hospital costs
    - \$2058 vs \$2546  $p=0.05$

# Self-management teaching/coaching

- Elderly patients with heart failure
- 6 RCTs, 857 patients
- Results:
  - Lower readmission rates
    - All-cause readmissions OR = 0.59, p=0.001
    - Heart failure readmissions OR = 0.44, p=0.001
  - No impact on mortality, QOL, functional capacity, symptom status
  - Cost savings \$1300-\$7515 per pt/yr

# Self-management teaching/coaching

- Elderly patients with COPD

Effing et al Cochrane Database Syst rev 2007

- 14 RCTs

- Results:

- Fewer hospitalisations OR = 0.64
- Mild improvements in dyspnoea scores and symptom status
- No impact on ED visits, exacerbations, lung function, exercise capacity

# Augmented hospital-primary care communication

- Trend to fewer readmissions if primary care physician in possession of discharge summary at first post-discharge visit<sup>1</sup>
- RCT of discharge care plan provided to all providers post-discharge (n=189)<sup>2</sup>
  - Significant improvements in:
    - Health service access post-discharge
    - Patient and provider satisfaction with discharge process
    - Time to GP receiving discharge plan
  - No change in readmissions, LOS, QOL

1. Van Walraven et al. J Gen Intern Med 2002

2. Preen et al Int J Qual Health Care 2005

# Augmented hospital-primary care communication

- RCT 122 patients in community hospital
- Transfer intervention
  - Comprehensive patient discharge form
    - Discharge diagnosis, dietary and activity instructions, home services, scheduled appointments, pending investigations, discharge medications, post-discharge follow-up and recommendations, nursing comments, patient reminders
  - Electronic transfer to primary care practitioner
  - Telephone contact by primary care nurse post-discharge
  - Scheduled OPD review

	Intervention	Control	p
No F/U @ 21 dys	15%	41%	0.005
Readmission @30 dys	8%	8%	NS
ED visit @ 30 dys	2%	2%	NS
Incomplete OPD work-up	11%	31%	NS
≥1 unfavourable outcomes	25%	55%	0.003

# Post-discharge home visits

## Home visits by nurse, allied health, geriatrician, GP

- Review of 9 trials, 2637 patients<sup>1</sup>
  - No effect on mortality
  - Inconsistent effects on readmissions
    - 2 trials decrease; 1 trial increase; 3 trials no effect
  - 44% increase in patients living at home vs institution

## Home visit by clinical pharmacist

- Old elderly (>80 years)<sup>2</sup>
  - Interventions in 20% patients
  - 2.6 recommendations per patient
- Results
  - 30% more readmissions in intervention gp (p=0.009)
- Medical patients<sup>3</sup>
  - No difference between groups

1. Hyde et al Age Ageing 2000

2. Holland et al BMJ 2005

3. Nazareth et al Age Ageing 2001

# Post-discharge telephonic follow-up

- 33 studies; n=5110
- Most studies of low quality
- Heterogeneity in intervention
  
- No overall differences in LOS, readmissions, QOL

# Nurse-led intermediate care units

- RCT 175 patients<sup>1</sup>
  - No impact on discharge destination or dependency
  - Longer LOS by 9.5 days
- Review 10 controlled trials, n=1896<sup>2</sup>
  - No impact on mortality (in-patient or longer term) or readmissions
  - Discharge to institution decreased by 56%
  - Increased functional status
  - Longer LOS (by 5 days)

1. Griffiths et al *Age Ageing* 2001

2. Griffiths et al *Cochrane Database Syst Rev* 2007

# Summary

- Self-management interventions have the most consistent and robust evidence of effect but limited to effects on readmissions
- Multidisciplinary teams or rounds may be effective but more evidence required
- Other interventions have little or no evidence of benefit

**Studies in which focus was on  
multifaceted, integrated interventions**

# Comprehensive discharge planning and home follow-up

- RCT; 363 patients  $\geq 65$  years (mean age 75 years)
- Specialist nurse-led assessment, discharge planning, patient-carer education; written care plans and medication lists; discharge summaries; co-ordination of post-discharge services; home visits (24 hrs and 7-10 days), telephonic follow-up
- Results at 6 months:
  - Readmissions: 20% vs 37%  $p < 0.001$
  - Health costs: \$0.6m vs \$1.2m  $p < 0.001$
  - No effects on mortality, functional status, patient/carers satisfaction

# Comprehensive discharge planning and post-discharge support

## *Older patients with CHF*

- Meta-analysis of 18 RCT; 3304 patients; mean age  $\geq 70$  yrs
- Intervention components
  - Specialist nurse or clinical pharmacist-led review
  - Patient education and self-management strategies
  - Discharge planning
  - Written care plans and medication lists
  - Home visits, telephonic follow-up, early clinic review
  - Enhanced communication between providers
- Results at 8 months:

- Readmissions:	35% vs 43%	RR=0.75 (0.64-0.88)
- All-cause mortality:	14% vs 17%	RR=0.87 (0.73-1.03)
- % increase QOL score:	26% vs 14%	p=0.01
- Health care costs:	No difference	

# Lessons from the literature

# Components of re-engineered hospital discharge

- Patient/carer education throughout hospital stay
  - Customised according to health literacy and delivered by single person
- Written discharge care plan to patient
  - Includes reconciled medication lists
- Specific self-management instructions
- Discharge summary to all providers
- Organisation of post-discharge services and appointments with telephone follow-up 2-3 days after discharge

# Underpinning themes of re-engineered hospital discharge

- Preparation for discharge to begin as early as possible
- Patient and carers should be central to the planning of discharge
- One member of the multidisciplinary care team should hold responsibility for the discharge program
- All preparations should be based on effective multidisciplinary teamwork between hospital and community

# Questions

# Discharge process interventions

## Discharge planning/preparation

- Screening for high-risk patients in need of more post-discharge support
- Multidisciplinary discharge rounds, case conferences
- Discharge planning protocols
- Educational interventions
- Liaison nurses, discharge co-ordinators, case managers
- GP input into discharge planning
- Discharge care plans
- Nurse-led discharge
- Nurse-led intermediate care units
- Patient/carer self-management

## Discharge support/aftercare

- Augmented hospital-primary care communication
- Post-discharge home visits
- Post-discharge telephonic contact