Minimising deconditioning in acute care

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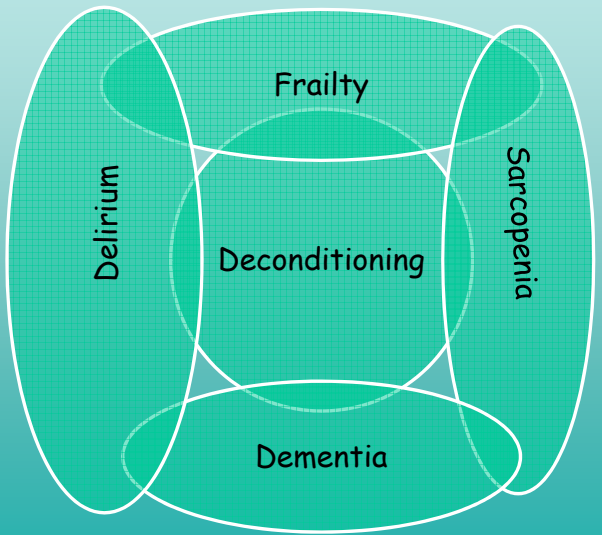
A true geriatric syndrome

- "↓ muscle tone, endurance or function due to ac. or chr. disease, immobility and hospitalisation."
- Multifactorial
  - Illness
  - Treatment
  - General effects of hospitalisation
- Multi-system
- Frequent: 1/3 – 2/3 older patients
- Multiple adverse outcomes
- Often devastating

Overlaps

- Delirium
- Dementia
- Sarcopenia
- Frailty

Overlapping pieces of the puzzle



Risk factors

Hoogerduijn JG. J Clin Nursing 2007; 16: 46-57

Non-modifiable	Potentially modifiable
Age	Length of stay
ADL disability	Depression
IADL disability	Bedrest
Cognitive Impairment/ Dementia	Delirium
Cancer	Decubitus ulcer
	Low social activity

Components

Hoenig HM. JAGS 1991; 39: 220-2
Kortebein P. J Gerontol Med Sci 2008; 63: 1076-81
Coker RH. J Gerontol Med Sci 2014; 69: 363-70.

- Cardiovascular: ↓ total body water
  - ↓ cardiac output
  - ↓ cardiorespiratory conditioning, incl. O2 uptake
- Skeletal muscle: atrophy and ↓ strength
- Bone Density: ↓ at all sites
- Fat + Glucose metabolism: ↓insulin-stimulated glucose disposal

Outcomes of deconditioning

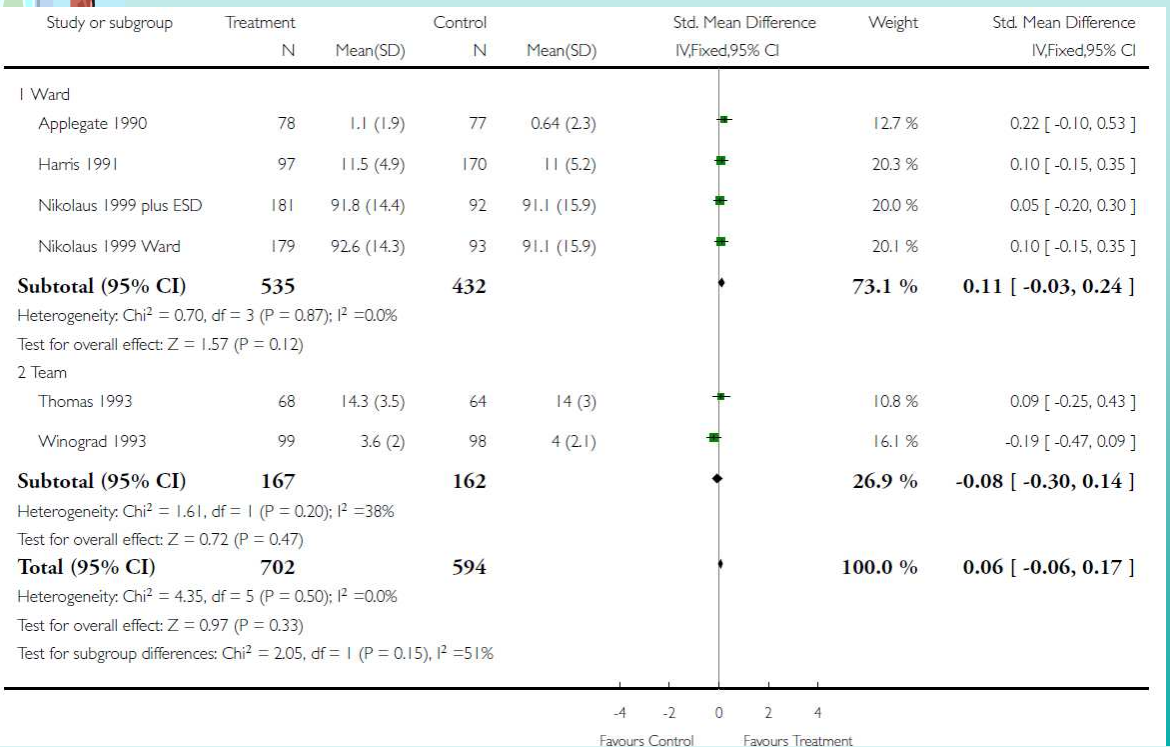
- ↓ADL and cognitive function
- Need for rehabilitation/ ↑LOS
- ↑ Community services
- Placement
- Death

Interventions

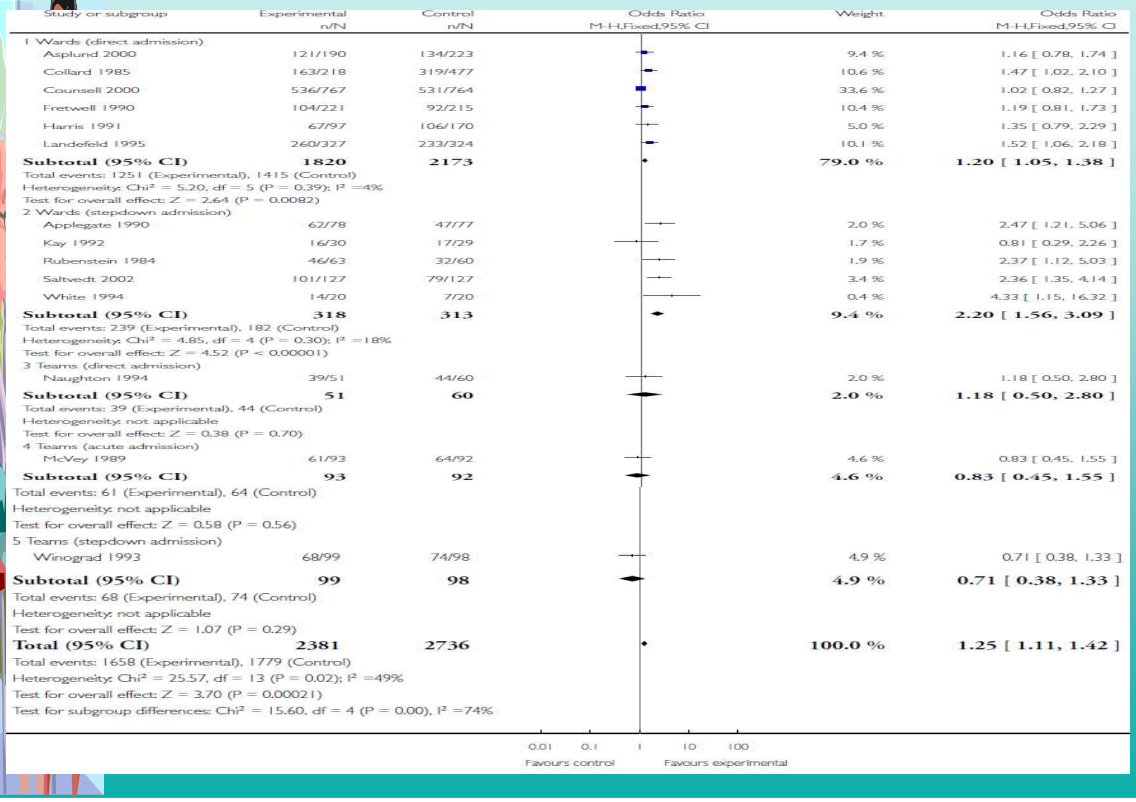
1. Comprehensive Geriatric Assessment
2. Exercise
3. Nutritional supplements
4. Hospital in the Home
5. Intensive Care

Effect of CGA on ADLs

Ellis G. CGA for older adults. Cochrane 2011; 7: Art No.: CD006211



Effect of CGA on living at home



Effect of CGA on living at home @6/12

Ellis G. CGA for older adults. Cochrane 2011; 7: Art No.: CD006211

Type of intervention	Odds Ratio (95% CI)
Wards (direct admission)	1.20 (1.05-1.38)
Wards (stepdown admission)	2.20 (1.56-3.09)
Teams (direct admission)	1.18 (0.50-2.80)
Teams (acute admission)	0.83 (0.45-1.55)
Teams (stepdown admission)	0.71 (0.38-1.33)
Overall	**1.25 (1.11-1.42)**

Exercise for acutely hospitalised older medical patients

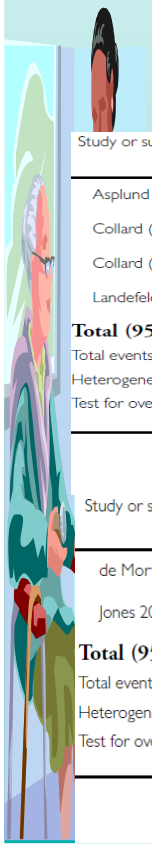
de Morton N. Cochrane 2007, Issue 1. Art. No.: CD005955

- Exercise intervention varied considerably
- 6 trials multidisciplinary interventions incl. exercise
- 3 trials exercise only - walking program and exercises individually tailored by a physiotherapist
- All compared to 'usual hospital care'

Effect on ADL scores

- No effect on mortality, ICU admission, adverse events

D/C to preadmission residence



MDT+

Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Asplund 2000	152/182	166/217		25.3 %	1.09 [0.99, 1.20]
Collard (C) 1985	66/90	136/202		14.0 %	1.09 [0.93, 1.27]
Collard (S) 1985	96/120	204/261		21.5 %	1.02 [0.92, 1.14]
Landefeld 1995	260/303	233/300		39.2 %	1.10 [1.02, 1.19]
Total (95% CI)	**695**	**980**		**100.0 %**	**1.08 [1.03, 1.14]**

Total events: 574 (Treatment), 739 (Control)
Heterogeneity: Chi^2 = 1.31, df = 3 (P = 0.73); I^2 =0.0%
Test for overall effect: Z = 3.06 (P = 0.0022)

0.5 0.7 1 1.5 2
Favours control Favours treatment

Exercise only

Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
de Morton 2006	85/108	98/124		57.7 %	1.00 [0.87, 1.14]
Jones 2006	43/71	33/77		42.3 %	1.41 [1.03, 1.94]
Total (95% CI)	**179**	**201**		**100.0 %**	**1.15 [0.80, 1.66]**

Total events: 128 (Treatment), 131 (Control)
Heterogeneity: Tau^2 = 0.06; Chi^2 = 4.57, df = 1 (P = 0.03); I^2 =78%
Test for overall effect: Z = 0.77 (P = 0.44)

0.1 0.2 0.5 1 2 5 10
Favours control Favours treatment

Nutritional interventions

- Malnutrition a common problem for older patients and those with chronic diseases
- Malnutrition contributes to deconditioning and poor outcomes.

Nutritional screening for improving professional practice for patient outcomes in hospital and primary care settings

Omidvari AH. Cochrane 2013; 6

- Found three studies of nutrition screening, but no significant outcomes at all.

Nutritional supplementation for hip fracture aftercare in older people

Avenell A. Cochrane 2010; 1.

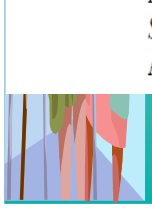
- Included 24 studies of nutritional intervention (multicomponent/ high protein/ vitamins/ peptides/ dietitian) by various routes (oral, NG, IV) after hip #.
- Mortality Risk ratio (RR) 0.76, 95% CI 0.42 to 1.37
- Complications RR 0.81, 95% CI 0.58-1.13
- ADL Function - no change

Nutritional supplements for hip # patients

Avenell A. Cochrane Issue 1, 2010.

Table 3. Length of hospital stay data used for significance testing

Study ID	Intervention (n, mean, sd)			Control (n, mean, sd)			Mean difference (99% confidence interval)
Oral supplements							
Brown 1992	5	27.00	10.00	5	48.00	37.00	-21.00 days (-65.15 to 23.15)
Bruce 2003	50	17.70	9.40	58	16.60	9.20	1.10 days (-3.53 to 5.73)
Madigan 1994	18	16.00	8.00	12	15.00	11.00	1.00 day (-8.51 to 10.51)
Nasogastric tube feeding							
Sullivan 1998	8	38.20	36.90	7	23.70	20.00	14.50 days (-24.34 to 53.34)
High protein supplements							
Espaulella 2000	85	16.40	6.60	86	17.20	7.70	-0.80 days (-3.62 to 2.02)
Neumann 2004	18	23.20	5.52	20	28.00	11.63	-4.80 days (-12.29 to 2.69)
Vitamin B1							
Day 1988	28	35.00	34.00	30	29.00	30.00	6.00 days (-15.75 to 27.75)



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MALNUTRITION SCREENING AND EARLY NUTRITION INTERVENTION IN HOSPITALISED PATIENTS IN ACUTE AGED CARE: A RANDOMISED CONTROLLED TRIAL

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Abstract: *Objectives:* High rates of malnutrition have been reported in the older hospitalized patient population. This is recognised to impact on patient outcomes and health costs. This study aimed to assess the impact of nutrition screening and intervention on these parameters. *Design:* Randomised controlled prospective study. *Setting:* The study was performed in the acute geriatric medicine wards of the Prince of Wales Hospital, Sydney Australia. *Participants:* All patients admitted to these wards under a geriatrician with an expected length of stay

Nutritional status on Mini Nutritional Assessment

Holyday M. J Nutrition Health Aging 2012; 16: 562-8.

	Intervention N (%)	Control N(%)
Well nourished	12 (17%)	12 (17%)
At-risk of malnutrition	47 (66%)	40 (56%)
Malnourished	12 (17%)	20 (28%)

Did not measure ADL function
No change in Mortality

Length of stay

Holyday M. J Nutrition Health Aging 2012; 16: 562-8.

	Intervention	Control	p value
Well nourished	9.0	11.7	0.48
At risk of malnutrition	13.8	11.0	0.20
Malnourished	10.6	19.5	0.013

Hospital in the Home

- If part of the cause of deconditioning is due to"being in hospital", treatment at home may reduce deconditioning

Systematic reviews

A meta-analysis of "hospital in the home"

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1 Post Acute Care Services,

"Hospital in the home" (HITH) provides acute or subacute treatment in a patient's residence for a condition that would normally require admission to hospital.[1] It is also known as "hospital at home", "home hospitalisation" and "early supported discharge",[2-6] and it has been speculated that HITH improves outcomes. The key is substituting for inhospital care. HITH includes admission avoidance (ie, full substitution for hospitalisation) and early discharge followed by care at home (ie, shortened hospitalisation).[7,8]

Most HITH services are nurse based, but they may include doctors and allied health professionals.[9,10] Some focus on specialties (eg, surgical specialties,[11-20] medical specialties,[21-33] rehabilitation medicine,[34,35] geriatrics,[36,37] psychiatry,[38-42] infectious diseases,[43,44] respiratory diseases[45-55] or orthopaedics[56]), diagnostic groups (eg, hip fracture[57,58] or stroke[59-70]) or a mixture.[71] The literature is confusing because many studies on HITH do not use the term HITH (or any similar terms) and some studies use the term HITH but do not involve substitution for inhospital care.

Abstract

Objective: To assess the effect of "hospital in the home" (HITH) services that significantly substitute for inhospital time on mortality, readmission rates, patient and carer satisfaction, and costs.

Data sources: MEDLINE, Embase, Social Sciences Citation Index, CINAHL, EconLit, PsycINFO and the Cochrane Database of Systematic Reviews, from the earliest date in each database to 1 February 2012.

Study selection: Randomised controlled trials (RCTs) comparing HITH care with inhospital treatment for patients aged >16 years.

Data extraction: Potentially relevant studies were reviewed independently by two assessors, and data were extracted using a collection template and checklist.

Data synthesis: 61 RCTs met the inclusion criteria. HITH care led to reduced mortality (odds ratio [OR], 0.81; 95% CI, 0.69 to 0.95; $P = 0.008$; 42 RCTs with 6992 patients), readmission rates (OR, 0.75; 95% CI, 0.59 to 0.95; $P = 0.02$; 41 RCTs with 5372 patients) and cost (mean difference, −1567.11; 95% CI, −2069.53 to −1064.69; $P < 0.001$; 11 RCTs with 1215 patients). The number needed to treat at home to prevent one death was 50. No

Caplan GA. MJA 2012; 195: 512-9.

- 19% ↓ mortality
- 25% ↓ readmissions

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2005, Vol. 60A, No. 8, 1035–1038

Effect of Hospital in the Home Treatment on Physical and Cognitive Function: A Randomized Controlled Trial

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bidity, as well as (HITH) results in

Group	Admission Mean (*SEM*)	Discharge Mean (*SEM*)	*p* Value
HITH			
Barthel	15.18 (0.98)	15.43 (1.00)	NS
Instrumental Activities of Daily Living	6.76 (0.69)	7.39 (0.73)	.007
Mental Status Questionnaire	7.08 (0.51)	7.45 (0.51)	.004
Hospital group			
Barthel	14.78 (1.04)	14.73 (1.04)	NS
Instrumental Activities of Daily Living	6.22 (0.74)	6.14 (0.73)	NS
Mental Status Questionnaire	6.88 (0.56)	7.14 (0.56)	.031

Note: *SEM* = standard error of the mean; HITH = Hospital in the Home; NS = not significant.

Intensive Care

- Survivors of ICU of any age suffer new, long term
  - Cognitive impairment
  - Physical and functional disabilities
- Increased focus on delirium diagnosis and prevention
- Recent attempts to address deconditioning

Multicomponent liberation + animation strategy

- Liberation – ↓exposure to mechanical ventilation + sedatives
  - Spontaneous awakening trials
  - Spontaneous breathing trials
- Animation – early mobilisation
- "Awakening and Breathing Coordination, Delirium monitoring/management, and Early exercise/mobility" (ABCDE)

Results of ABCDE

Jackson JC. Crit Care Med 2012; 40: 1088-97.
Balas MC. Crit Care Med 2014; 42: 1024-1036.

- ↓ Time on ventilator
- ↓ Delirium incidence
- ↑ Cognitive function
- ↑ ADL function

Link between ABCDE + HITH?

- Overall attempts to reduce the "heavy hand" of medicine
- Less is more

Conclusion

- Deconditioning is a common side effect of illness and hospitalisation for older people
- BUT, it can be reduced through a number of strategies

Geriatric medicine is one of the youngest medical specialities in Australia but is also one of the fastest growing. Geriatric medicine offers a more holistic approach to patient care than organ-based internal-medicine sub-specialities. Patient-centred interventions aim to allow the patient to function optimally. This textbook has been designed to inspire and inform students of geriatric medicine about the science and art of aged care.

The book is structured to follow how geriatric-medicine clinicians approach patients who present with geriatric syndromes and must be assisted by systems of care. In an introductory part, overviews are provided of the biology of ageing, comprehensive geriatric assessment (the cornerstone of geriatric-medicine practice), multidisciplinary teamwork, and community services for older people in Australia. In the second part of the book, over 13 chapters, detailed coverage is provided of the geriatric syndromes, the so-called 'geriatric giants', immobility, incontinence, instability, and impaired intellect. In the third part of the book, over 10 chapters, 'Care in context' – care of older people in general practice and in residential aged care facilities, rehabilitation, acute and post-acute care, end-of-life issues, legal aspects of geriatric medicine, for example – is the focus; geriatric medicine is placed within the Australian health-care system. Individual chapters are written by specialist contributors. Case studies illustrate key points about assessment and management. Inclusion of three poems, by H W Longfellow, W B Yeats, and Dylan Thomas, will enable readers to 'feel the heart within geriatric medicine'.

Australasian medical students, junior hospital doctors working in geriatric medicine, and other members of aged-care teams (specialist nurses, physiotherapists, occupational therapists, social workers, etc.), will find in this book a succinct, readable, and authoritative introduction to the principles and practice of geriatric medicine.

About the editor:

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Geriatric Medicine: An Introduction Caplan

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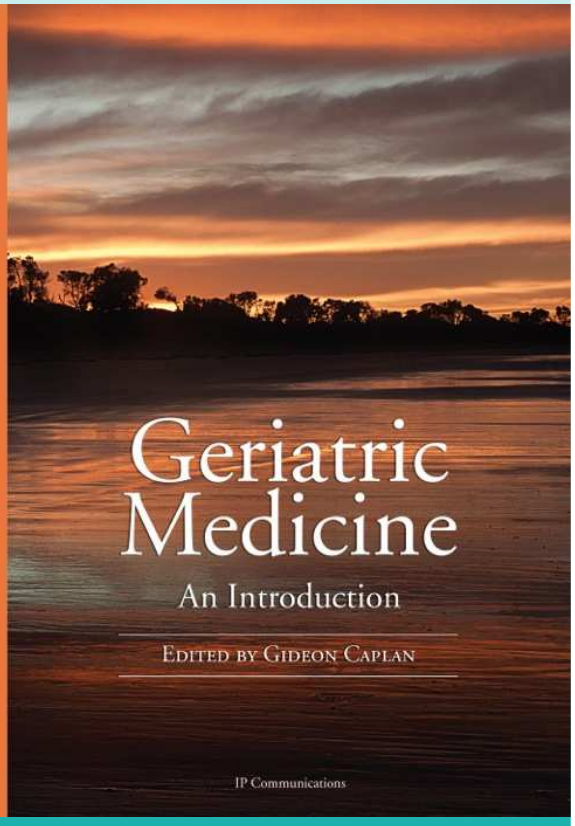

Geriatric Medicine

An Introduction

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