

Models and outcomes of acute hospital care for older patients

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Prevention of harm

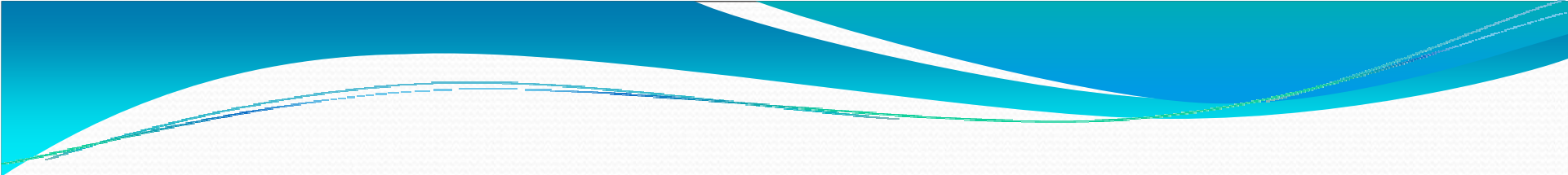
- “Hazards of hospitalisation in the elderly”

Creditor Ann Int Med 1993

- Complications of disease or Rx eg DVT, ADR
- Complications due to interaction of ageing (decreased physiological reserve) and hospitalisation

→ decline in function and nursing home placement

- Decline in muscle strength and aerobic activity
- Urinary and sensory “incontinence”
- Malnutrition and dehydration
- Impaired skin integrity
- Vasomotor and respiratory compromise

- 
- Recommended model of care:
 - Ambulation
 - Low beds, no rails, carpet, encouragement & assistance, minimise tethers
 - Reality orientation
 - Clocks, calendars, dressing, communal dining
 - Increased sensory stimulation
 - Proper lighting, decoration, glasses/hearing aids, recreation
 - Functional change
 - Interdisciplinary care, shared objectives, family participation, early d/c planning



This presentation

Functional decline

Delirium

Malnutrition

- Common and serious
- Under-recognised
- Management and prevention issues
- Evidence for interdisciplinary approach

Our service

- 5000+ acute general medical admission per annum
 - 1/3 of all emergency admissions via DEM
 - 1/6 of all overnight admissions at RBWH
- Outpatient and consultative services
- 4-5 gen med units with cyclical 24 hour admitting leading to comparable pt mix
- MAPU implemented 1999
- 20% bed contraction 2001

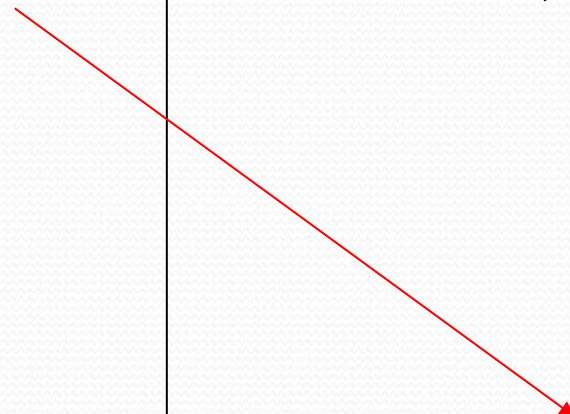


Functional decline

Usual function



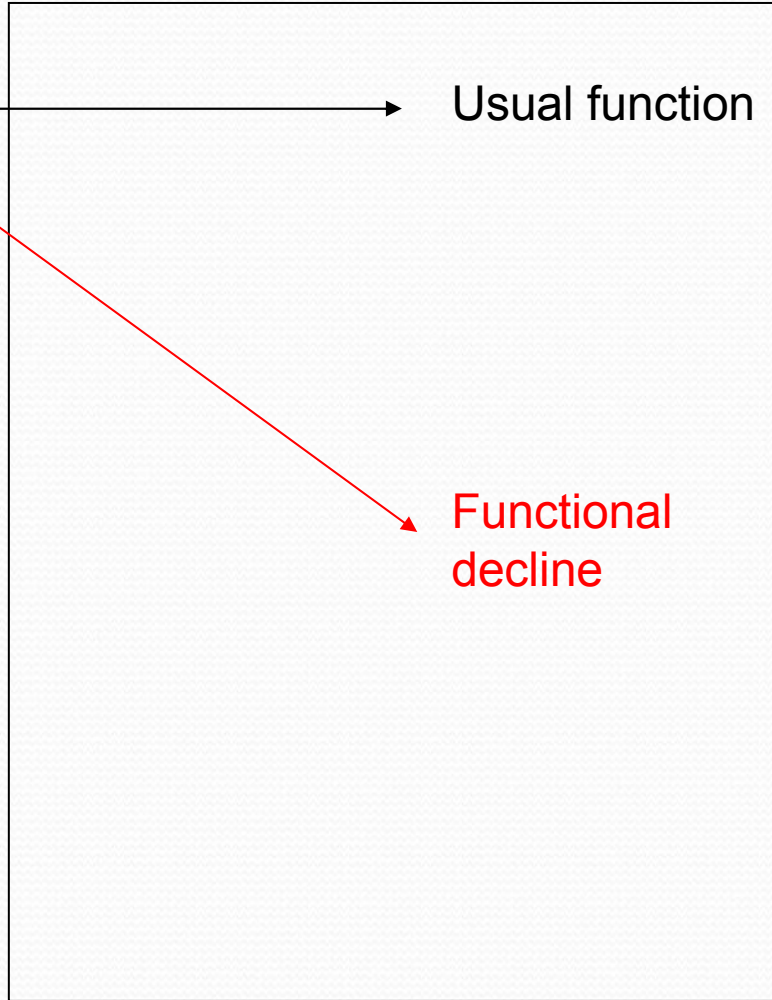
Usual function



Functional decline

PRE-HOSPITAL

HOSPITAL



Usual function



Stable



Stable

Pre-hospital decline

45-65%

PRE-HOSPITAL

HOSPITAL



Usual function



Stable



Stable

Recovery

40-60%

Pre-hospital decline



PRE-HOSPITAL

HOSPITAL



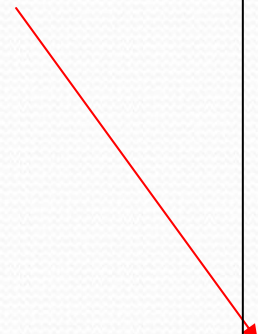
Usual function



Stable



Stable



Pre-hospital decline



Recovery



Incomplete recovery



In-hospital decline

PRE-HOSPITAL

HOSPITAL

Usual function



Stable



Stable

Pre-hospital decline



Incomplete recovery



In-hospital decline

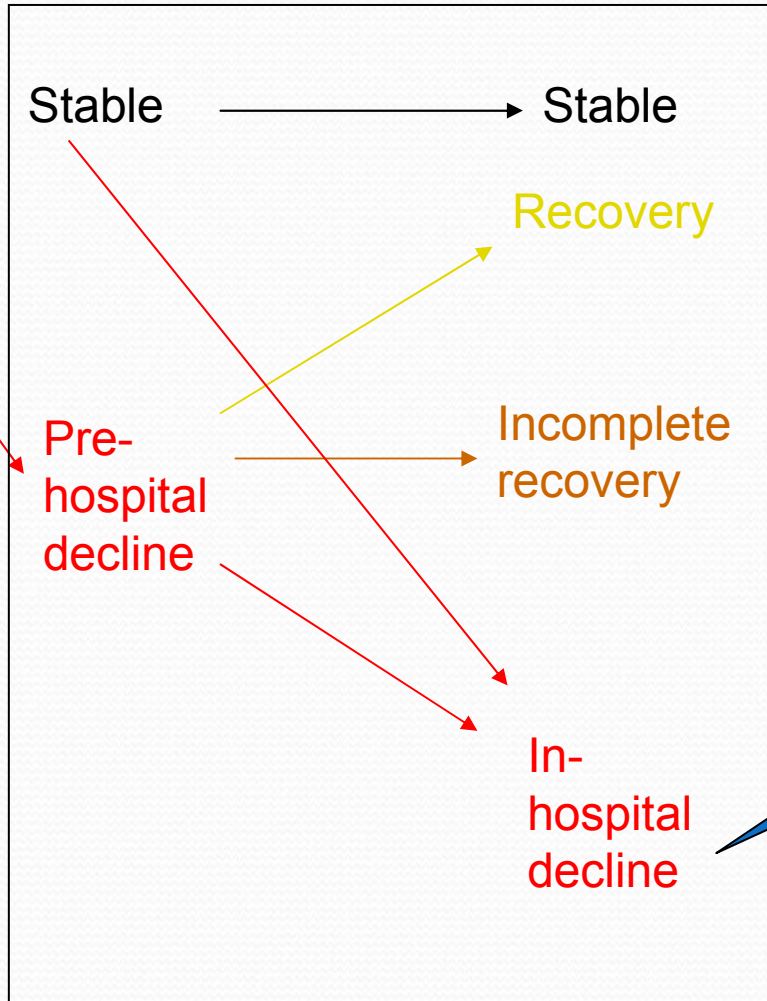
Recovery



2-29%

PRE-HOSPITAL

HOSPITAL



Consequences

Sager 1996

- Patients with decline at 3/12 had:
 - Higher mortality (16% v 7%)
 - More readmissions (27% v 20%)
 - More likelihood of NH placement (15% v 5%)

Fortinsky 1999

- In-hosp decline or failed recovery ↑NHome

Carlson 1998

- Overall decline ↑death/NHome/readmission

Rozzini 2005

- Prehospital decline ↑mortality

Preventing functional decline

- Stuck et al meta-analysis (Lancet 1993)
 - 28 trials comprehensive geriatric assessment
 - Inpatient geriatric evaluation and management models (6 studies) showed
 - 35% reduction in mortality
 - Improved physical function at 12 months
 - More likely to be living at home at 6 months

Preventing functional decline

- Baztan meta-analysis (BMJ 2009)
 - 11 trials of acute care for elders units
 - No mortality difference
 - 18% reduction in functional decline in hospital
 - More likely to be living at home at 3 months
 - Trend to reduced LOS
 - No difference in readmissions

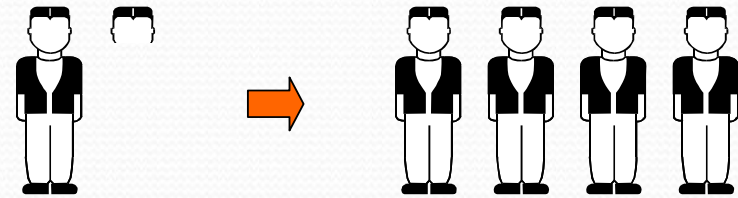
Aims

- To reduce length of stay (index, 6/12)
- To reduce functional decline in hospital
- To reduce inpatient mortality
- To reduce nursing home discharge

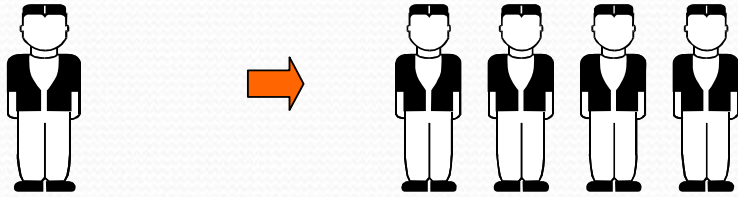
Our model (2003)

- Early senior assessment
 - Medical, nursing, AH
- Early and regular information sharing
 - Mandated daily MDT meetings
- Early discharge planning
 - Specify expected discharge date post-take
- Increased allied health resourcing

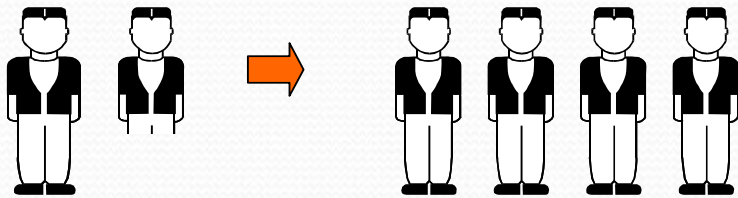
PHYSIO



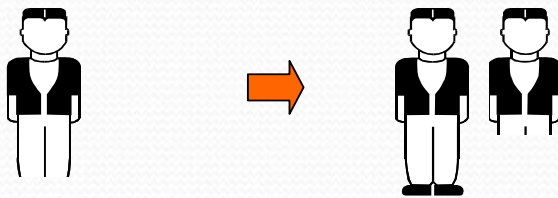
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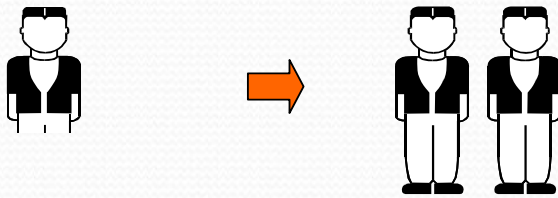
SOCIAL
WORK



NUTRITION



SPEECH



Evaluation

- Prospective controlled trial
 - Existing allocation to control vs intervention
 - 3 months “run-in”
 - 24 weeks data collection
- Ethics : individual consent waiver, “opt out”

Patient variables

- Age, sex, usual residence
- “Geriatric criteria”
 - History of ADL dependency, dementia, malnutrition, depression, incontinence, walking difficulty, falls, prior stroke, previous admission (Reuben 1995)
- Functional status 2 weeks prior, admission, discharge using 6 item Katz (Sager 1998)
- Diagnosis, cost-weight

Patient characteristics

- N=1538 (746 usual care, 792 intervention)
 - 65% aged >65
 - 28% ADL dependency
 - 55% living alone in community
 - 14% from residential aged care

Outcomes

- **Trend to reduced LOS**
 - 7.3 vs 7.8 days index admission (p=0.18)
 - 13.7 vs 15.1 days over 6 months (p=0.16)
- **Significantly reduced in-hospital decline**
 - 3.2 % vs 5.5% p=0.04
- **Significantly reduced inpatient mortality**
 - 3.9% vs 6.4% p=0.03
- No difference in discharge function or NH placement

Functional decline rates

- Subgroup aged 65+, LOS >48h
 - Pre-hospital decline 70%
 - In-hospital recovery 42%
 - In-hospital decline 7%
 - Overall decline 40%

Functional recovery

Improving functional recovery

- Long stay multidisciplinary rehabilitation models
 - Rubenstein1984, Applegate 1990, Cohen 2002
- Multidisciplinary assessment, management and discharge planning models
 - Landefeld 1995, Inouye 1999
- Graded exercise programmes delivered by an allied health assistant
 - Siebens 2000, Jones 2006

Our model (2005)

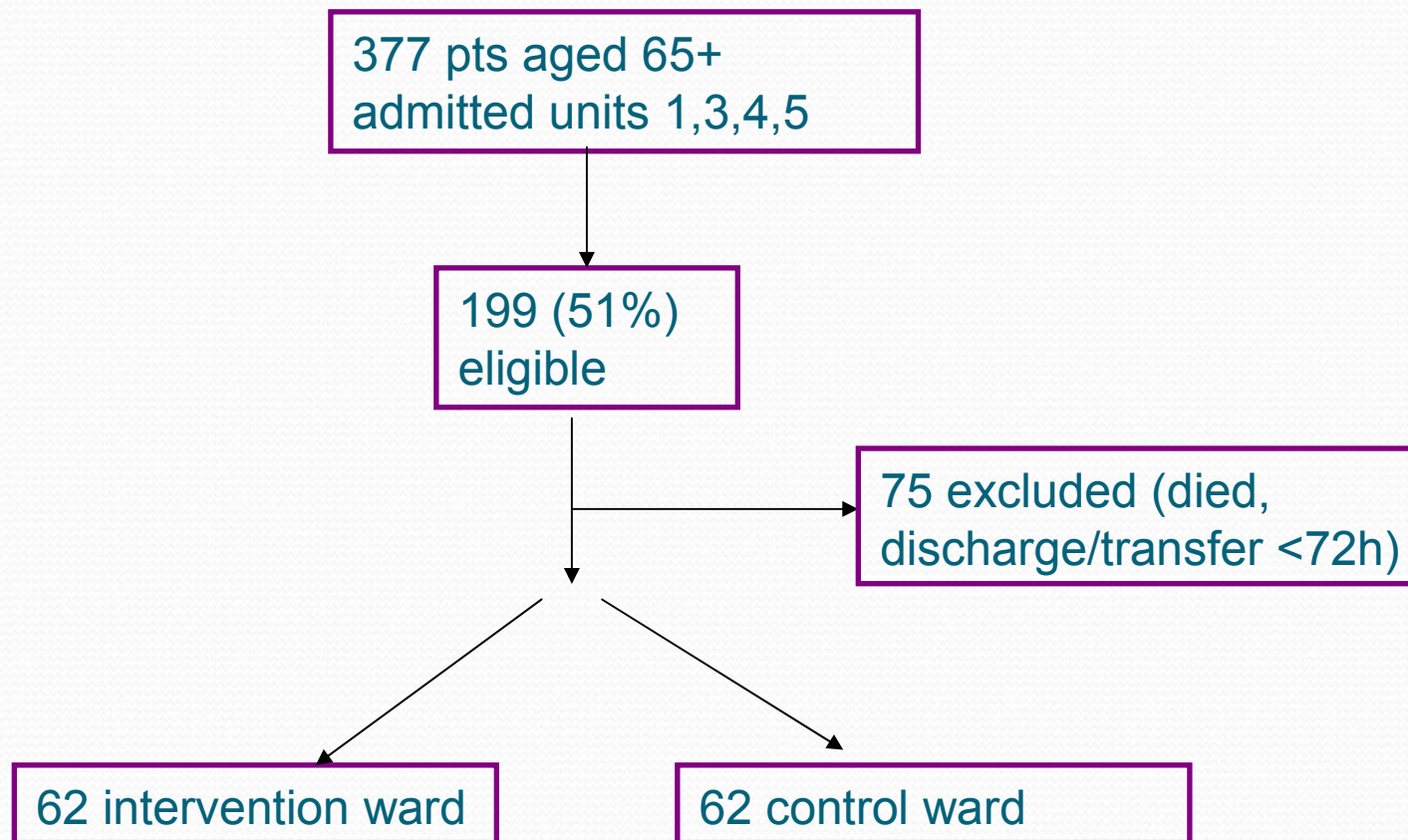
- Identified target patients:
 - Aged 65+ from community
- Team physio: individual graded exercise
- Team emphasis on mobility and independence: everyone's business
 - Education, detailing, marketing
- Patients/carers support
 - Information, diary
- Cognitive groups

Evaluation

- Prospective controlled trial
 - Existing patients allocation to control or intervention
- Blinded outcome evaluation
 - Functional status at admission and discharge (MBI)
 - Chart abstraction for delirium, falls, length of stay
- Process evaluation by project manager

- 10 week evaluation period

Enrolment



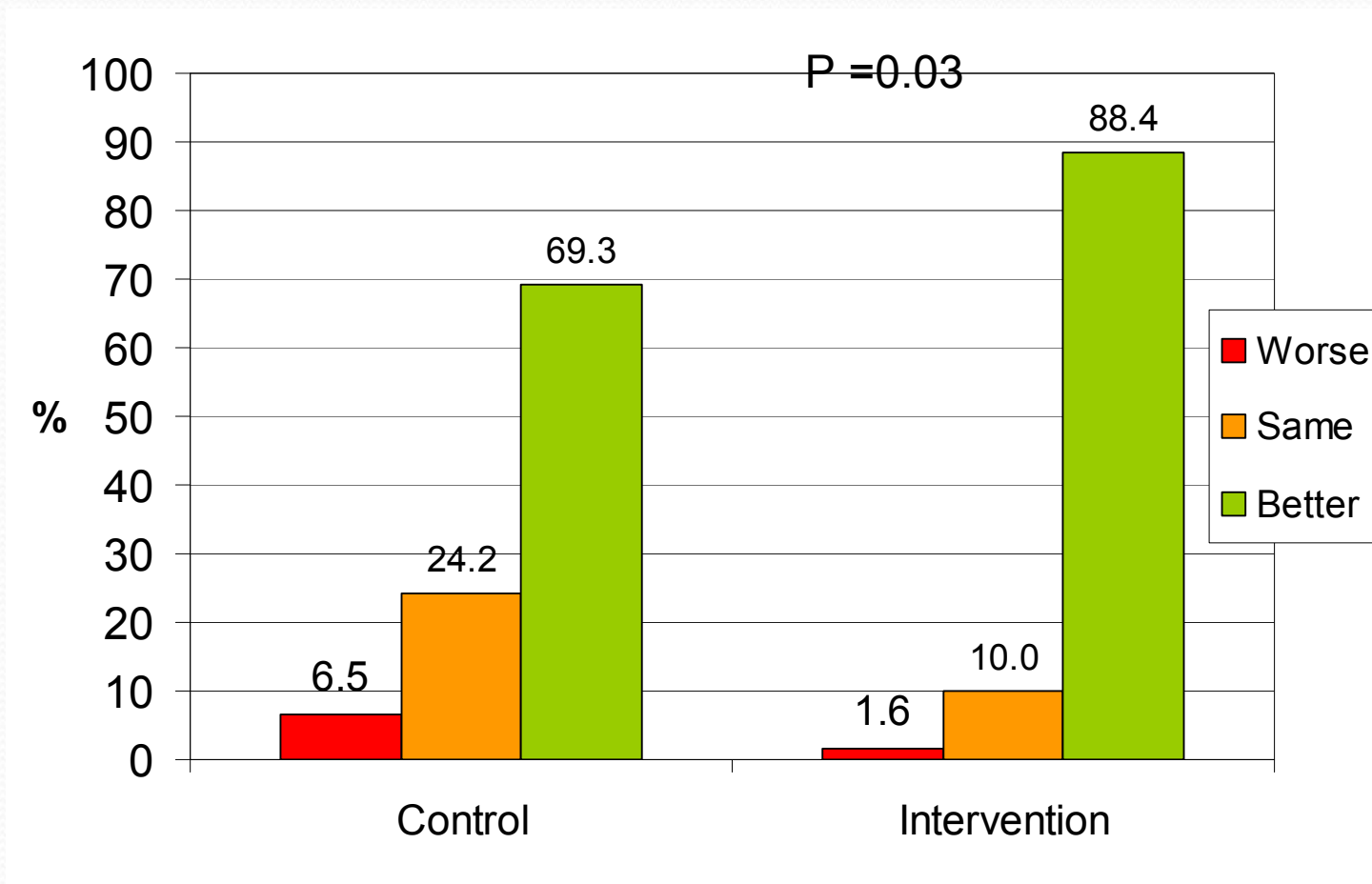
Pt characteristics

- N=124
 - 37% aged 85+
 - 45% living alone
 - Median 2 comorbidities, 6 medications
 - Median MBI score 72

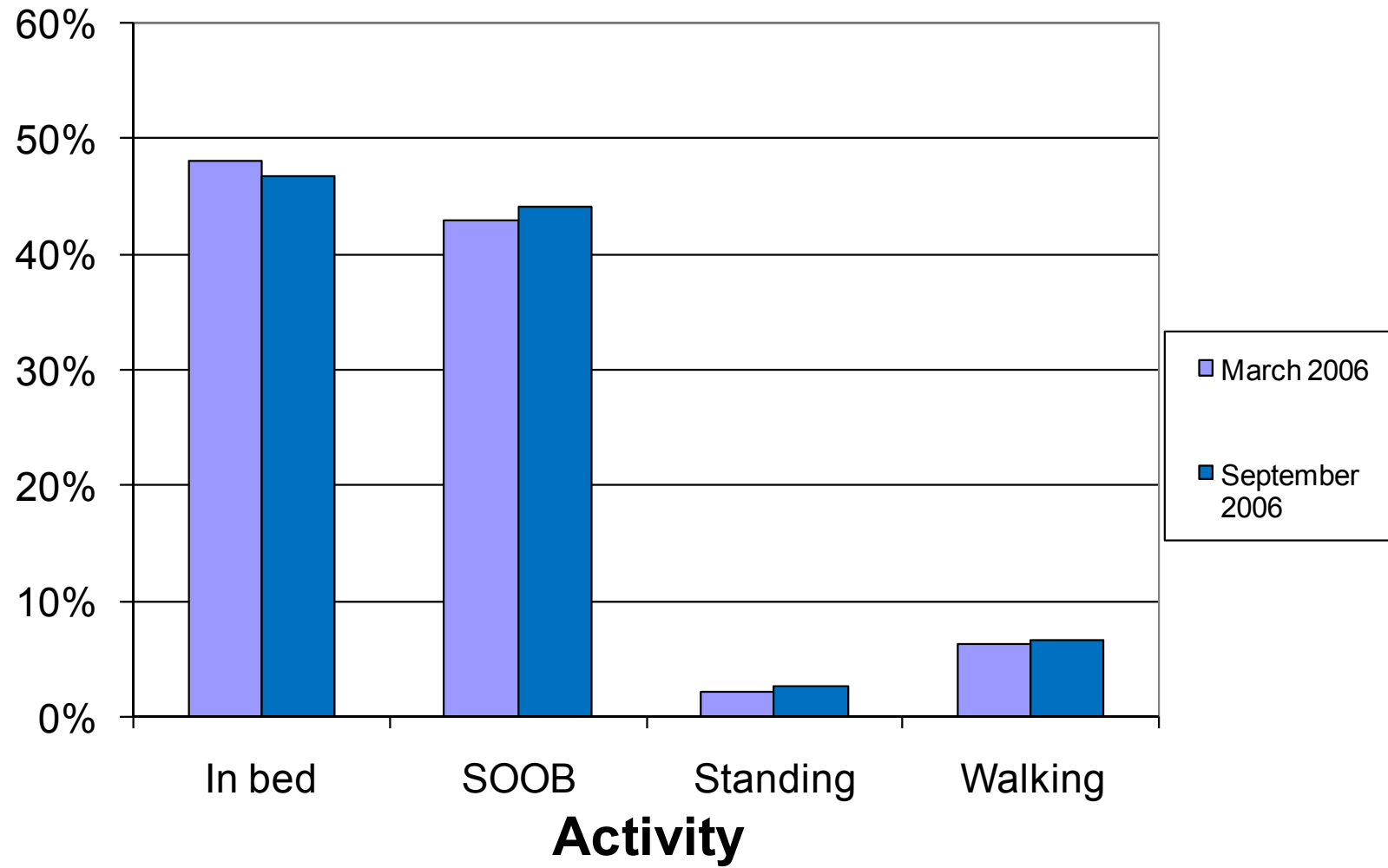
Outcomes

- **Significantly greater improvement in MBI**
 - Mean improvement MBI score 8.5 vs 3.5 (p=0.03)
 - 66% vs 47% improved by 5 points or more (p=0.03)
- **Trend to reduction in**
 - Falls (5% vs 11%, p=0.19)
 - Delirium (8% vs 14%, p=0.25)
 - Patients requiring walking aid at discharge (39 vs 54%, p=0.11)
- No difference in LOS or readmission

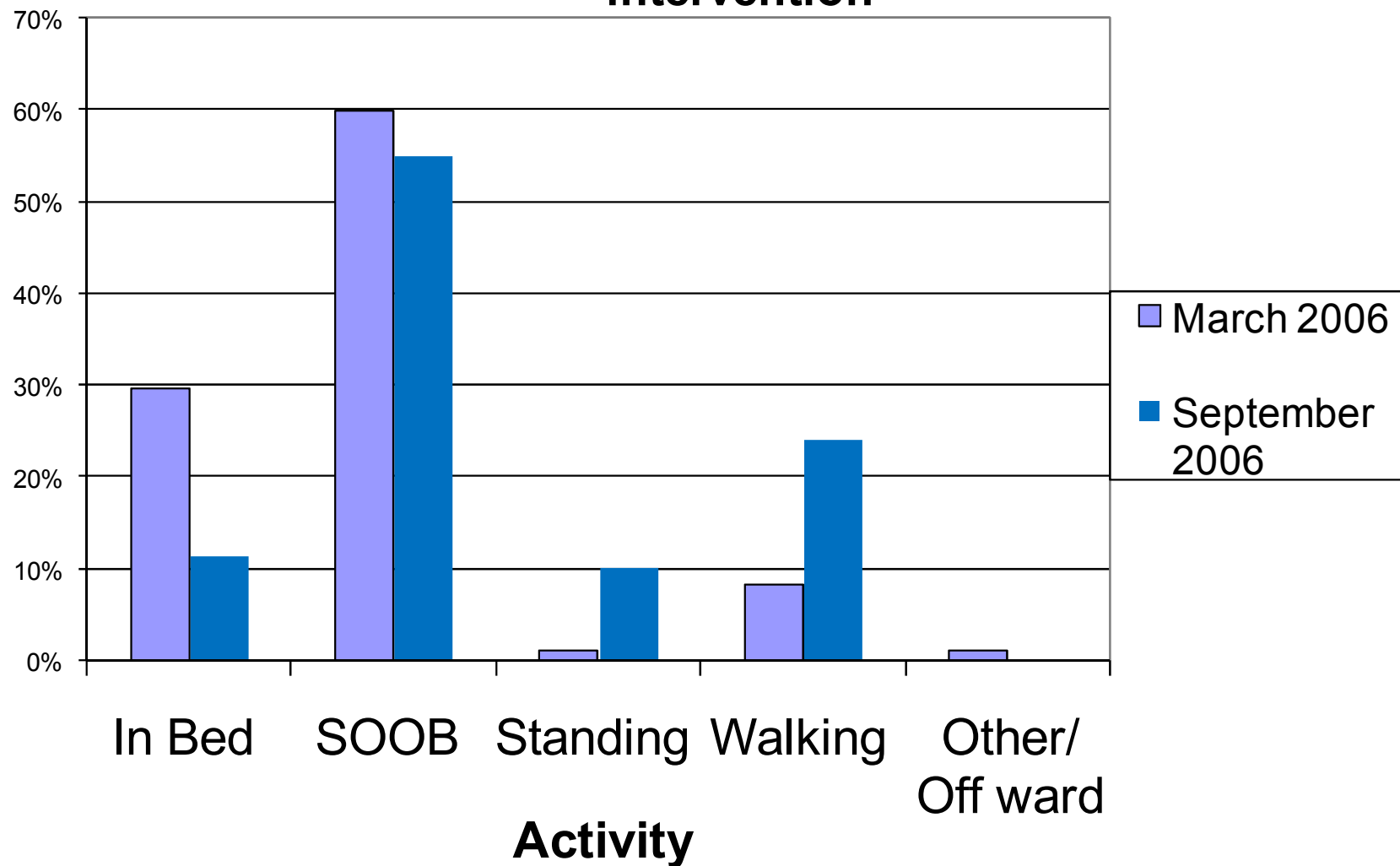
Functional changes



Percentage of time observed in various activities-control



Percentage of time observed in various activities -intervention





In summary

An integrated, team-wide program focussed on functional recovery can

- improve mobility levels on the ward, safely
- enhance return to baseline function
- reduce functional and cognitive decline in hospital

Delirium

Delirium

- Occurs in 10-50% hospitalised patients
 - 10-30% prevalent
 - 10-20% incident
- Consequences
 - Inouye et al JGIM 1998
 - Delirium at admission (12%) associated with
 - increased risk of death or new NHome placement
 - increased risk of functional decline

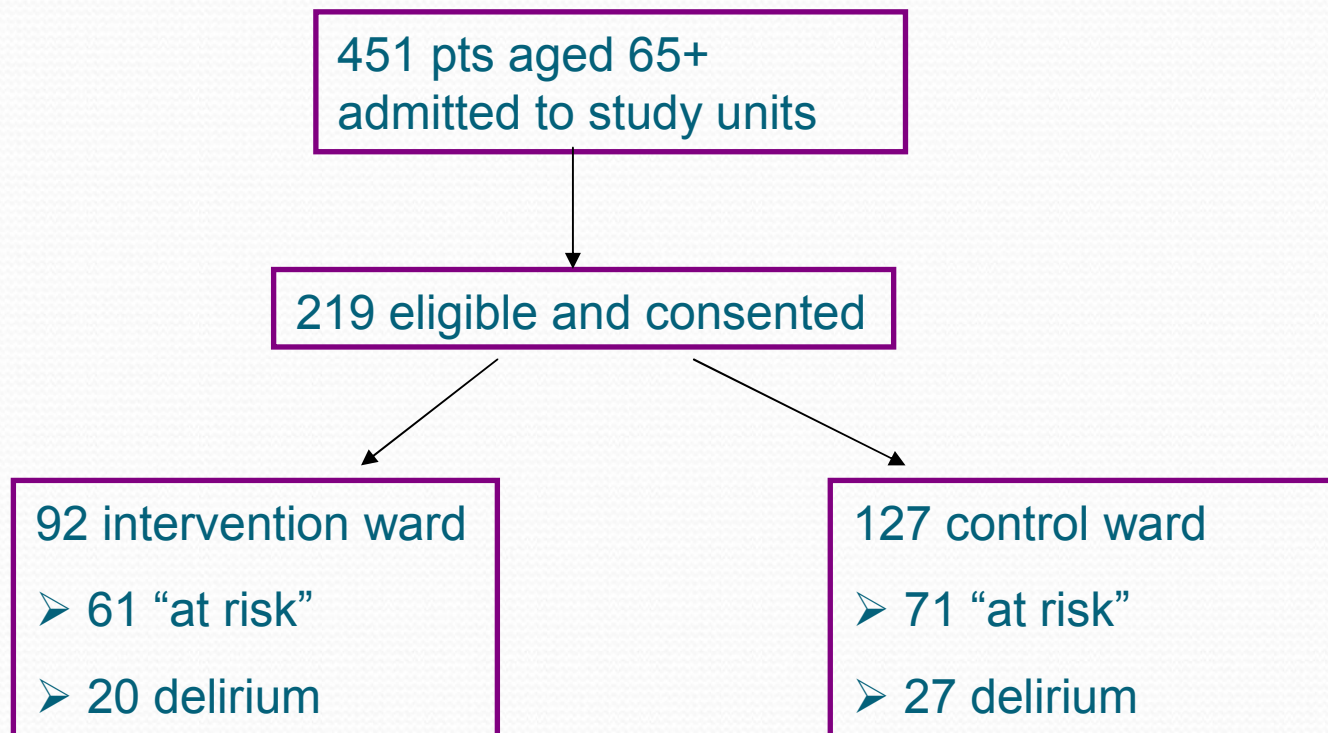
Reducing incidence of delirium

- Hospital Elder Life program (Inouye et al NEJM 1999)
 - Older medical patients without delirium at admission
 - Multidisciplinary care model
 - Medication review
 - Fluid, nutrition and sleep protocols
 - Reorientation, cognitive stimulation, mobility
 - Significant reduction in new onset delirium

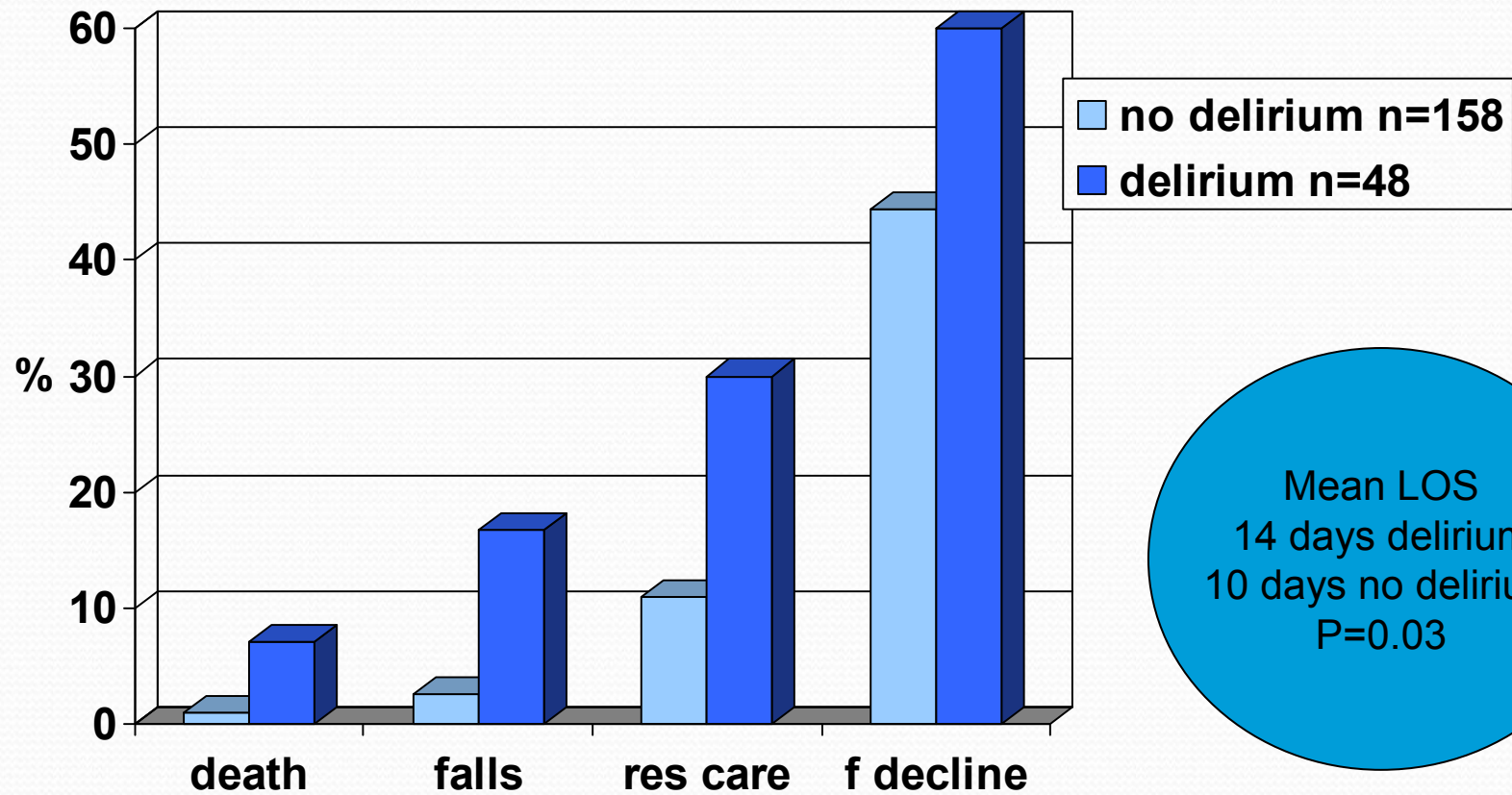
Our model (2008)

- Identified target patients
- Bed management processes
- Additional AIN, volunteers for hi-risk pts
- Team emphasis on delirium prevention strategies
 - Education, documentation
- Patient/carer support

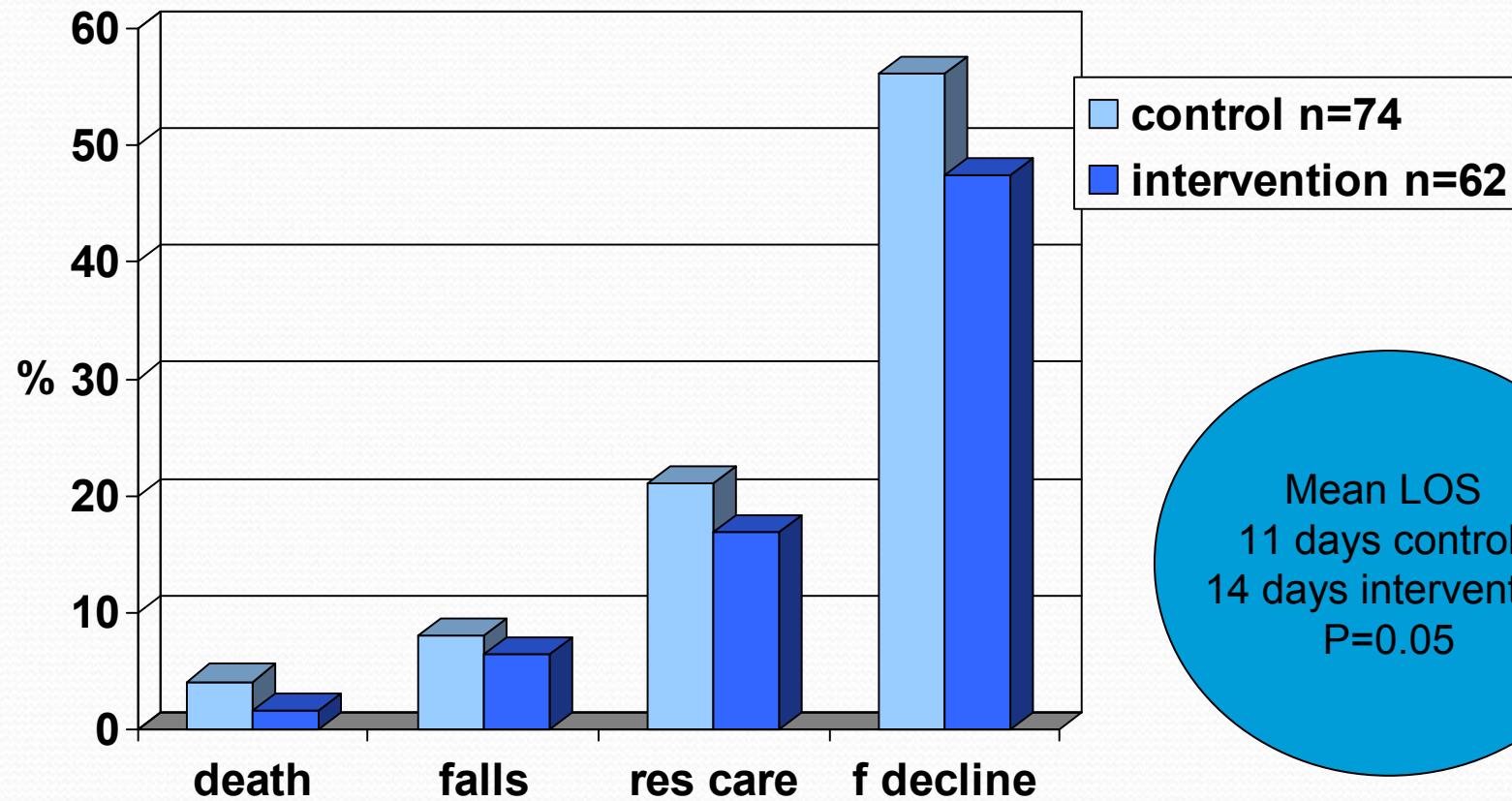
Enrolment



Outcomes: delirious pts

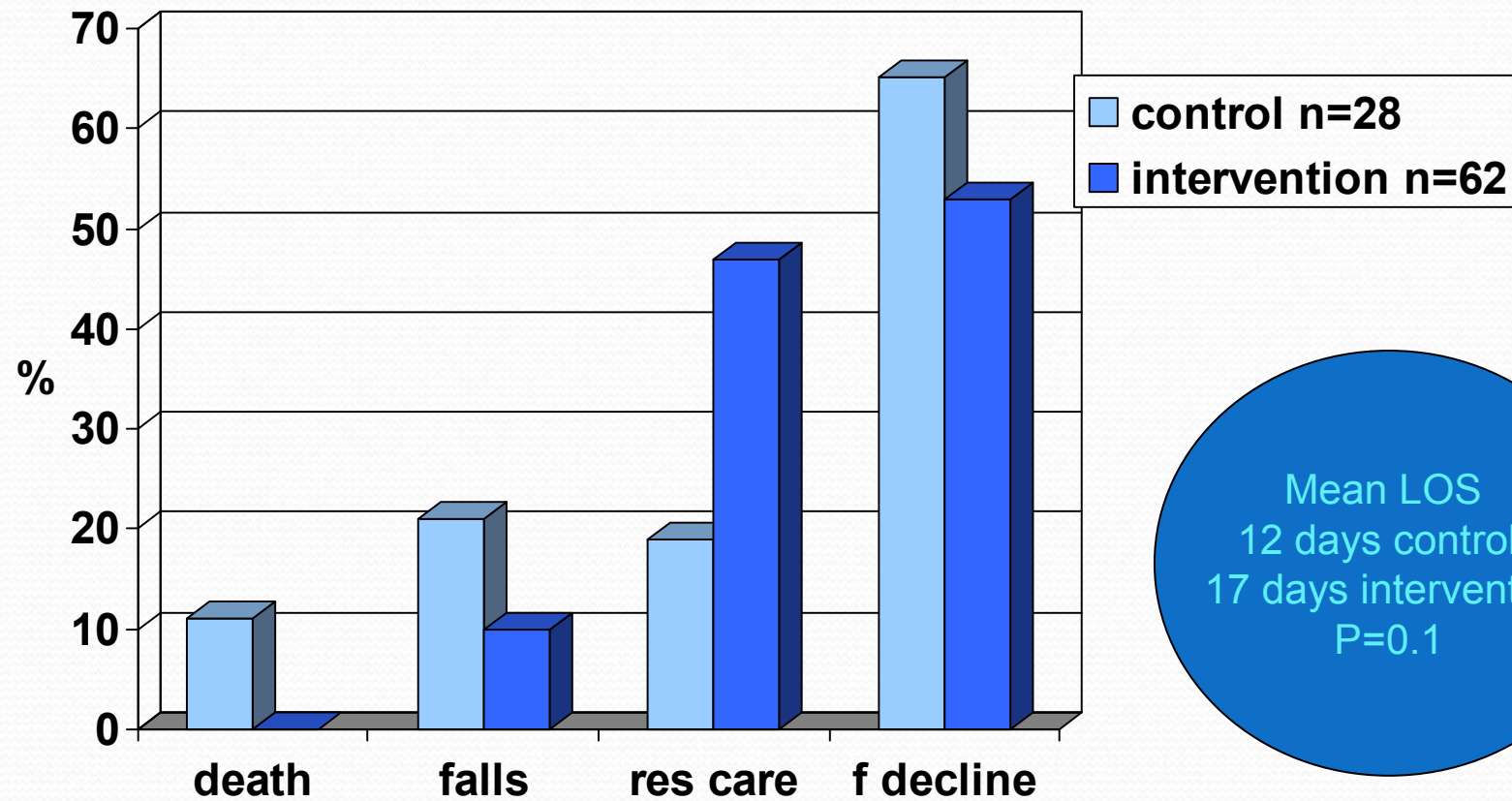


Outcomes: at risk subgroup



Mean LOS
11 days control,
14 days intervention
P=0.05

Outcomes: delirium subgroup



Mean LOS
12 days control,
17 days intervention
P=0.1

Only 25% control group had resolved delirium at discharge (63% i/vention)

In summary

An interdisciplinary intervention, including screening, bed management, daily care protocols and intensive education

- May have improved care and some outcomes
- BUT increased recognition of delirium may have led to longer acute hospital stay and definitive placement



Nutrition





Nutritional decline

- Malnutrition
 - 30-50% of hospitalised older patients
- Consequences
 - Increased risk of mortality, pressure ulcers, infections
 - Increased length of stay and readmissions
- Inadequate caloric intake in hospital
 - 30-60% of older medical patients consume <65% reqts

Observational study

- Cohort study n=132 aged 65+
 - Existing malnutrition (SGA B or C) 45%
 - Inadequate intake for resting energy exp in almost 50%
 - Predictors of inadequate intake
- Staff focus groups
- Environmental audits

Reasons for inadequate intake

- Patient related
 - Need for assistance with ADL
 - Delirium
 - Infectious diagnosis
 - ? Higher BMI
- System related
 - Diffused responsibility
 - Poor prioritisation
 - Frequent interruptions

Our model (2009)

- Targeted all older medical patients, supported by risk screening (MST)
- Team emphasis on adequate intake: everyone's business
 - Education, redesign of some processes
 - Mealtimes are priority
- Additional AIN for meal-related activities

Evaluation

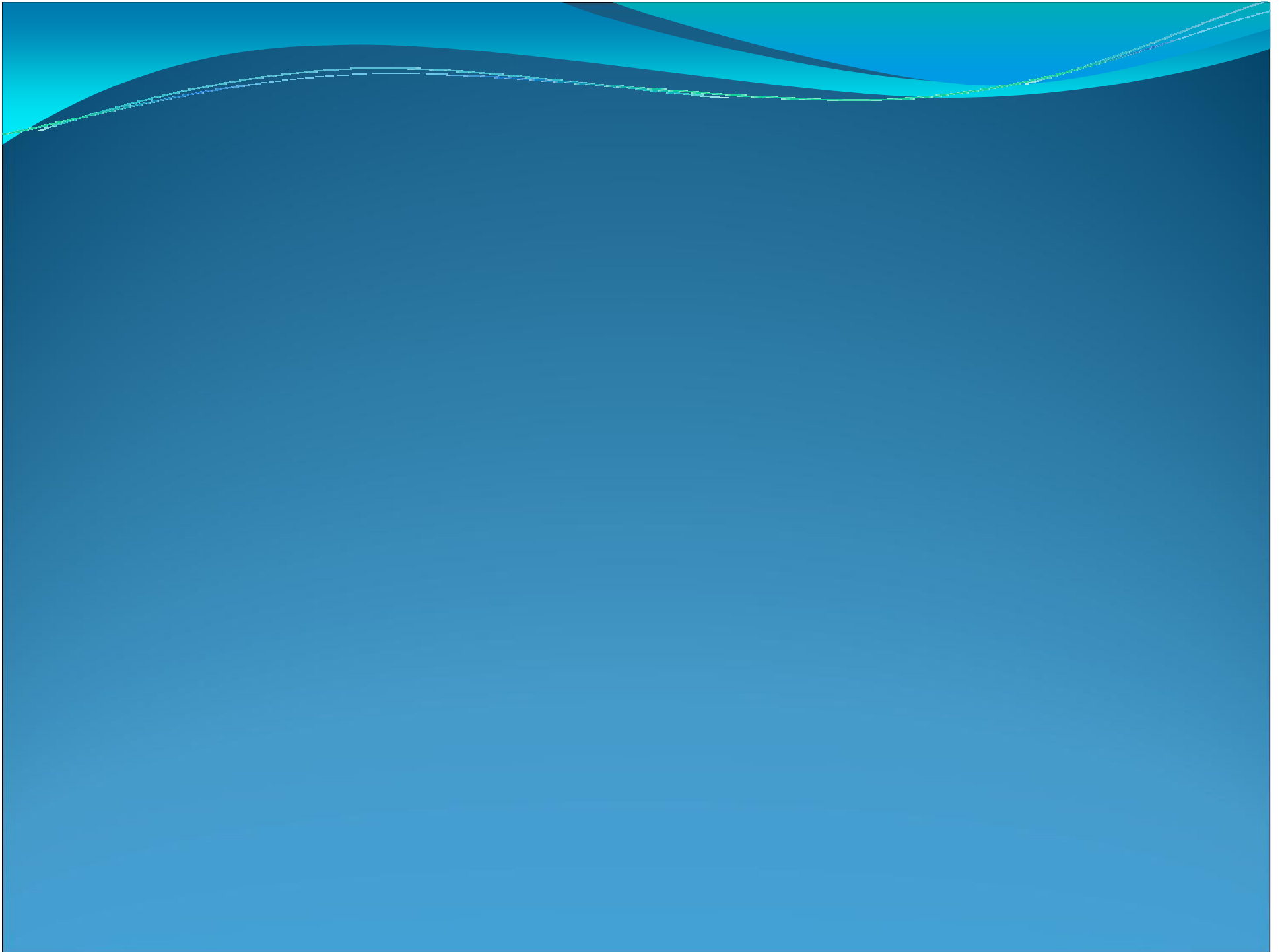
Time series design, ward-based strategies

Baseline data (n=132) used for education

- Investigation on 2 wards:
 1. Control then extra nursing time
 2. Control then protected mealtimes then both

Preliminary process observations

- Feeding assistance
 - Increase in number of nurses assisting at mealtimes
 - Increase in mealtime assistance by other staff
- Mealtime interruptions by staff
 - Reduction in interruptions by allied health & phlebotomy
 - Reduction in interruptions by nursing staff
 - Marginal reduction in interruptions by medical staff



Evolution of the model (1)

- Interdisciplinary care model
 - Defined service aims, structure, communication, resourcing and governance
 - Emphasis on efficiency and quality
 - Major impact on medical, allied health and senior nursing work practices
 - Established model, ongoing benefits
 - Has permitted other initiatives

Evolution of the model (2)

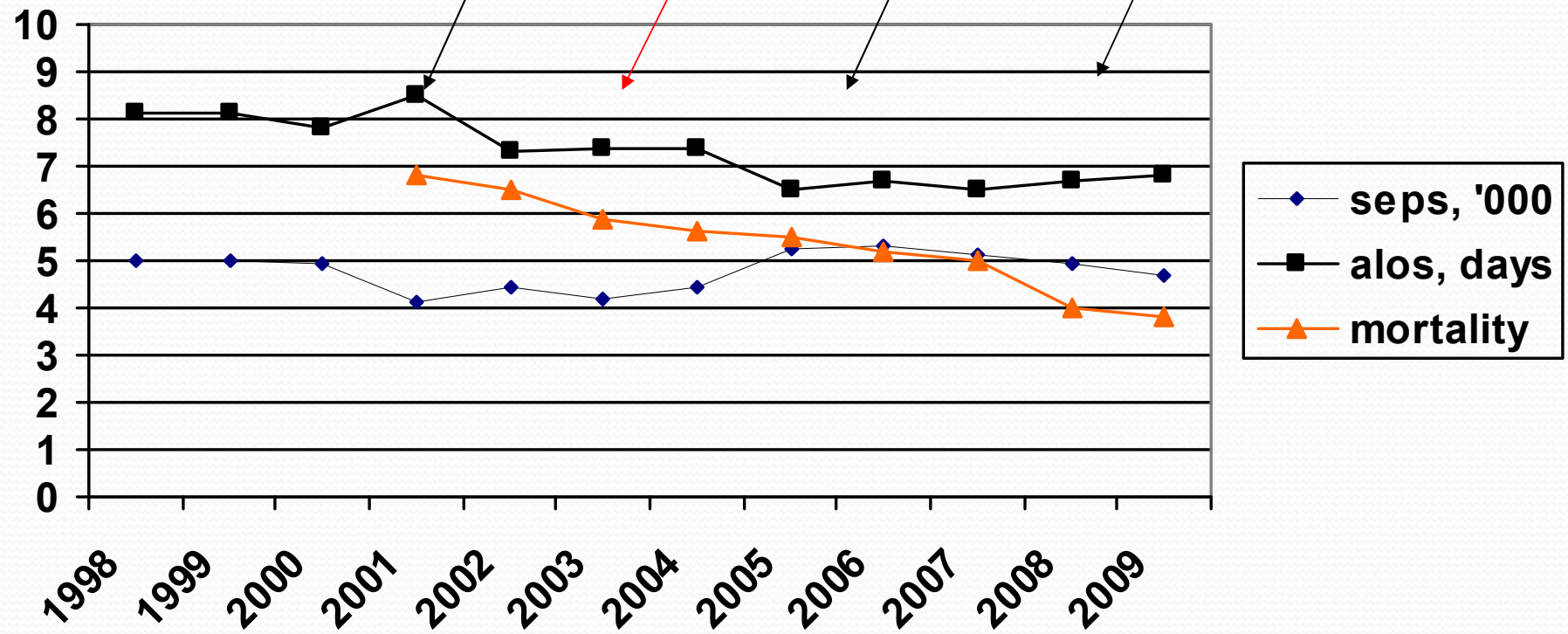
- Subsequent additions with a focus on function, cognition and nutrition
 - Defined “hands-on care”
 - Major impact on bedside nursing practice
 - Emphasis on quality not efficiency
 - Effective in project phase but difficult to maintain

Risk assessment and care planning

- Risk assessment for all inpatients
 - Integrates existing forms eg MST, Waterlow, falls risk
 - Primarily nursing responsibility
- Daily care plan
 - Facilitates communication between MDT and bedside nurse
 - Facilitates decision making re subacute care

Challenges in evaluation

- Ward-level interventions limit methods
- Environment of constant change
- Quality vs research
- Adequate sample size
- Consent issues
- Improving baseline





What can you do today

.....To get your inpatients moving?

.....To reduce the risk of delirium?

.....To ensure your patients eat enough?

What systems do we need?

- Shared understanding:
 - Systems for early identification of risk
 - Continuing interdisciplinary education
 - Systems for audit and feedback of performance
- Shared workload:
 - Adequate allied health staffing
- Shared focus:
 - Systems for interdisciplinary communication and role negotiation
 - Identification of areas for improvement

Our strategies to sustain

- Interdisciplinary governance
- Risk assessment and care planning tools
 - good uptake by nursing staff
- Interdisciplinary education program
- Interdisciplinary research



Imagine....



Acknowledgements

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