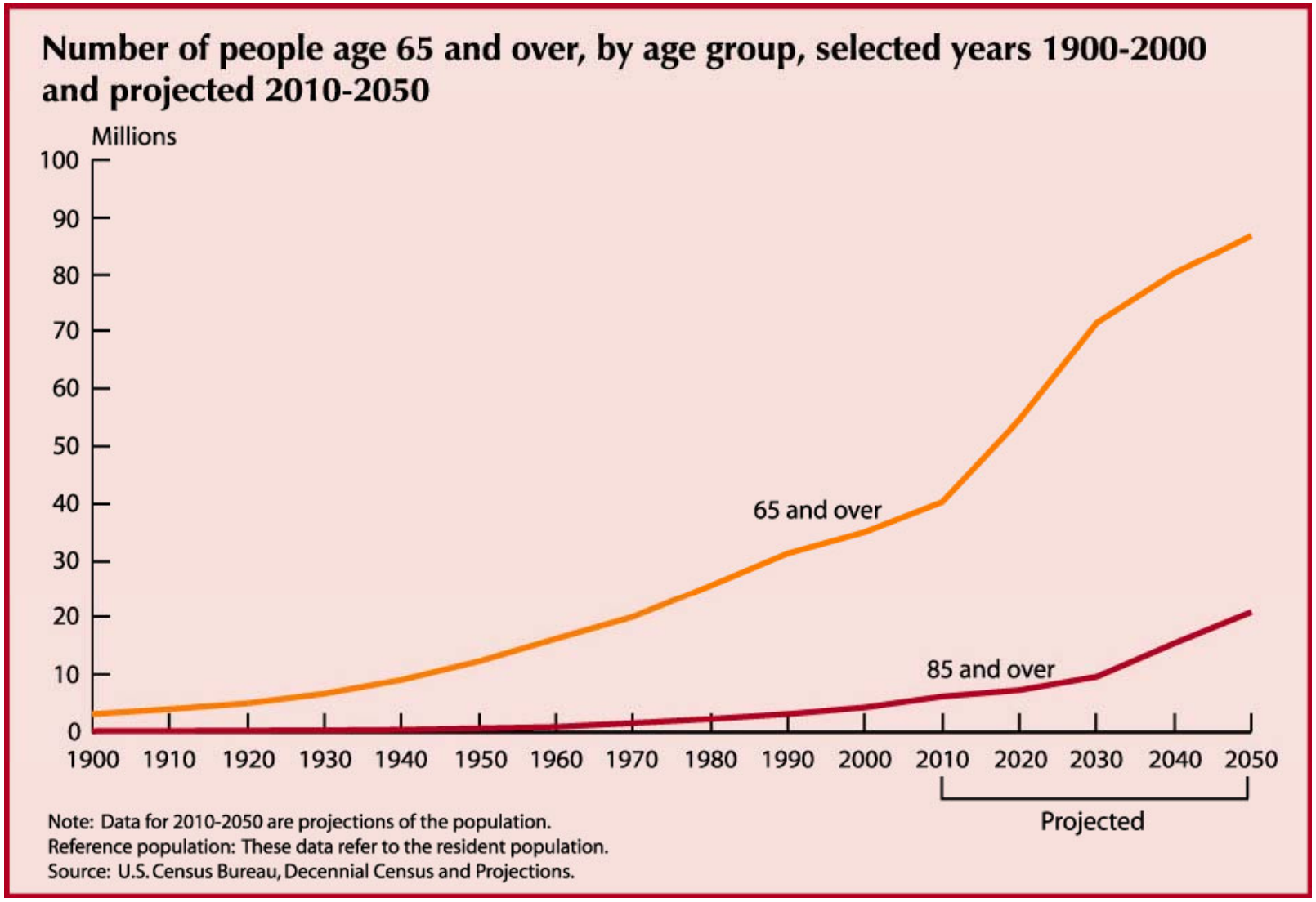
Heart Failure Disease Management

Harlan M. Krumholz

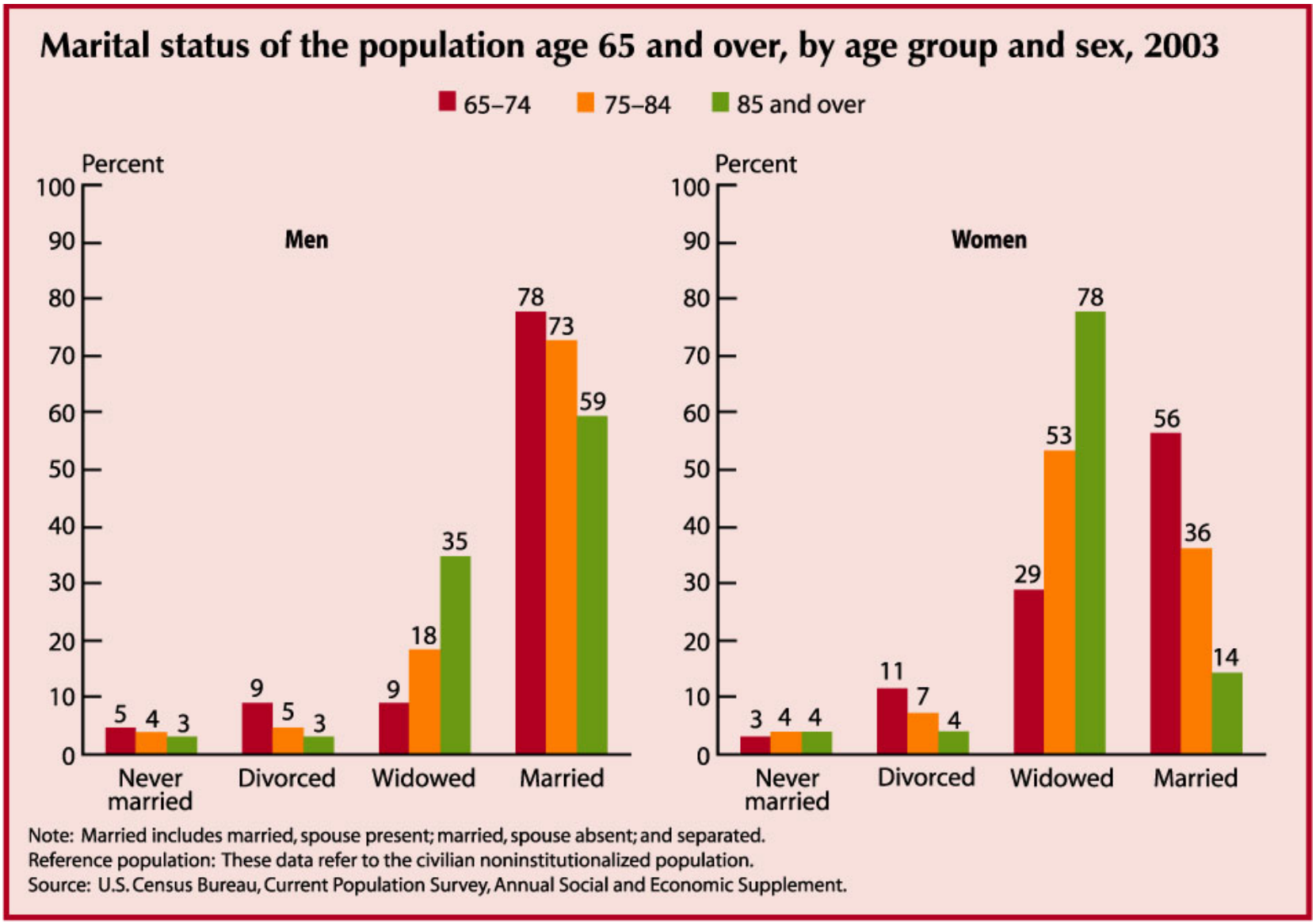
Harold H. Hines, Jr Professor of Medicine

Yale University School of Medicine

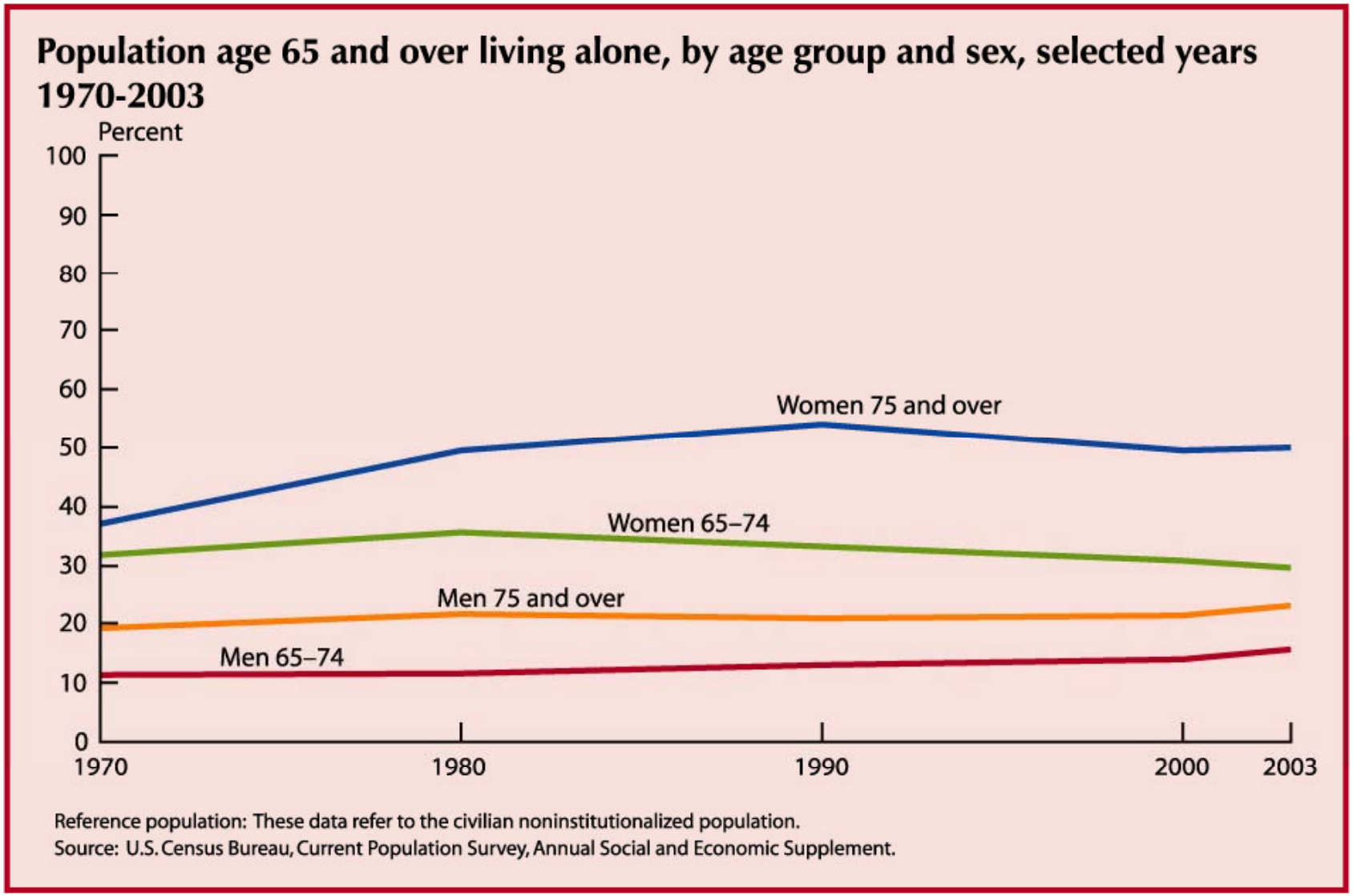
US Population Trends



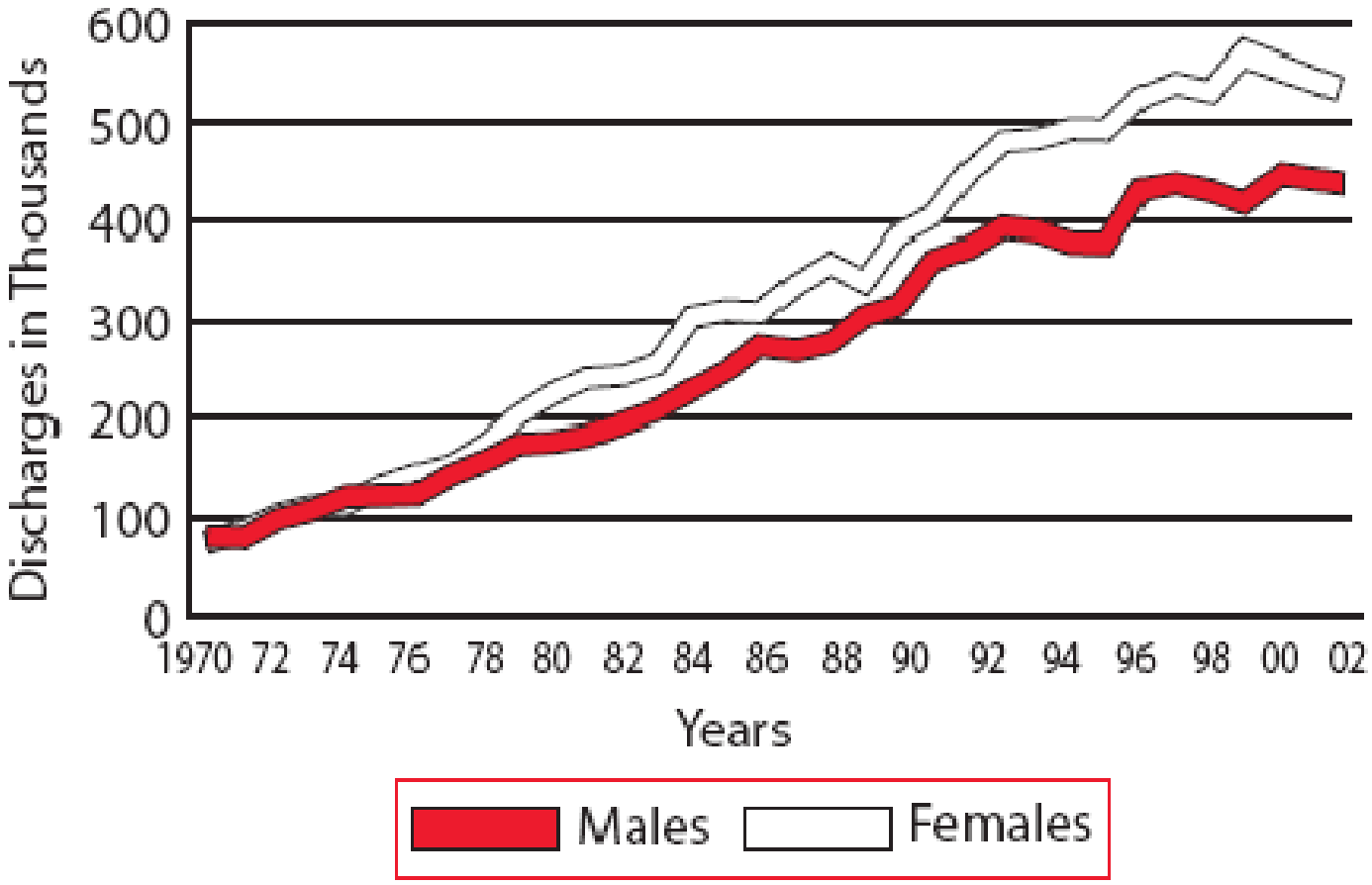
Marital Status by Age



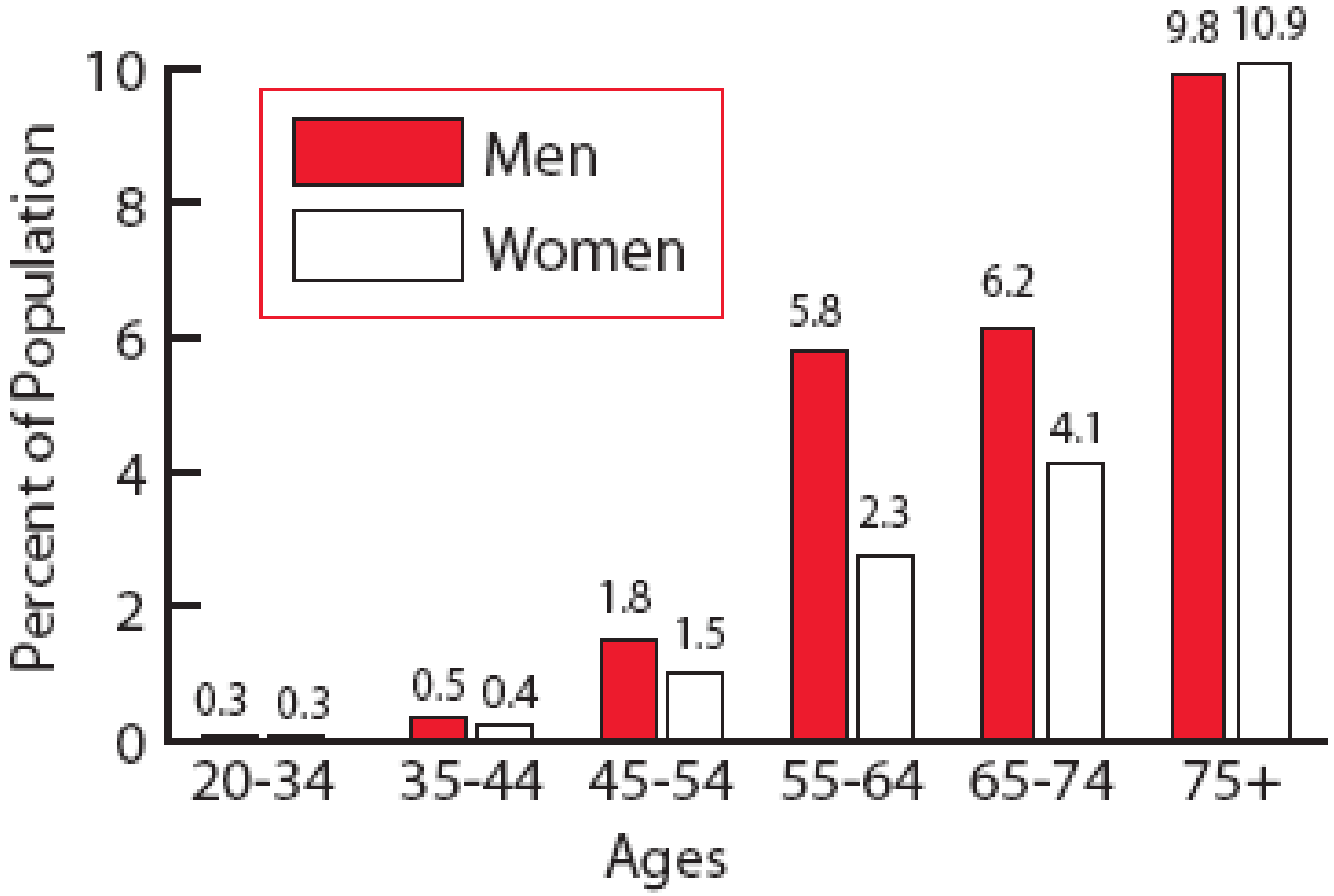
Living Alone



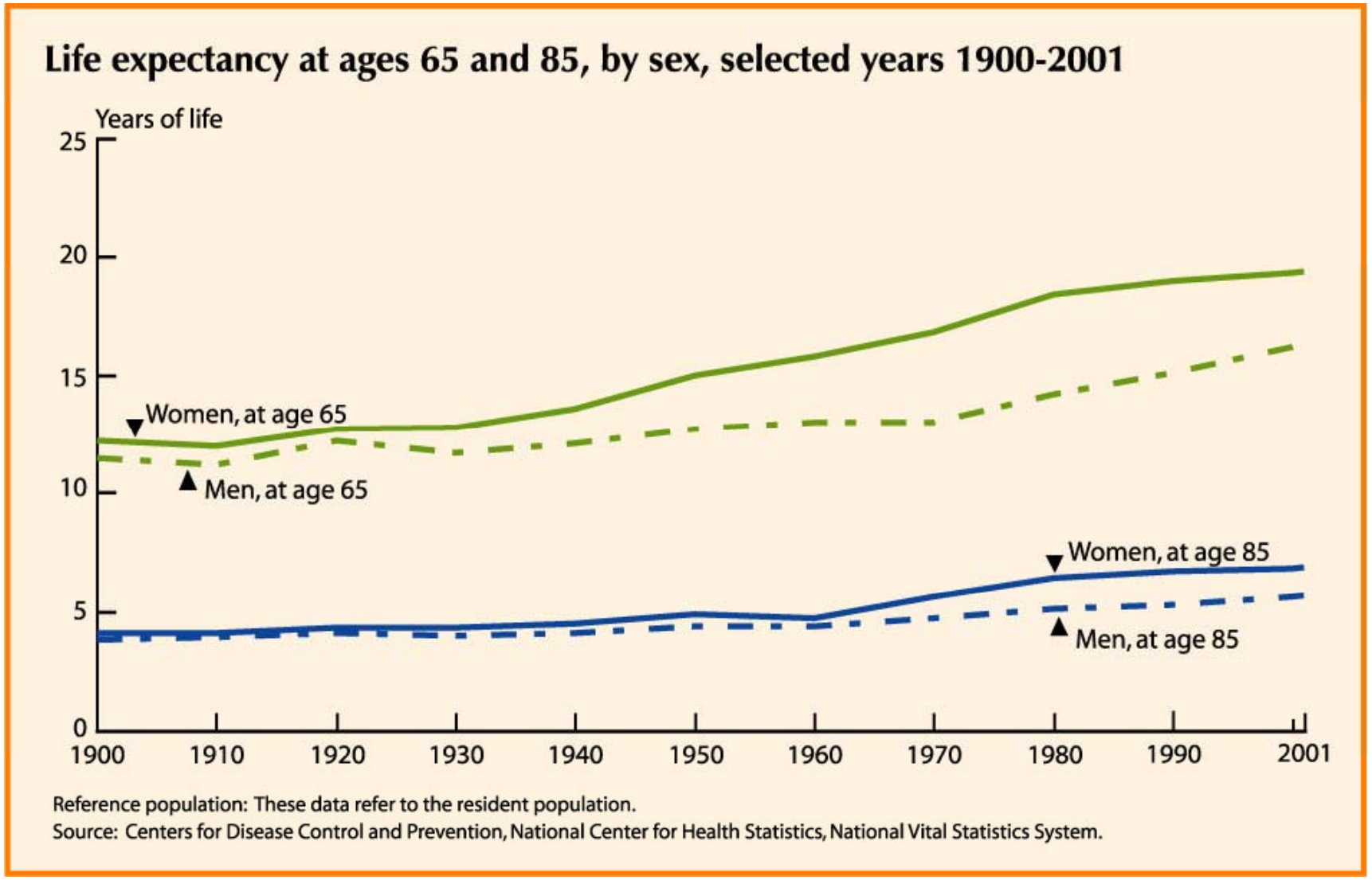
Heart Failure Hospitalization



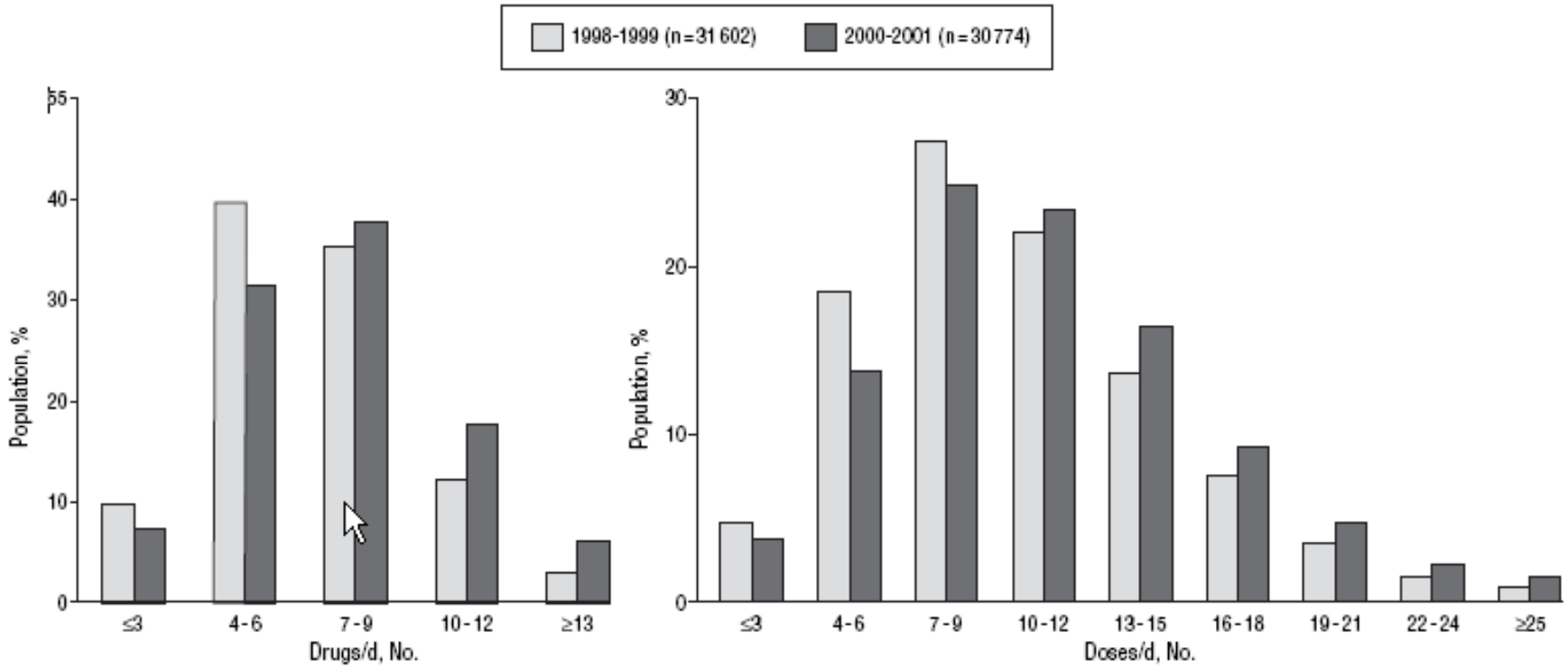
Prevalence of HF by Age



Life Expectancy

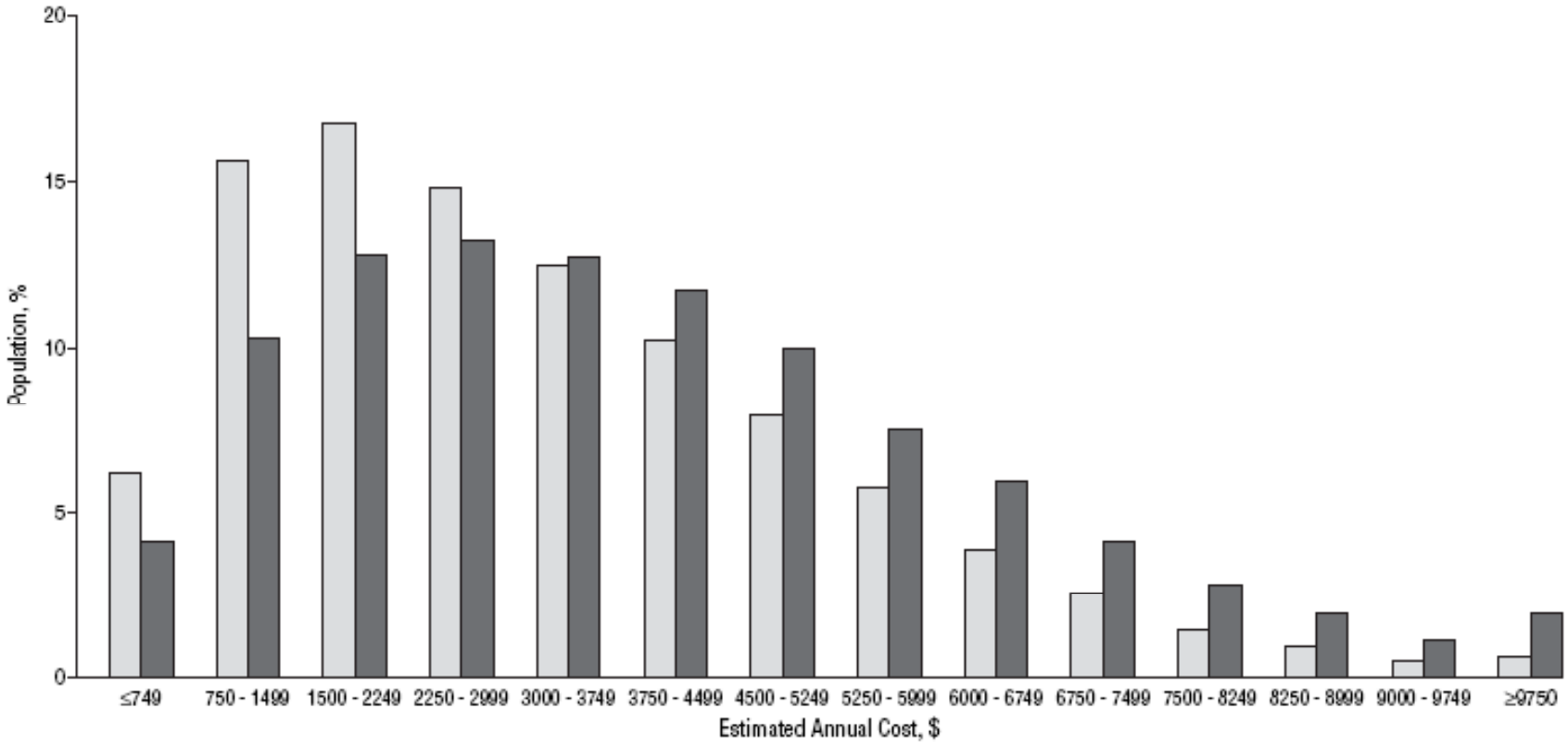


Polypharmacy



Arch Intern Med (in press)

Polypharmacy



Arch Intern Med (in press)

Trends in HF in Elderly: 1990s

- No change in 1-year mortality
- Length of stay decreased ~25%
- Admission to nursing homes increased

- Efficacy-Effectiveness Gap

What if we had a pill that…

- Improved outcomes (hospitalization and/or mortality)
- Had no side effects
- May save money

The Promise of Disease Management

- Improves outcomes
- Has No Side Effects
- Save Money

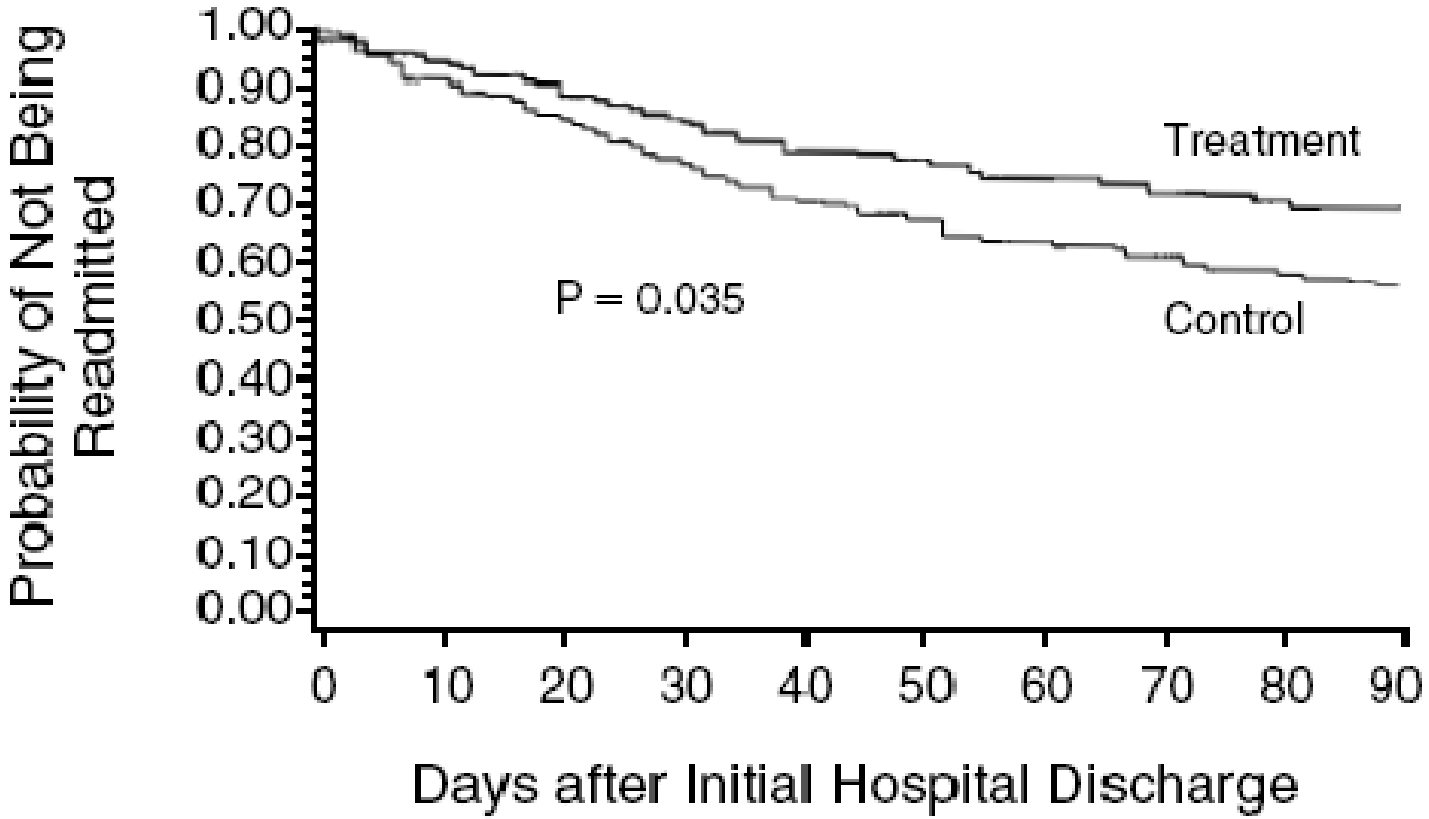
Disease Management: Definition

- System of coordinated healthcare interventions and communications for populations with conditions in which patient self-care efforts are significant.

Potential Mechanisms

- Changing the behavior of physicians
- Extending the abilities of physicians
- Changing the behavior of patients
  - Adherence to meds and lifestyle recommendations
  - Self monitoring and care seeking

Rich Study



N Engl J Med 1995;333:1190-5

Rich Intervention

- Intensive education about HF by an experienced CVD nurse
- Individualized dietary assessment and instruction by dietitian
- Consultation with social-service personnel
- Analysis of medications by a geriatric cardiologist
- Intensive follow-up after discharge through the hospital's home care services, supplemented by individualized home visits and telephone contact

N Engl J Med 1995;333:1190-5

Rich Study

- 282 patients
- 70+ years
- Admitted with heart failure
- Primary outcome: 90 day survival without readmission

N Engl J Med 1995;333:1190-5

Rich Results

- **Survival without readmission 53.6% versus 64.1% (P=0.09)**

N Engl J Med 1995;333:1190-5

Challenges of Disease Management

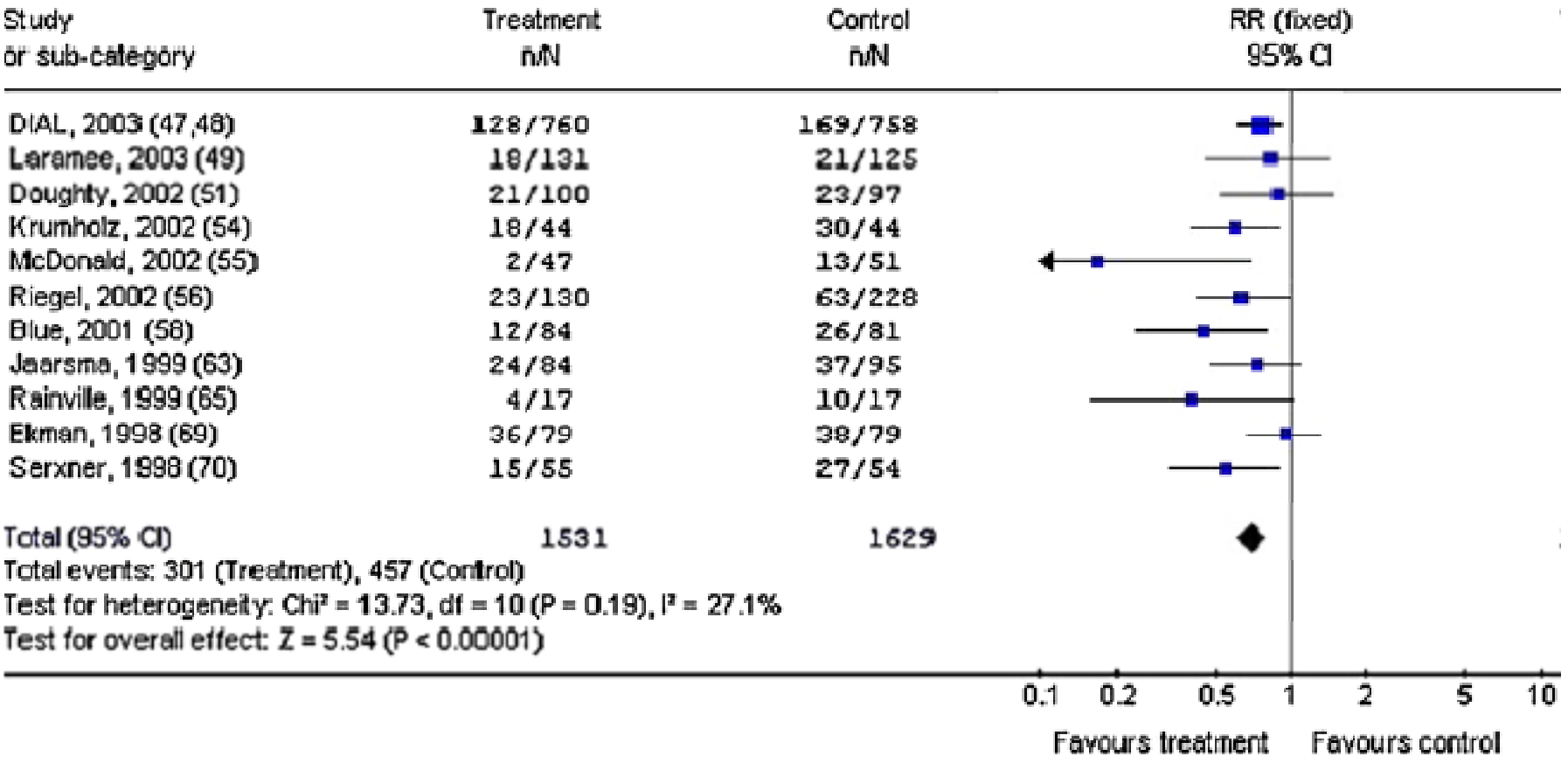
- Active ingredient
- Inconsistent literature/terminology
- Uncertain scalability
- Efficacy-effectiveness issues
- Incentives

Phillip Meta-Analysis

- 18 RCTs from 8 countries
- 3304 patients; mean follow-up 8 months
- Risk of readmission - RR 0.75 (NNT 12)
- Trend lower mortality – RR 0.87
- Trend for cost saving

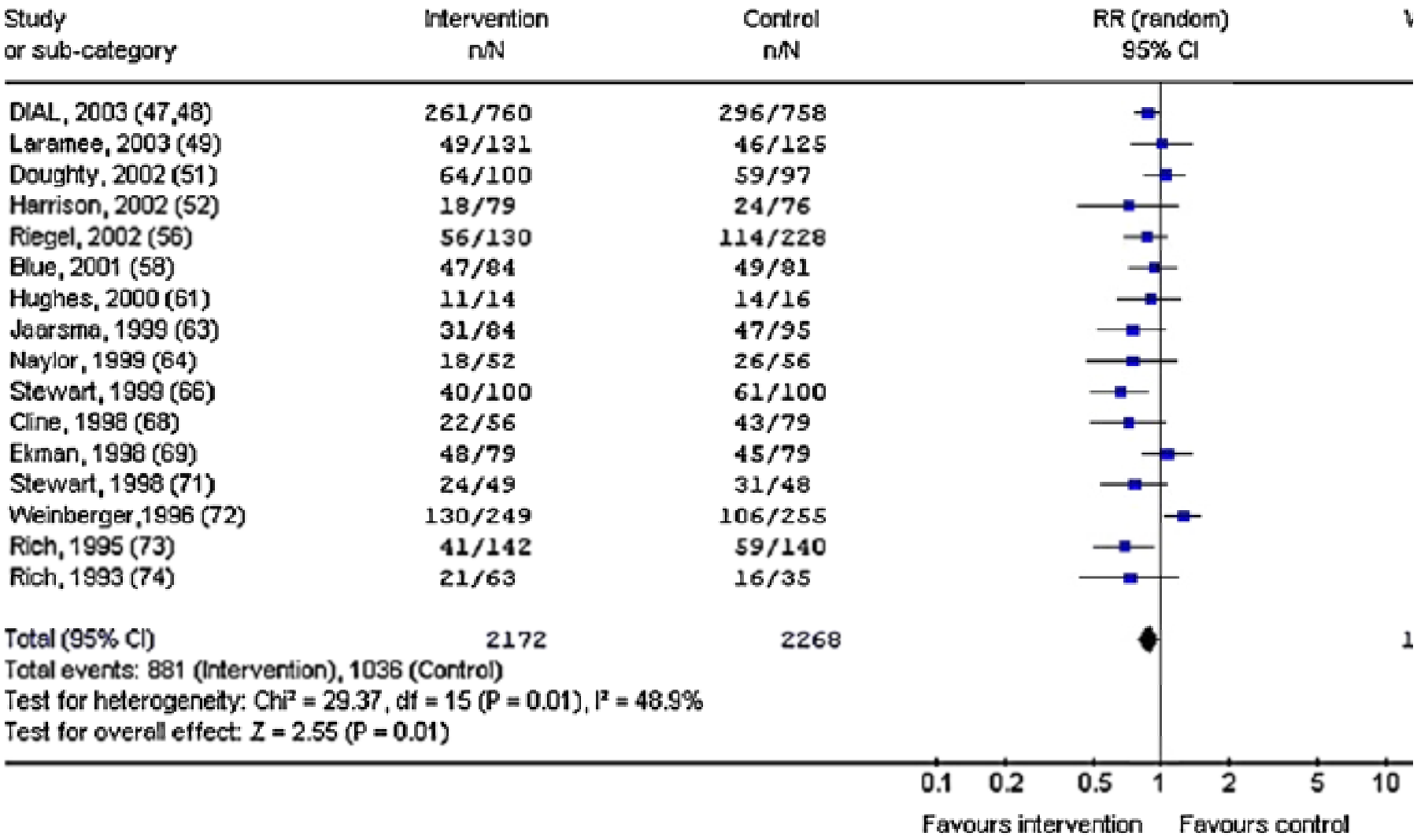
JAMA 2004;291:1358-1367

Gonseth Meta-Analysis: HF/CVD Admission



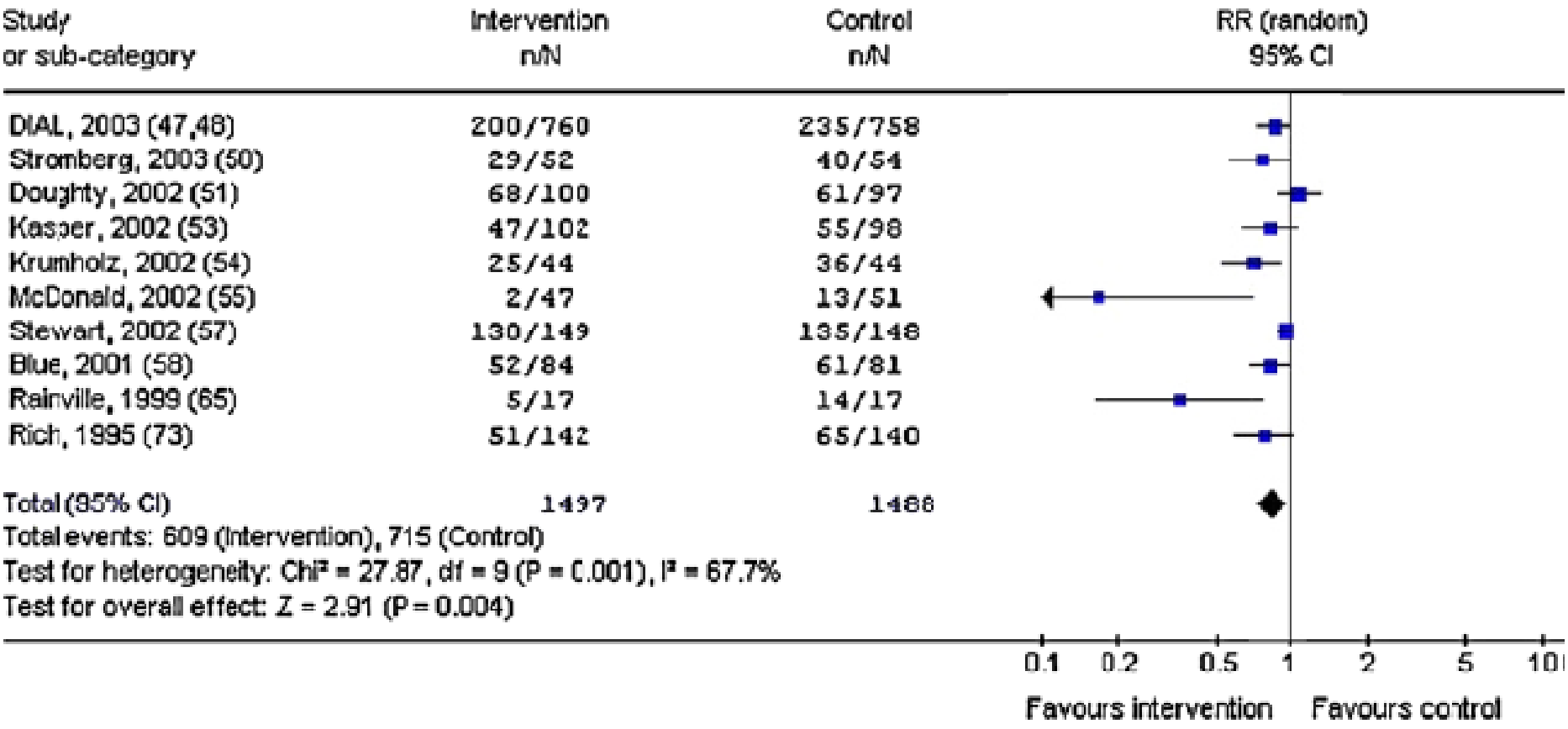
EHJ 2004; 25: 1570–95

Gonseth Meta-Analysis: All-Cause Readmission



EHJ 2004; 25: 1570–95

Gonseth Meta-Analysis: Admission or Death



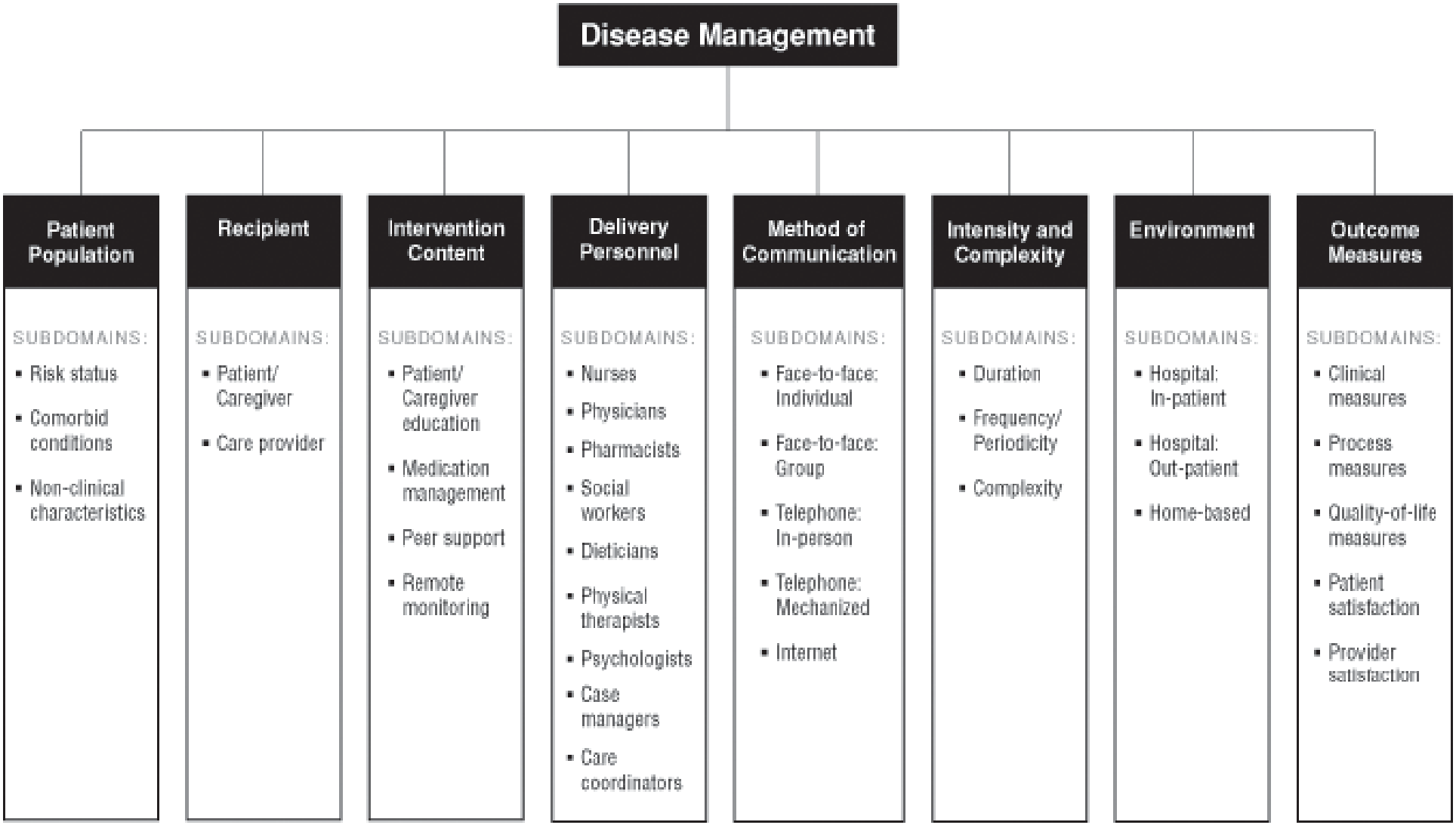
EHJ 2004; 25: 1570–95

McAlister Meta-Analysis

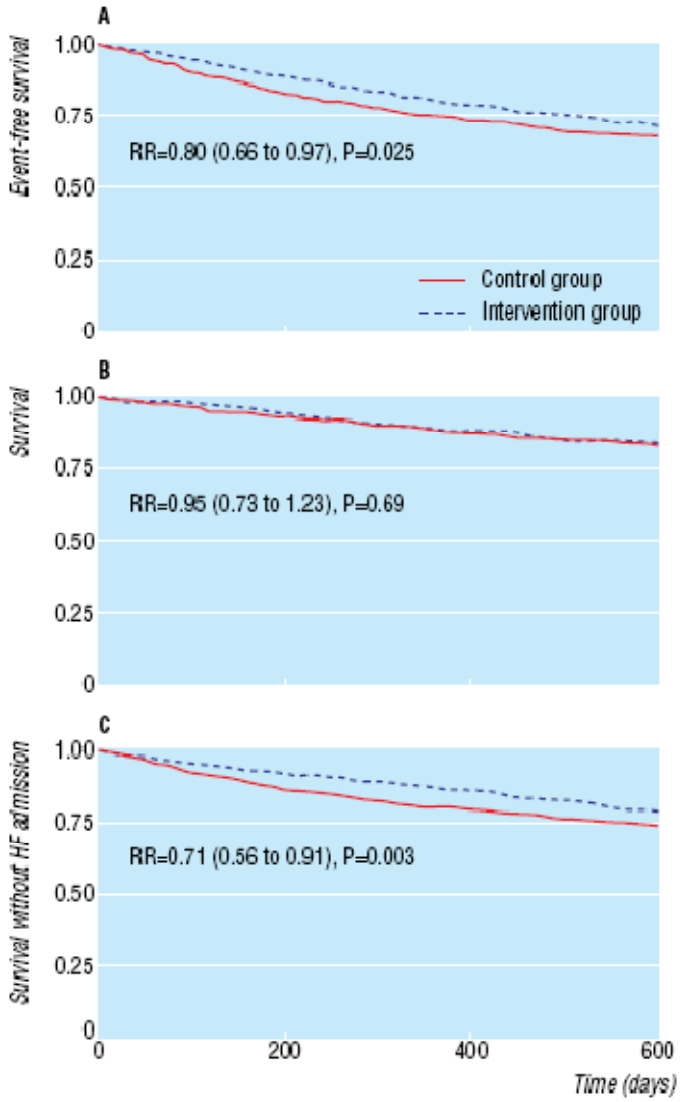
Type	Mortality	HF Admits	All Admits
F/U by multi-team	19%	25%	26%
Enhancing pt self-care	NS	34%	27%
Telephone telemonitor	NS	25%	NS

J Am Coll Cardiol 2004;44:810–9

Taxonomy

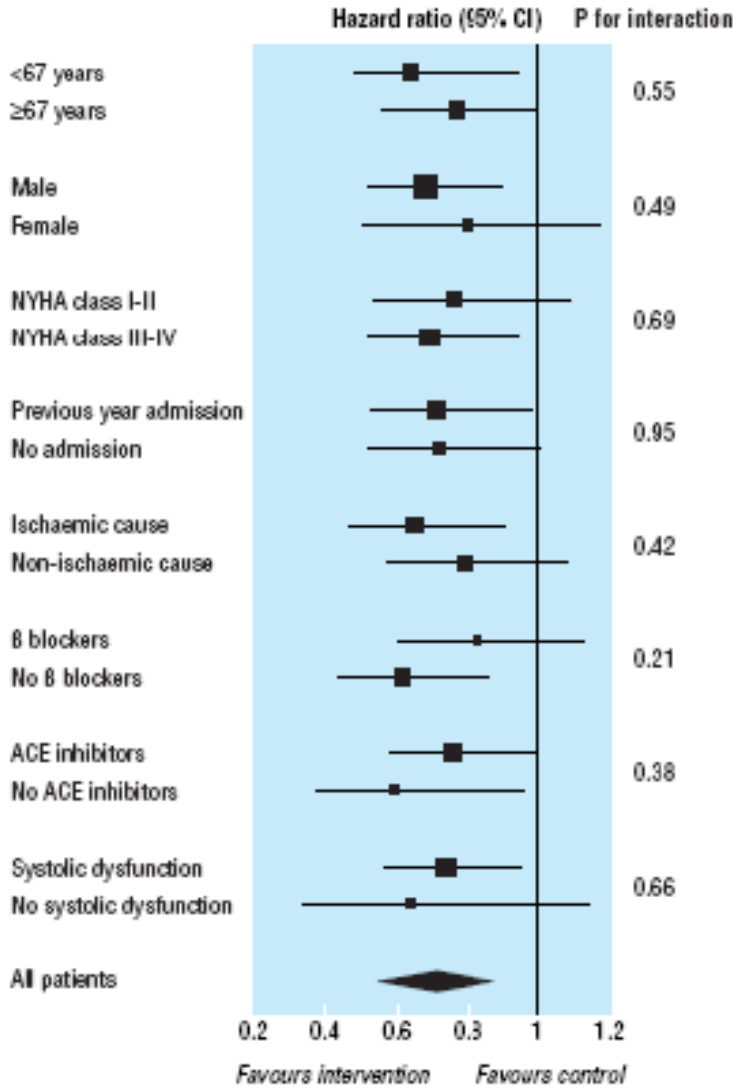

Disease Management
Patient Population
SUBDOMAINS:
Risk status
Comorbid conditions
Non-clinical characteristics
Recipient
SUBDOMAINS:
Patient/ Caregiver
Care provider
Intervention Content
SUBDOMAINS:
Patient/ Caregiver education
Medication management
Peer support
Remote monitoring
Delivery Personnel
SUBDOMAINS:
Nurses
Physicians
Pharmacists
Social workers
Dieticians
Physical therapists
Psychologists
Case managers
Care coordinators
Method of Communication
SUBDOMAINS:
Face-to-face: Individual
Face-to-face: Group
Telephone: In-person
Telephone: Mechanized
Internet
Intensity and Complexity
SUBDOMAINS:
Duration
Frequency/ Periodicity
Complexity
Environment
SUBDOMAINS:
Hospital: In-patient
Hospital: Out-patient
Home-based
Outcome Measures
SUBDOMAINS:
Clinical measures
Process measures
Quality-of-life measures
Patient satisfaction
Provider satisfaction

Dial

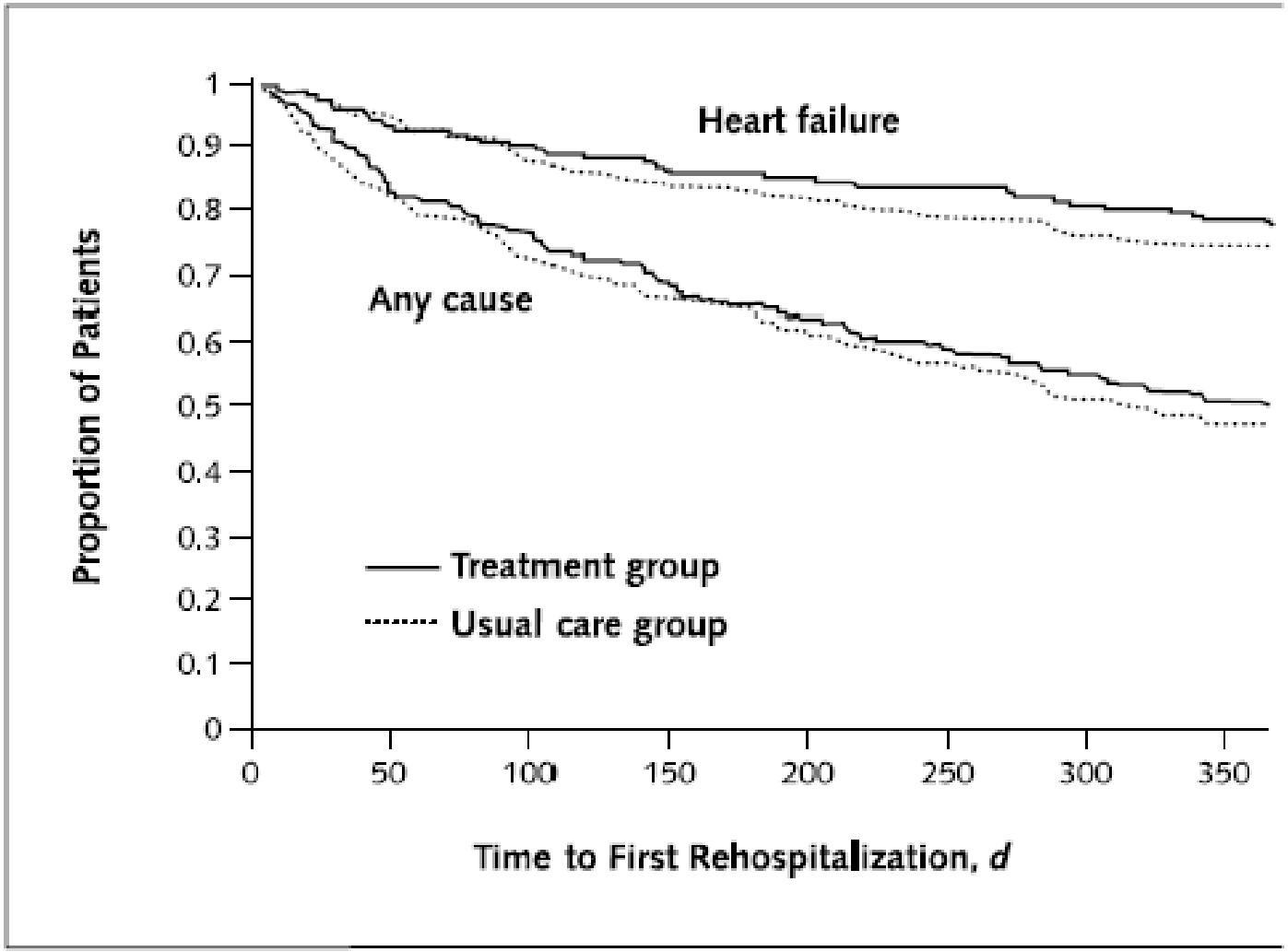


BMJ 2005;331;425

Dial Subgroups

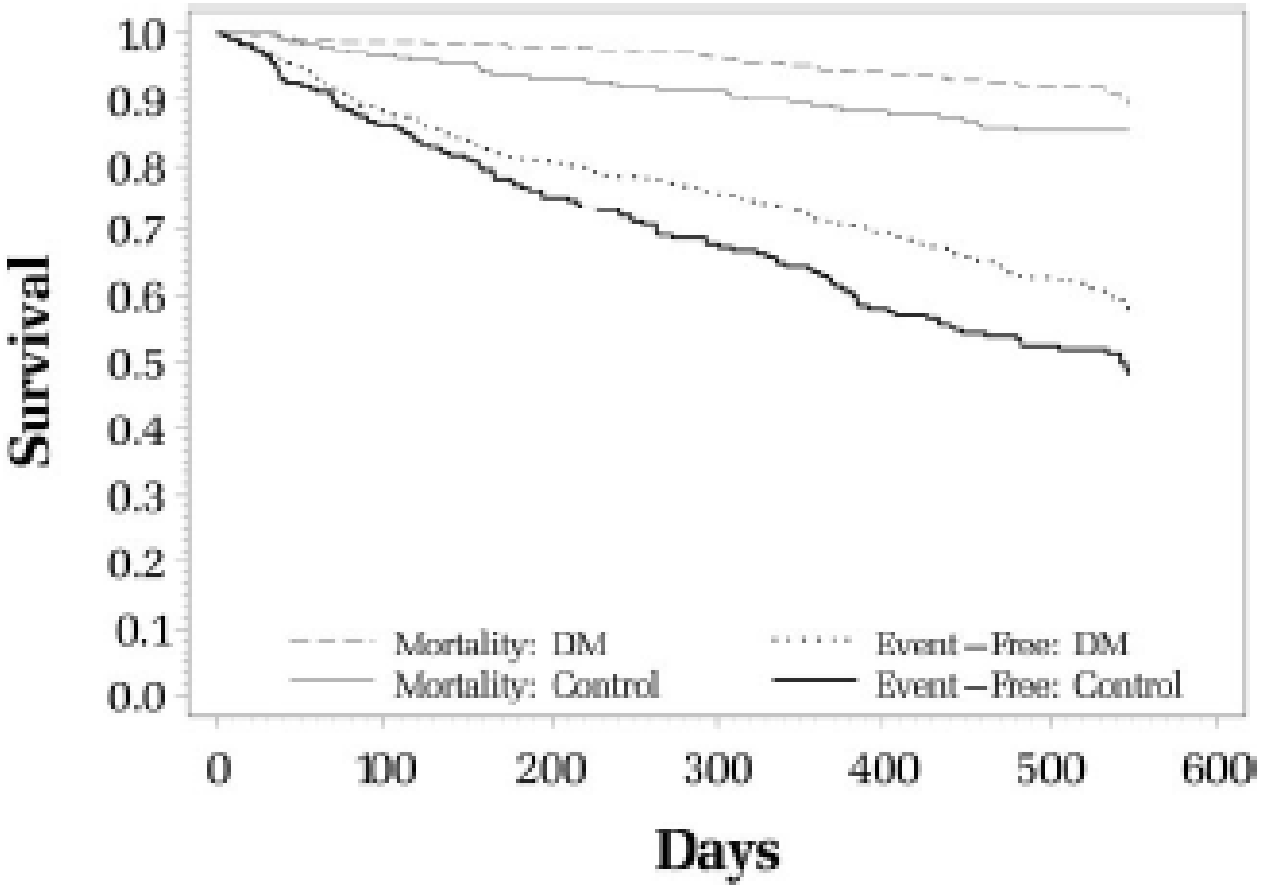


DeBusk Study

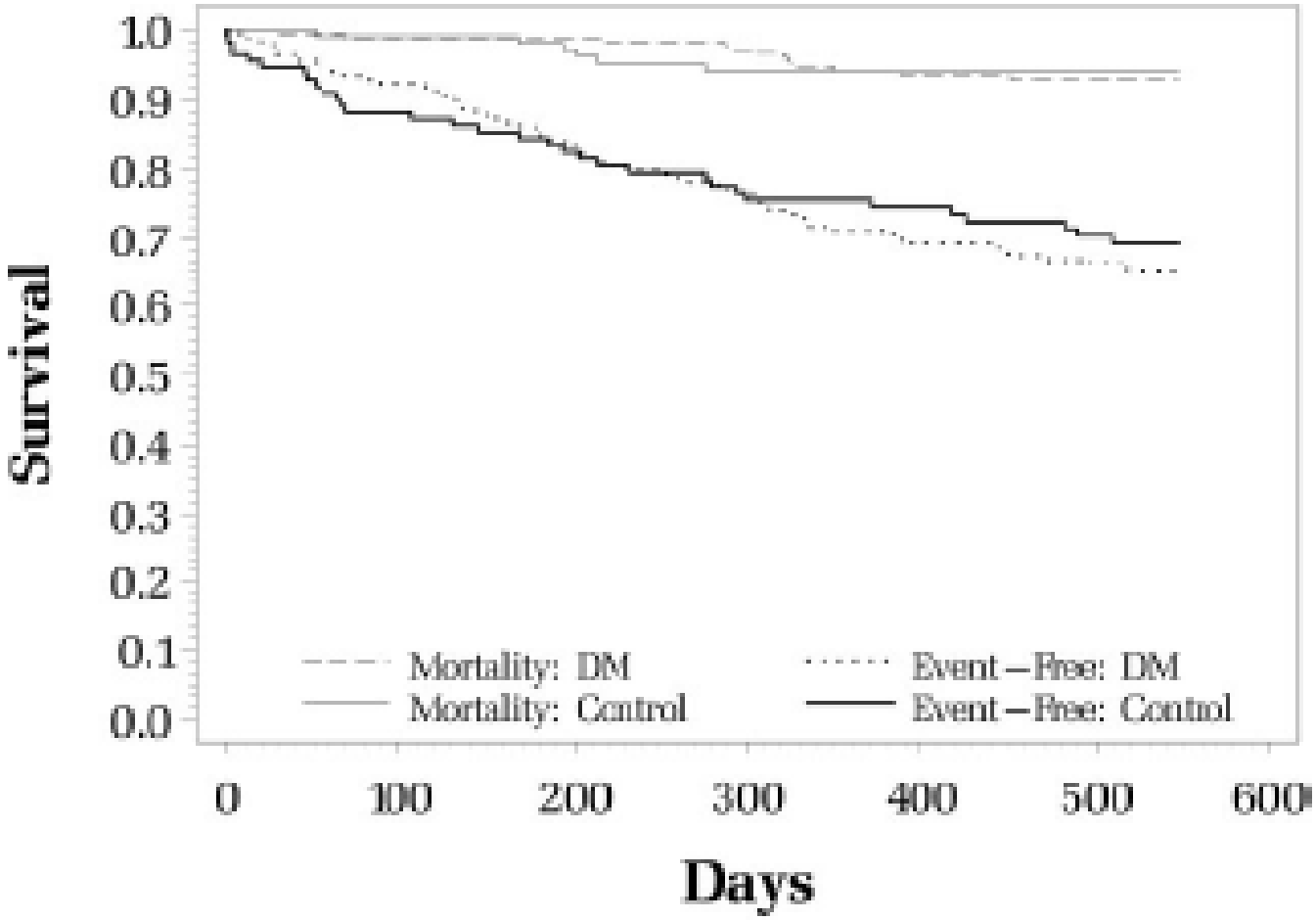


Ann Intern Med. 2004;141:606-613

Galbreath: LV Dysfunction Group

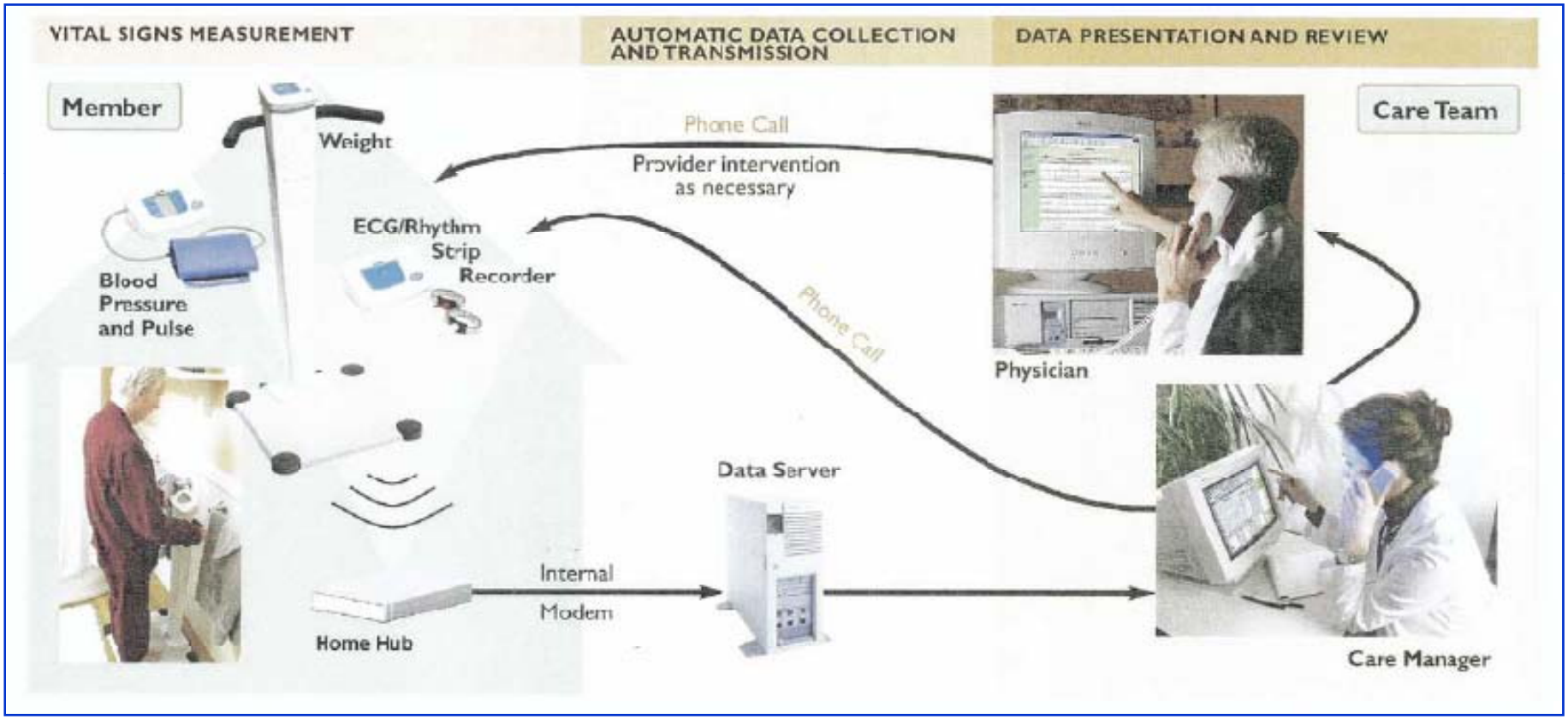


Galbreath: Preserved LV Function



Circulation **2004;110:3518-3526**

Home Telemonitoring - Cleland



J Am Coll Cardiol 2005;45:1654–64)

Cleland Results

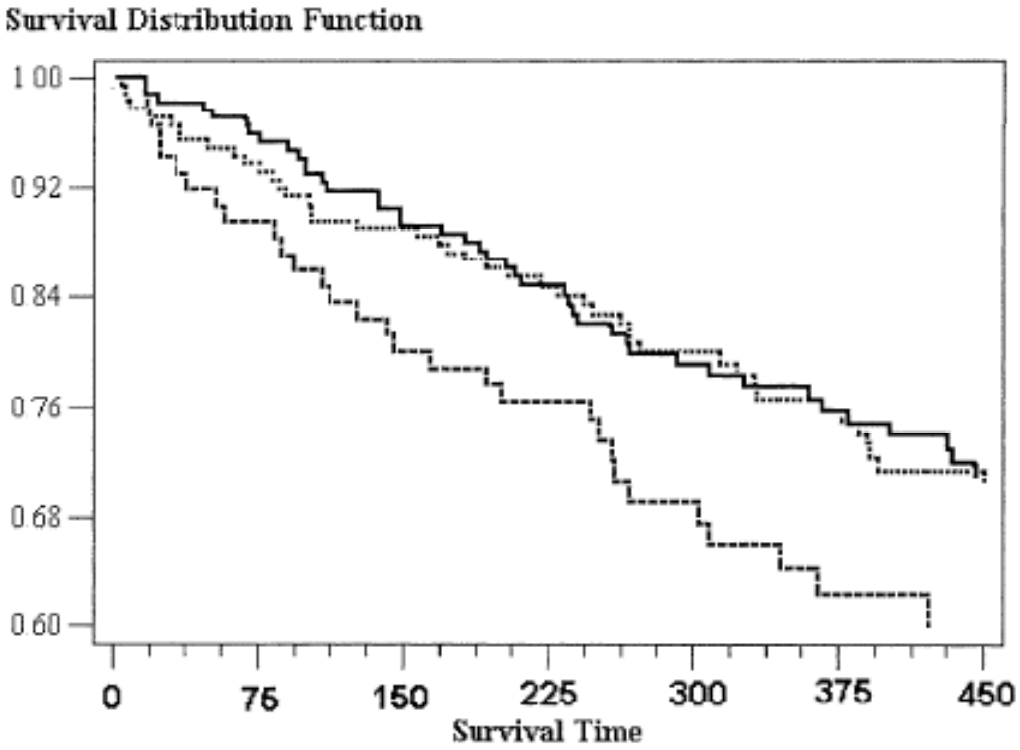


Figure 3. Mortality in each of the randomized groups. A difference was found between usual care and either nurse telephone support or home telemonitoring (chi-squared test: p = 0.0397). The absolute difference in mortality at one year was 16% to 18%. **Dashed line** = usual care; **dotted line** = nurse support; **solid line** = telemonitoring.

J Am Coll Cardiol 2005;45:1654–64)

Pharos Innovations

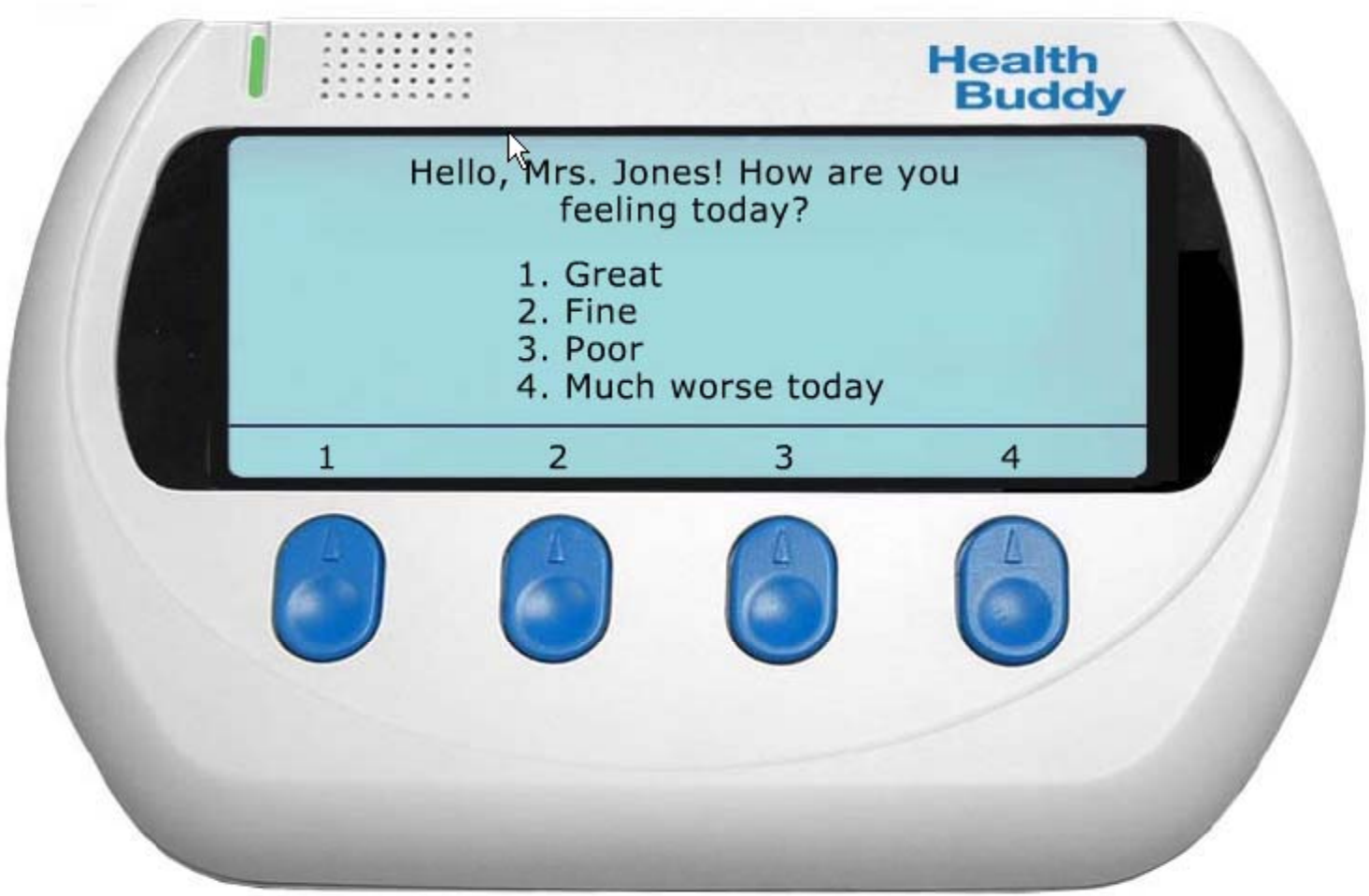
Survey Results:

Baseline Clinical Parameters

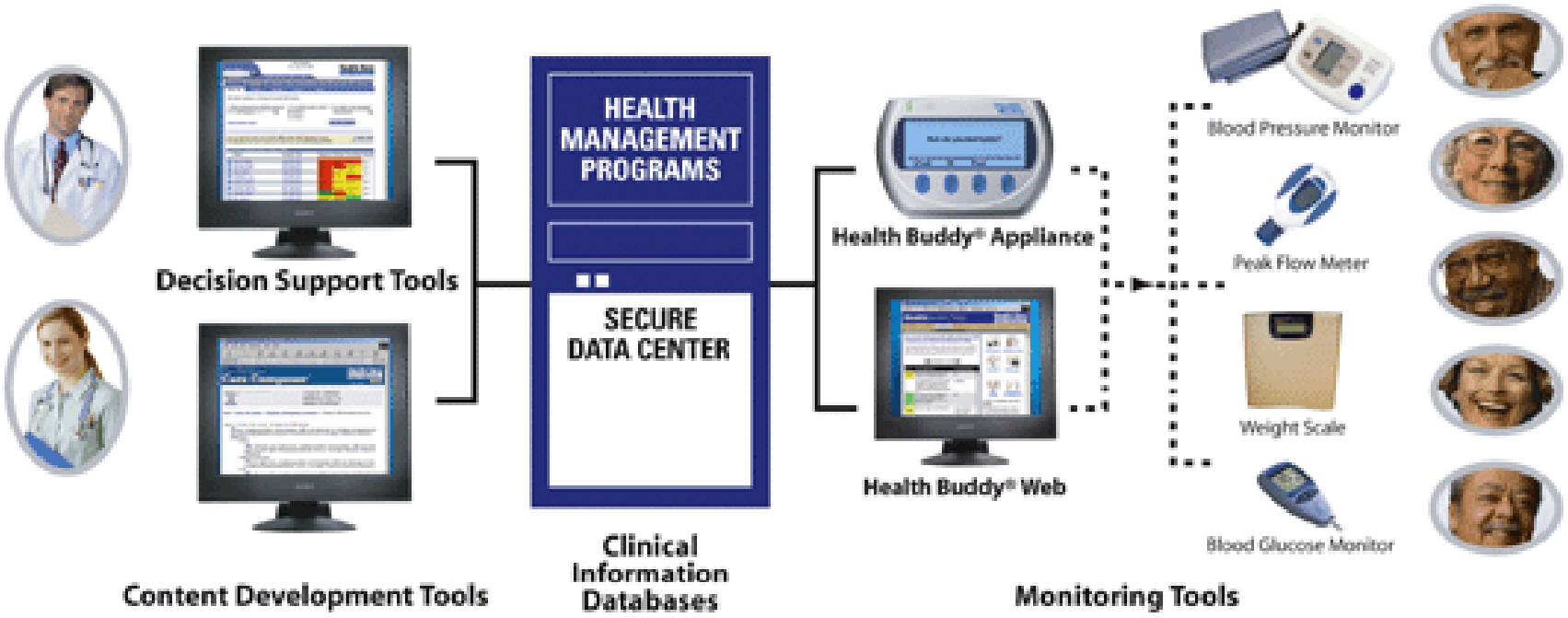
Best Weight:	185 lbs.	Min. Weight:	182 lbs.	Max. Weight:	188 lbs.
Blood Preasure:	90/50	Creatinine:	1.4	Etiology:	N/A

Survey Date	Shortness of Breath	Swelling	PND	Orthopnea	Dizziness	Need Rest	Weight	Weight Range
03-11-2004	N/A	N/A	N/A	N/A	N/A	N/A		182 / 188
03-10-2004	N/A	N/A	N/A	N/A	N/A	N/A		182 / 188
03-09-2004	No	No	No	No	No	No	184	182 / 188
03-08-2004	No	No	No	No	No	No	186	182 / 188
03-07-2004	No	No	No	No	No	No	184	182 / 188
03-06-2004	No	No	No	No	No	No	184	182 / 188
03-05-2004	No	No	No	No	No	No	185	182 / 188

Health Buddy



Health Buddy



Health Buddy® System*

Alere

Questions

- Patient population
- Content/Focus
- Frequency
- Delivery method
  - Who
  - How
- Consequence

Next Steps

- What should be implemented?
- What needs further testing?
- Who should pay for it?
- How to ensure quality?

- Is it different from devices?