

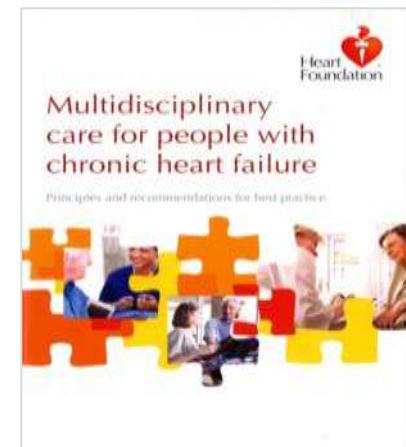
Baker IDI
HEART & DIABETES INSTITUTE

Which Heart failure Intervention is most Cost-effective & consumer friendly in reducing Hospital care?

*Primary endpoints from the multicentre randomised **WHICH?** Trial*

**Simon Stewart on behalf of the
WHICH? Trial Investigators**

Background



- **Multidisciplinary programs now gold-standard in CHF post-discharge care**
- **Historical divide - specialist CHF clinics (outpatient) & home-based programs**
- **As a complex syndrome CHF does not occur in isolation**
- **We postulated that home visits may confer additional benefits beyond optimal CHF management**

Home Visits

Specialist Clinics

WHICH? TRIAL



Dedicated disease management applied in a range of different settings



Telemonitoring



Telephone Care

Key components of management

Dietary Advice



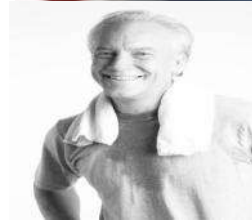
Clinical Monitoring



Treatment/Adherence



Exercise Therapy



Monitoring Weight



Knowledge/Self-care



Study Hypothesis

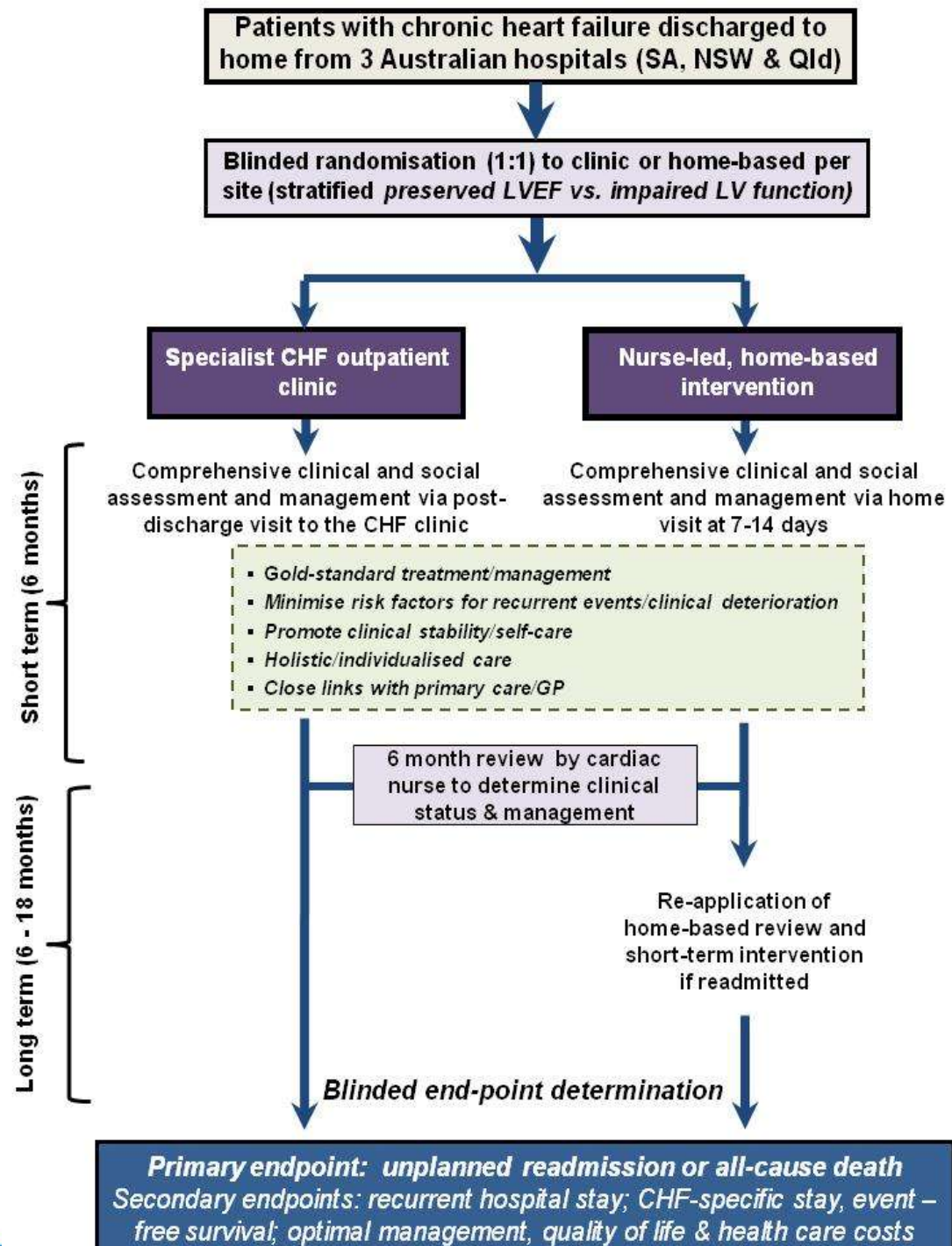


Compared to an equivalent clinic-based program of management, a nurse-led, post-discharge, multidisciplinary management program for CHF patients (including those with preserved LVEF) involving post-discharge home visits, will be superior in reducing the composite *primary end-point* of unplanned (all-cause) readmission or death during 12-18 months follow-up by an absolute margin of 15%.

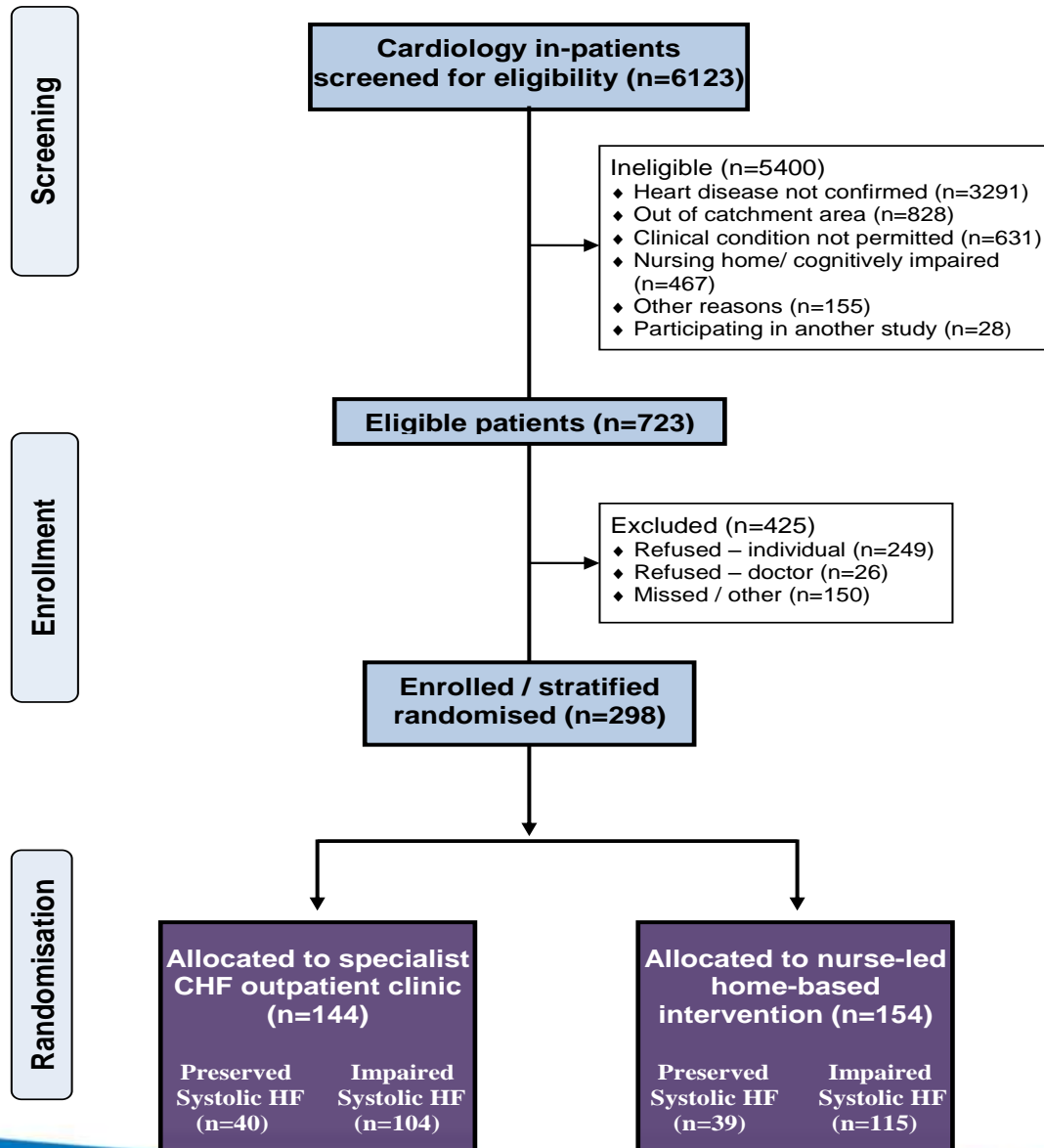
Also that a home-based approach will also (cost-effectively) reduce the rate of unplanned hospital stay (all-cause) by a minimum of 15% relative to clinic-based management during study follow-up.

Study Design

- Multicentre RCT
- Standardised care
- Blinded endpoint adjudication
- No “contamination” from home to clinic
- Prospective health economic analyses
- Prospective consumer choice analyses



Consort flow-chart

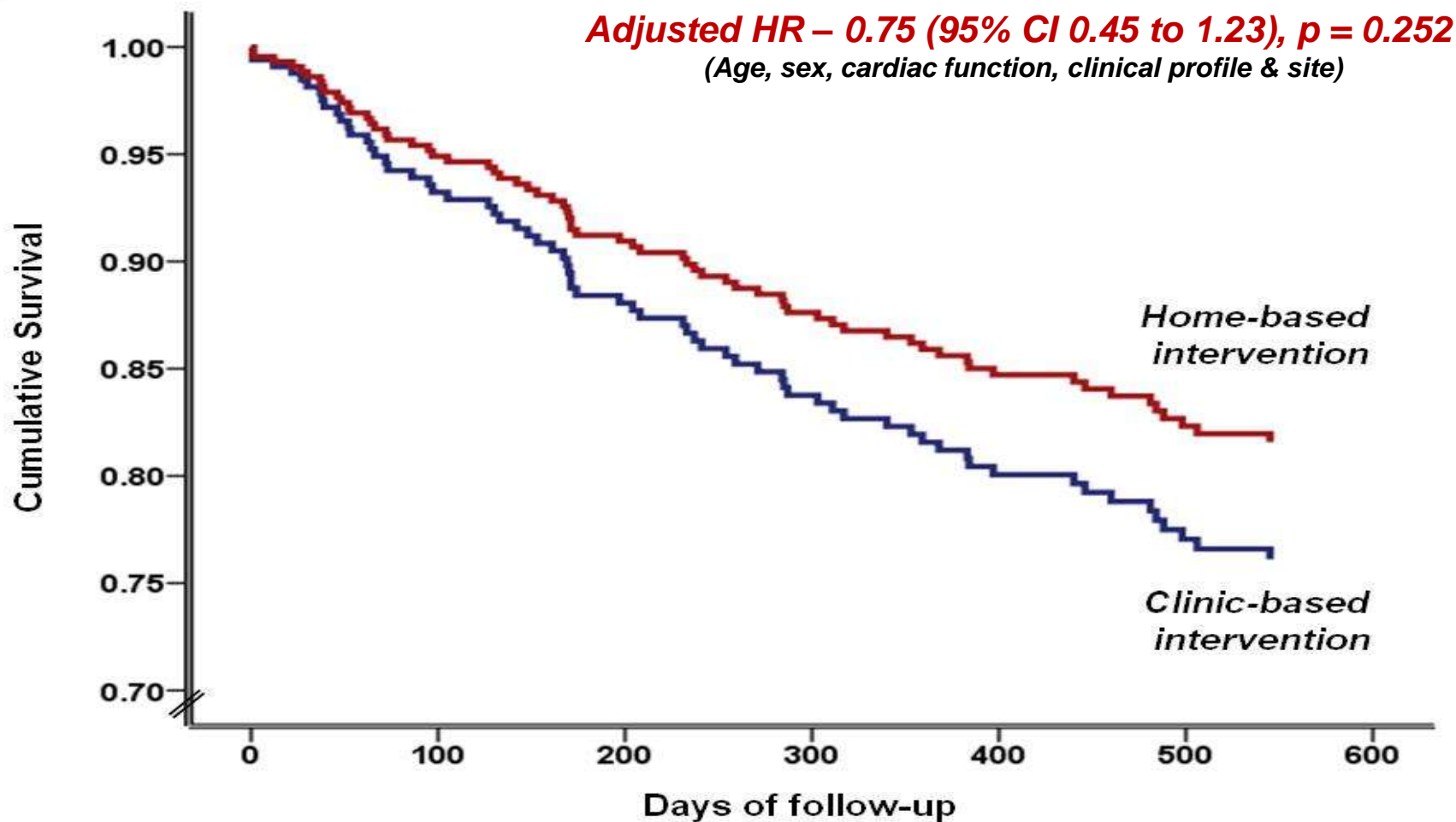


Baseline characteristics



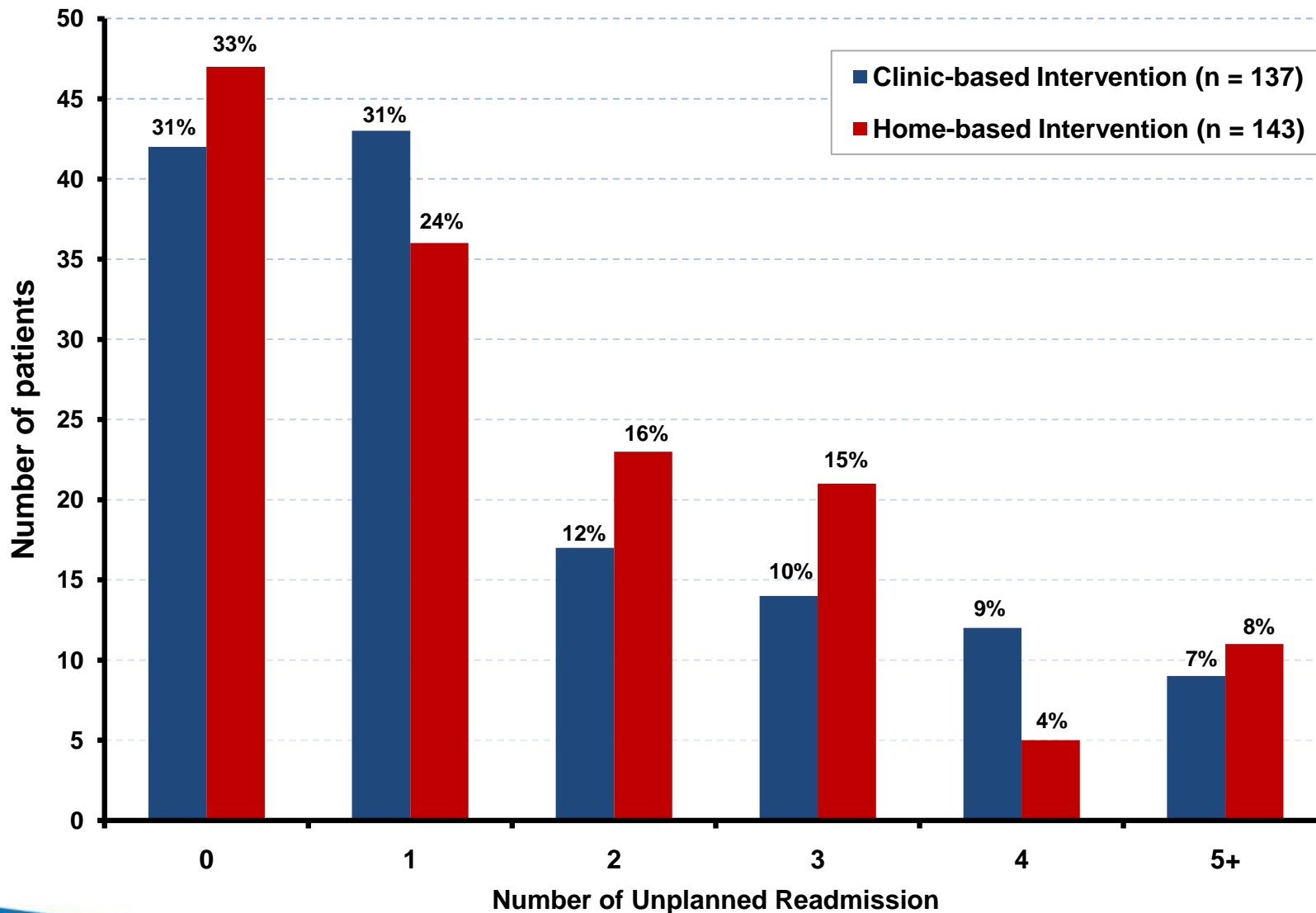
	All n = 280	Home-based n = 143		CHF Clinic n = 137	
		LVSD (n=108)	Preserved LVEF (n=35)	LVSD (n=97)	Preserved LVEF (n=40)
<i>Demographic Profile</i>					
Men	203 (73%)	86 (80%)	18 (51%)	75 (77%)	24 (60%)
Age (years)	71 ± 14	69 ± 15	73 ± 13	71 ± 14	77 ± 10
<i>Clinic Profile</i>					
Hypertension	177 (63%)	69 (64%)	24 (69%)	59 (61%)	25 (63%)
Type 2 diabetes mellitus	109 (39%)	36 (33%)	15 (43%)	39 (40%)	19 (48%)
Months since CHF diagnosis	39.4 ± 5.3	39.2 ± 4.9	29.0 ± 3.6	47.3 ± 5.9	37.6 ± 5.9
LVEF (if ≤ 45%)	-	30.2 ± 9.8	-	30.0 ± 8.4	-
NYHA Class II/III	212 (76%)	79 (73%)	29 (83%)	73 (75%)	31 (78%)
Acute pulmonary oedema	125 (45%)	42 (39%)	20 (57%)	43 (44%)	20 (50%)
Coronary artery disease	155 (55%)	60 (56%)	16 (46%)	60 (62%)	19 (48%)
Atrial fibrillation	148 (53%)	56 (51%)	15 (43%)	53 (55%)	24 (60%)
Charlson Index	6.1 ± 2.4	5.7 ± 2.4	6.0 ± 2.4	6.1 ± 2.3	7.3 ± 1.9
<i>Pharmacotherapy</i>					
ACE inhibitor or ARB	213(76%)	87 (81%)	23 (66%)	74 (76%)	29 (74%)
Beta blocker	200 (71%)	84 (78%)	20 (57%)	74 (76%)	22 (56%)
Spironolactone	109 (39%)	43 (40%)	12 (34%)	42 (43%)	12 (31%)
Loop diuretic	232 (83%)	87 (81%)	29 (83%)	80 (82%)	36 (92%)
Digoxin	90 (32%)	38 (35%)	6 (17%)	34 (35%)	12 (31%)

All-cause mortality

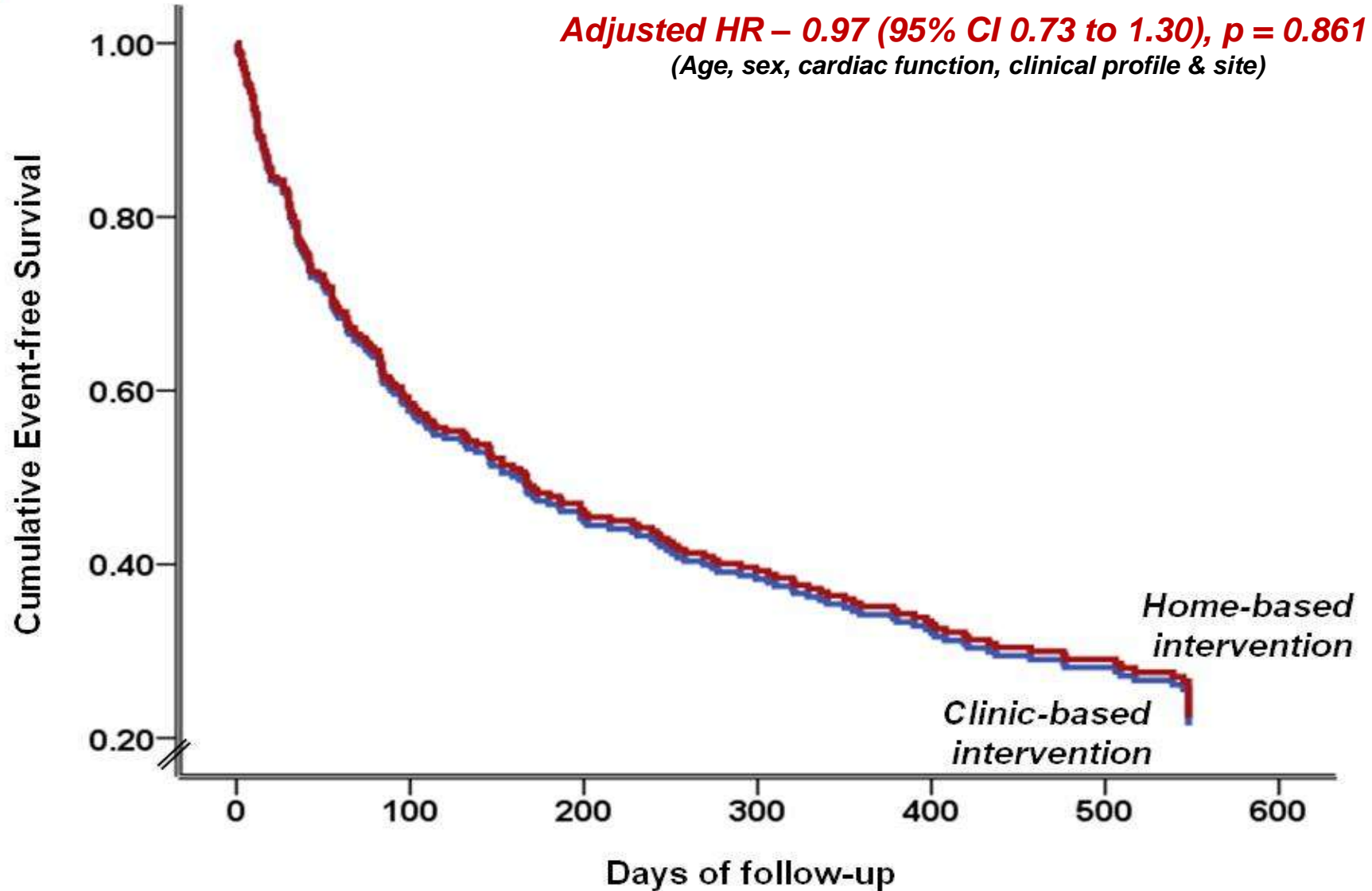


	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Clinic-based intervention	137	133	130	126	124	121	115	113	112	110	110	108	101	94	91	85	79	76	75
Home-based intervention	143	141	137	134	133	131	129	128	125	124	121	120	118	114	109	104	101	95	94

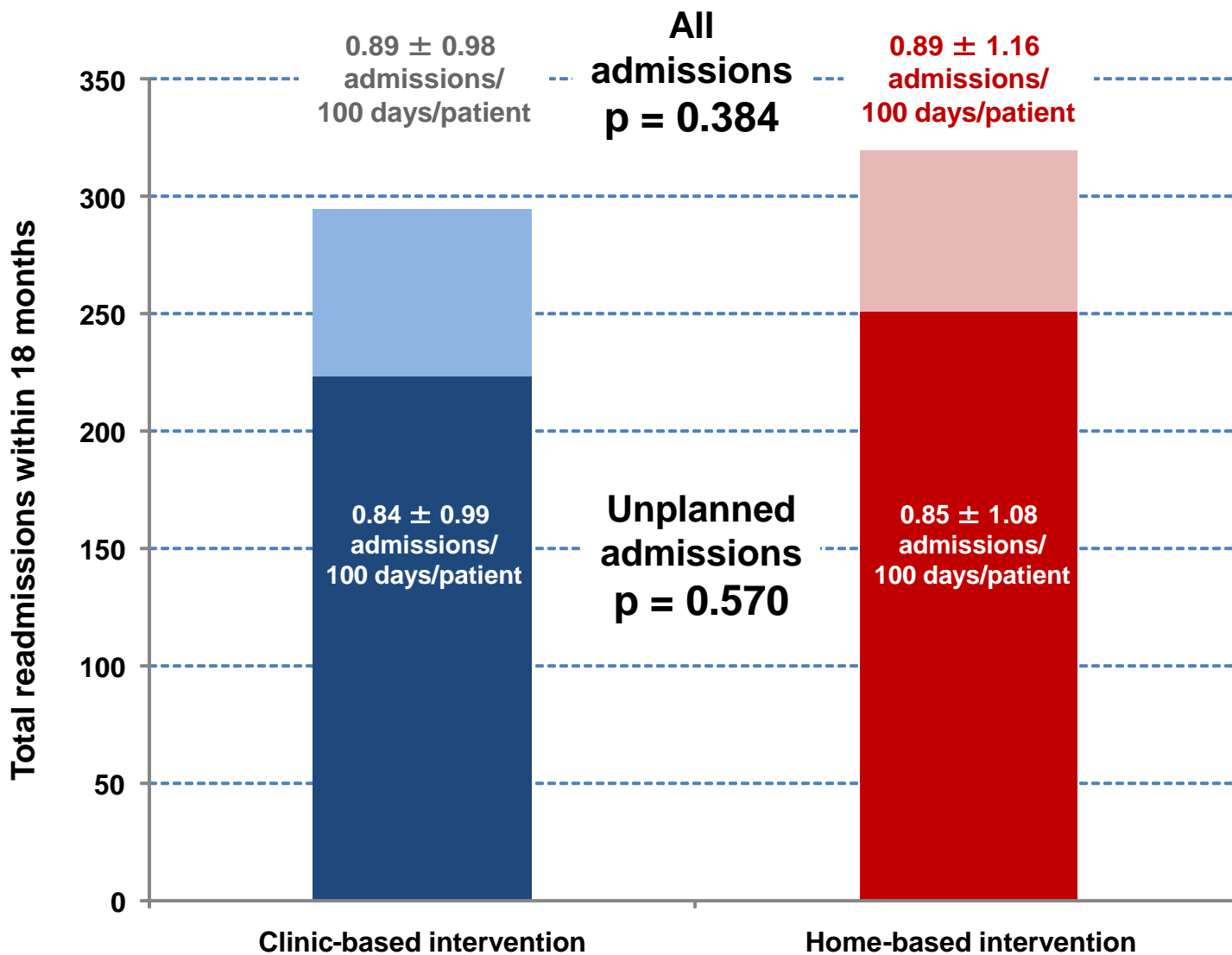
Unplanned readmissions



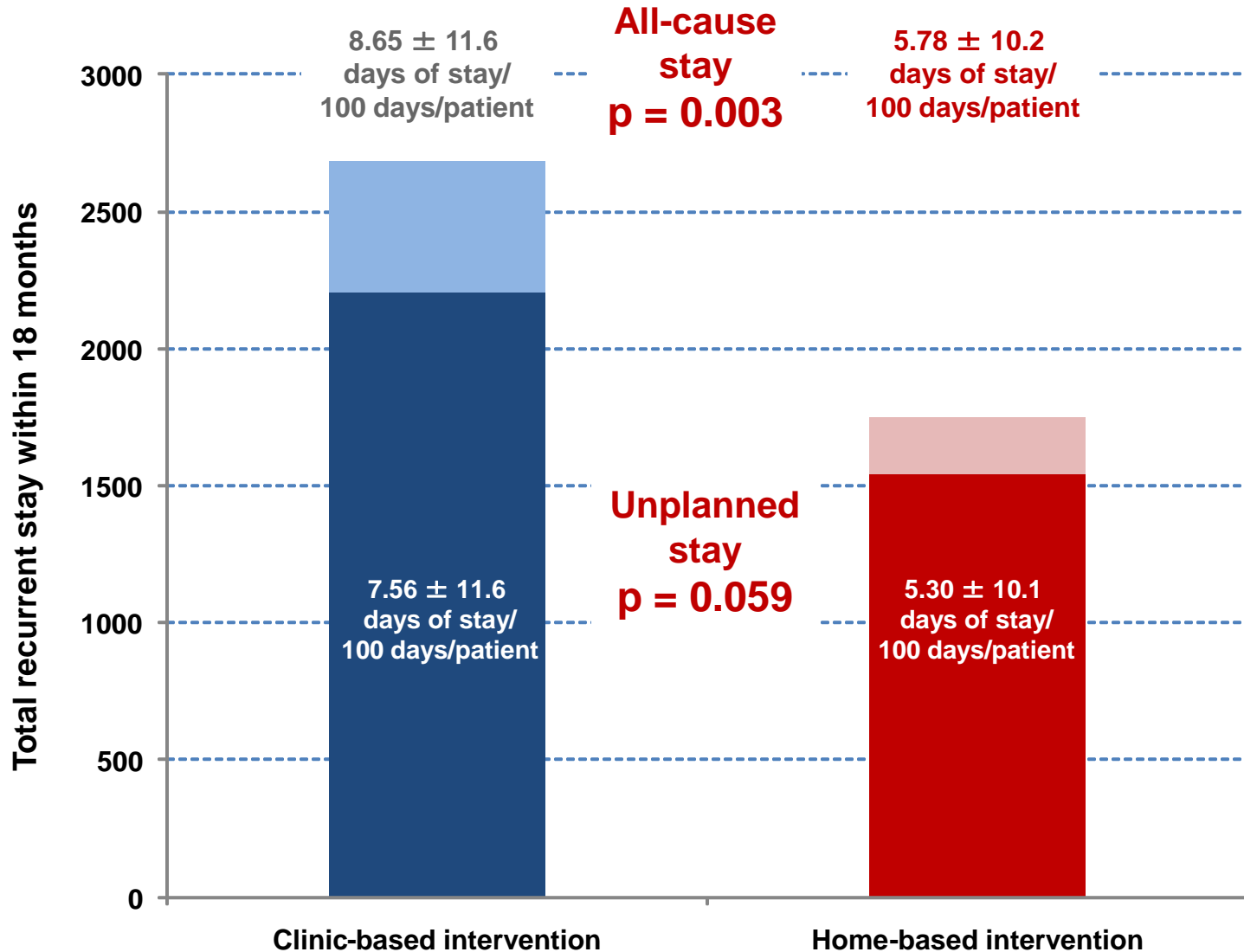
Event-free survival



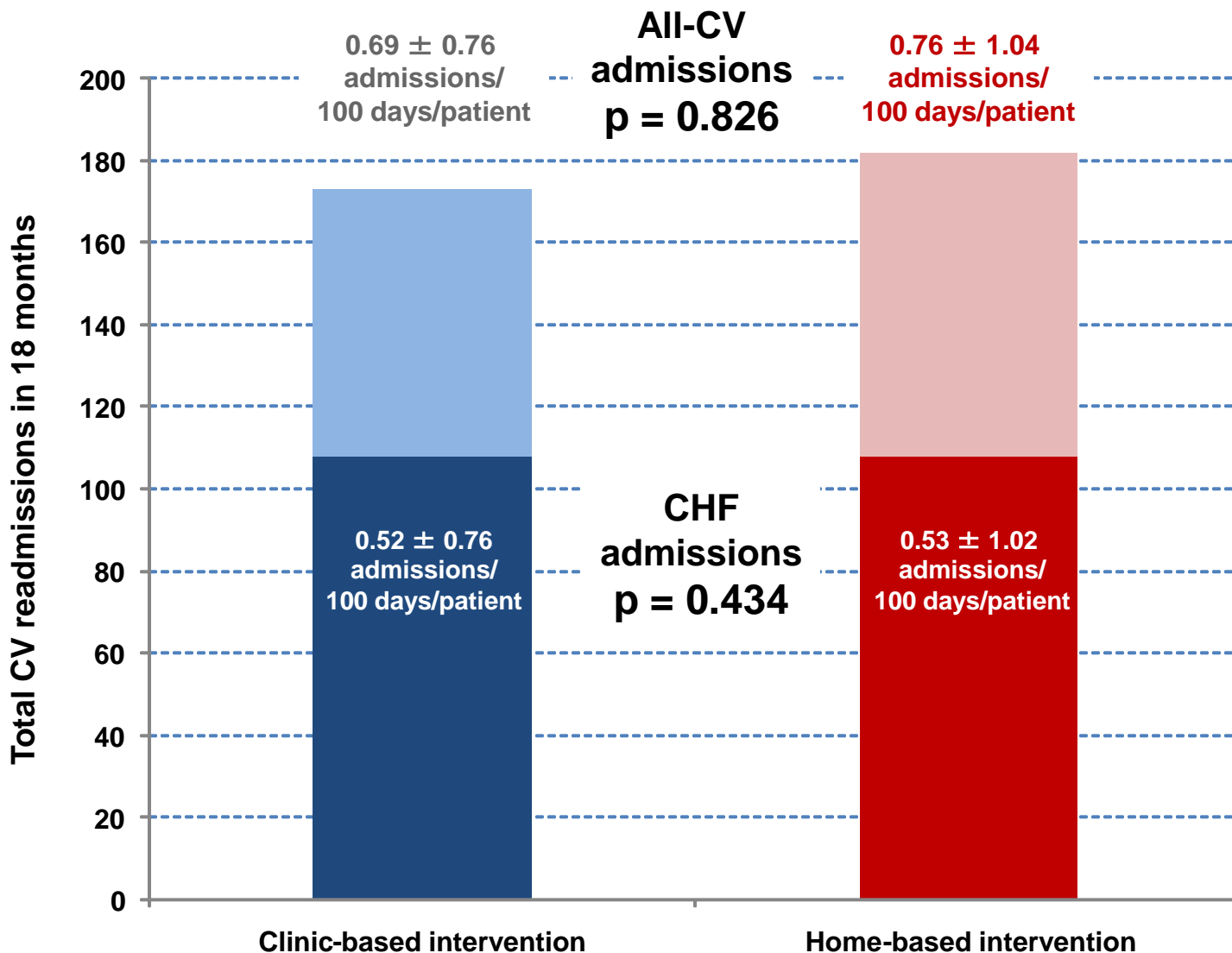
Total all-cause readmissions



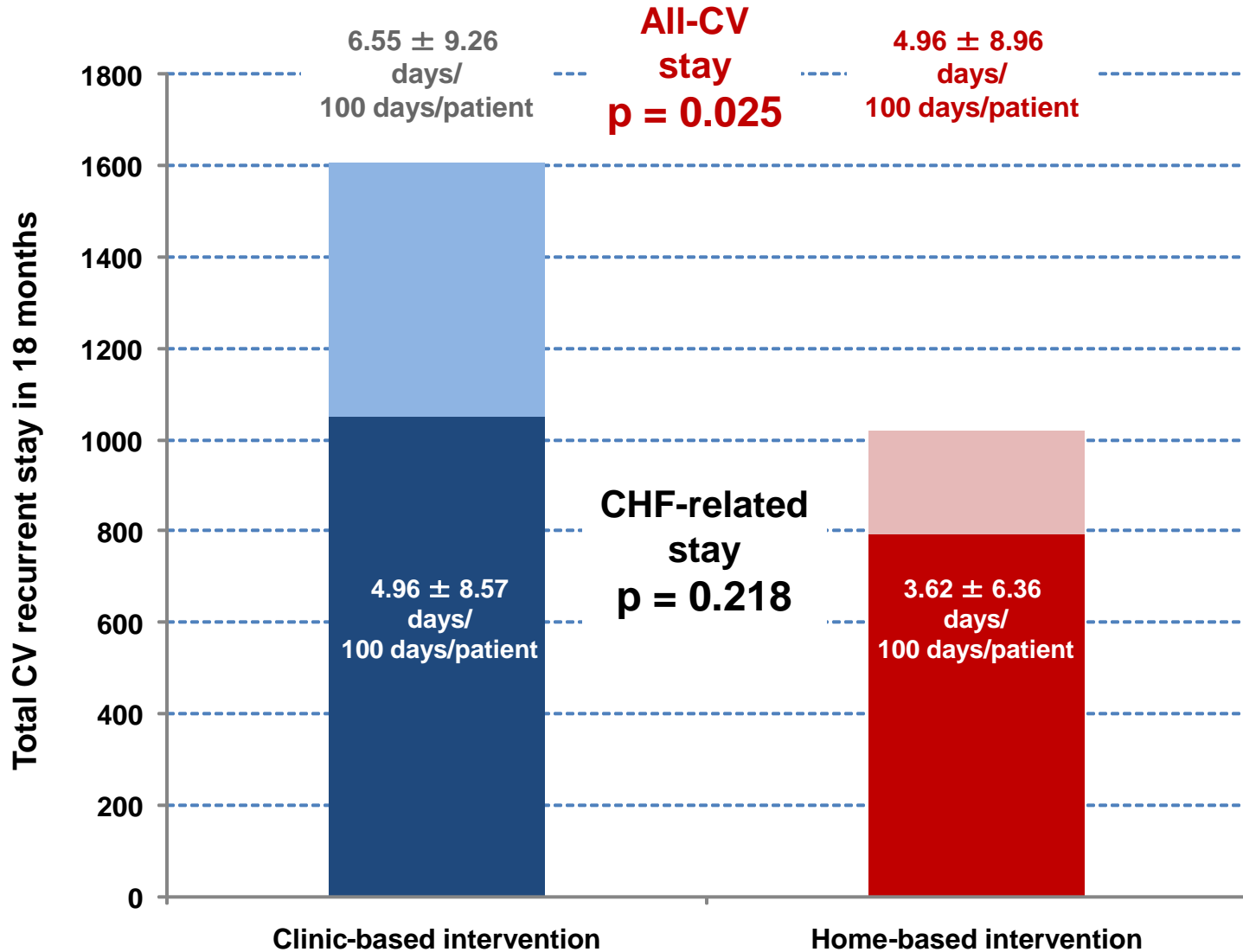
Rate of all-cause stay



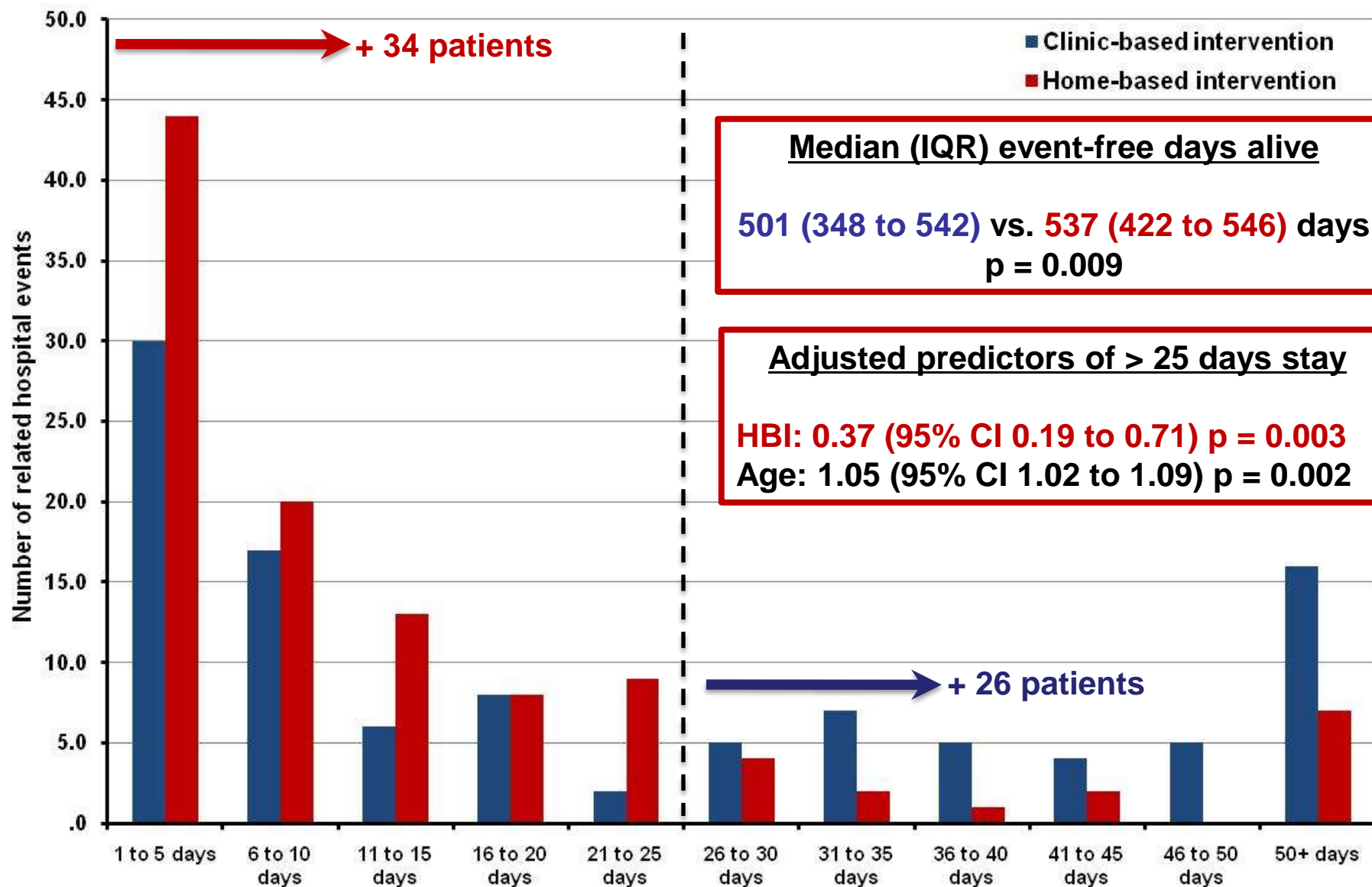
Total CV-related readmissions



Rate of CV-related stay



All-cause length of stay



Summary



Compared to clinic-based management of CHF, home-based intervention:

- Modestly improved survival profile (*non-significant 25% adjusted hazard reduction*)
- No impact on risk of readmission (unplanned vs. elective & CV vs. non-CV)
- No impact on event-free survival
- Potentially important reductions in hospital stay:
 - 934 less days of all-cause stay (- 35%): $p = 0.003$
 - 668 less days of all-cause unplanned stay (- 30%): $p = 0.059$
 - 259 less days of CHF-related unplanned stay (- 25%): $p = 0.218$
 - 590 less days of CV-related stay (- 37%): $p = 0.025$
- Economic and consumer preference analyses

WHICH? Trial Collaboration



Baker IDI Heart and Diabetes Institute

- Professor Simon Stewart
- Dr Melinda Carrington
- Dr Yih Kai Chan
- Alicia Calderone



Princess Alexandra Hospital/University of Queensland

- Professor Thomas Marwick
- Julie Holliday
- Robyn Peters
- Mary Boyde



The Queen Elizabeth Hospital/University of Adelaide

- Professor John Horowitz
- Libby Birchmore
- Terina Selkow
- Jenny Poulton



St Vincent's Hospital/Curtin University of Technology

- Professor Peter Macdonald
- Professor Patricia Davidson
- Dr Phillip Newton



Griffith University

- Professor Paul Scuffham
- Dr Jenny Whitty

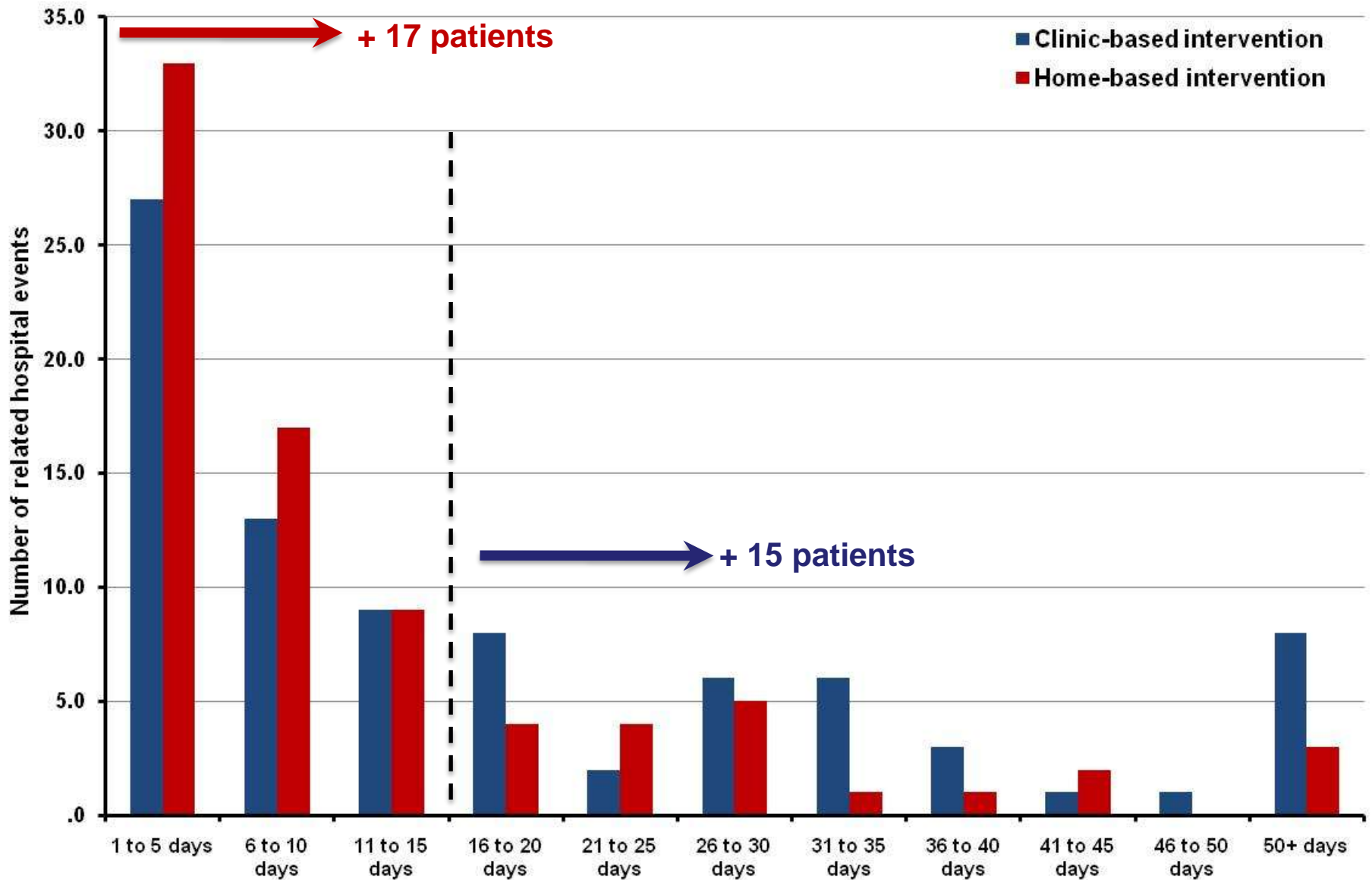


Monash University, VIC

- Professor Henry Krum
- Assoc Professor Christopher Reid



CV-related length of stay



HF-related length of stay

