The effects of three different implementation strategies for heart failure guidelines on the management of heart failure in New Zealand primary care: a cluster randomised trial

VOLUME 1

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Abstract

This thesis aimed to evaluate the effectiveness of three implementation strategies on change over time in the primary care management of heart failure (HF) in New Zealand. Emergence of the Internet as a tool for continuing medical education (CME) prompted the study, which compared an Internet-based CME course, small–group education sessions and a passive mail-out of national guidelines. These were "one-off" educational interventions as is common in CME.

A single-blind stratified cluster randomised controlled trial (cRCT) design was used. Sixty nine practices were randomised to one of the three implementation strategies. The two active arms participated in almost identical education sessions based on four recommendations of the 2001 New Zealand Heart Foundation HF guideline. These recommendations were selected as primary study outcomes because their performance was suboptimal. Two of the recommendations – use of echocardiography and use of high dose angiotensin converting enzyme inhibitors (ACEi) – were not new in HF management. Introduction of β-blockers to the treatment schedule illustrated a dramatic change in accepted treatment. The indication for reintroducing spironolactone for HF had changed.

Patients were identified using a HF scoring system. Twenty four practices completed the study and 359 patients participated. Retrospective data were collected from the patient cohort for up to five years.

Most echocardiograms were performed before the educational intervention. In each group, ACEi prescription decreased over time, β-blocker use increased and spironolactone use remained static. None of the three implementation strategies had a statistically significant effect on outcomes. Two patient variables that negatively predicted echocardiography referral and prescribing were older age and female sex. The increase in β-blocker prescribing was mainly attributed to initiations that occurred

in secondary care before the educational intervention. The intervention arms did not affect the dose prescribed. Older age was negatively associated with dose.

None of the implementation strategies was superior in promoting change in primary care. Changes that occurred either were negative or could be attributed to factors operating beyond the control of the study, not to education. Ongoing work is required to develop interventions that will reduce barriers to changing HF management in primary care.

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"... non confundar in aeternum."

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List of Abbreviations

ACC	American College of Cardiology
ACEi	Angiotensin Converting Enzyme inhibitor
AGREE	Appraisal of Guidelines Research and Evaluation (Instrument)
AHA	American Heart Association
AHCPR	Agency for Health Care Policy and Research – now the AHRQ
AHRQ	Agency for Healthcare Research and Quality – formerly the AHCPR
ARB	Angiotensin Receptor Blocker
BMI	Body Mass Index
BNF	British National Formulary
BNP	Brain Natriuretic Peptide (see also NT-Pro BNP)
CABG	Coronary Artery Bypass Graft
CFPC	The College of Family Physicians of Canada
CHD	Coronary Heart Disease
CI	Confidence Interval
CME	Continuing Medical Education
COPD	Chronic Obstructive Pulmonary Disease
cRCT / cRT	cluster Randomised Controlled Trial / cluster Randomised Trial
CTR	Cardio Thoracic Ratio
CXR	Chest X-Ray
DHB	District Health Board (NZ)
DM	Diabetes Mellitus
DTB	Drugs and Therapeutics Bulletin
EBM	Evidence-Based Medicine
ECG	Electrocardiograph / Electrocardiography / Electrocardiogram
Echo	Echocardiograph / Echocardiography / Echocardiogram
EF	Ejection Fraction
ESC	European Society of Cardiology
GP	General Practitioner
HF	Heart Failure
IPA	Independent Practitioner Association (NZ) became PHO
JVP	Jugular Venous Pressure
LV	Left Ventricle / Ventricular

LVD	Left Ventricular Dysfunction
LVEF	Left Ventricular Ejection Fraction
LVF	Left Ventricular Failure
LVFx	Left Ventricular Function
LVSD	Left Ventricular Systolic Dysfunction
LVSFx	Left Ventricular Systolic Function
MI	Myocardial Infarction
MIMS	Monthly Index of Medical Specialities
NICE	National Institute for Clinical Excellence or since April 2005 National Institute for Health and Clinical Excellence.
NPV	Negative Predictive Value
NT-ProBNP	N-Terminal-Prohormone Brain Natriuretic Peptide (see also BNP)
NYHA	New York Heart Association
NZGG	New Zealand Guidelines Group
OR	Odds Ratio
Pharmac	Pharmaceutical Management Agency (NZ)
PHO	Primary Health Organisation (NZ) previously IPA
PPV	Positive Predictive Value
PTCA	Percutaneous Transluminal Coronary Angioplasty
RAAS	Renin Angiotensin Aldosterone System
RCT	Randomised Controlled Trial
RNZCGP	Royal New Zealand College of General Practitioners
SIGN	Scottish Intercollegiate Guidelines Network