Research update—RESPOND and ASPREE-Fracture trials

NSW Fall Prevention and Healthy Ageing Network Annual Forum

Friday 27 May 2002

Professor Anna Barker

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Fall-related hospital care - AIHW

In 2018–19 :

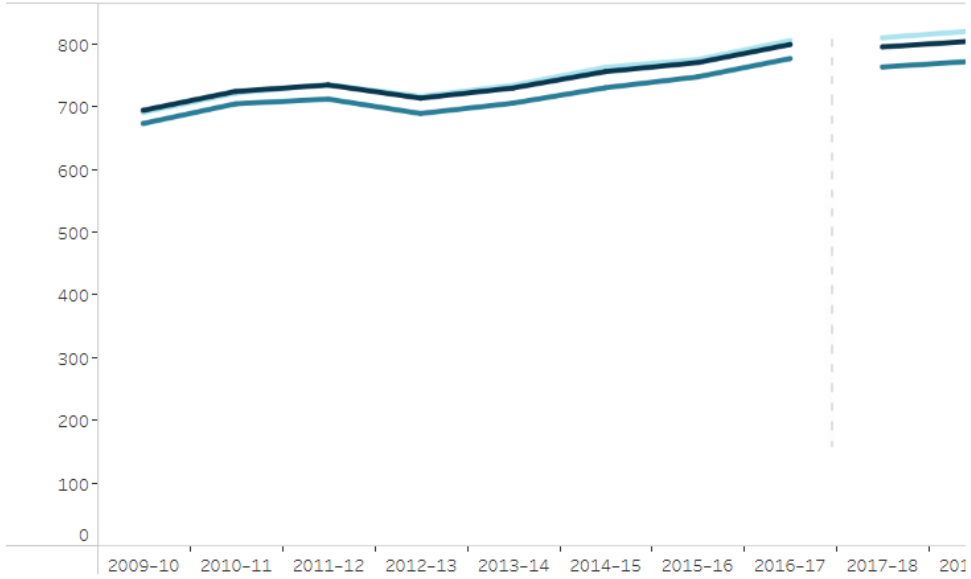
- Hospitalisations due to falls ↑ 1.2% than the previous year.
- Indigenous Australians 1.3 times as likely as other Australians to be hospitalised due to a fall injury
- People living in very remote areas were 1.4 times as likely to be hospitalised due to a fall as people living in Inner regional area

58% of hospitalisations and 94% of deaths were for people ≥ 65

The head and neck most often identified as site of injury

Fractures were the most common type of injury sustained

Fall injury hospitalisations 2009-10 to 2018-19



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Preventing falls in older people living in the community

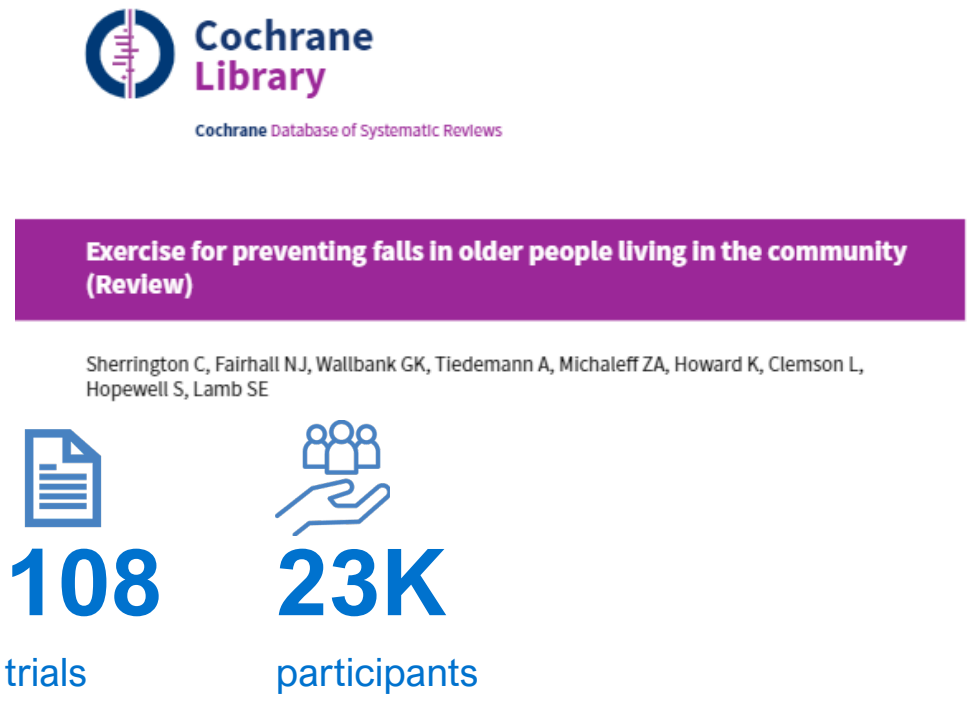
Multifactorial interventions may reduce the rate of falls compared with usual care or attention control. Multiple component interventions, usually including exercise, may reduce the rate of falls and risk of falling compared with usual care or attention control.

62 trials

20K participants

Exercise for preventing falls in older people living in the community

Well-designed exercise programmes reduce the rate of falls and the number of people experiencing falls amongst older people living in the community (high-certainty evidence).



108 trials

23K participants

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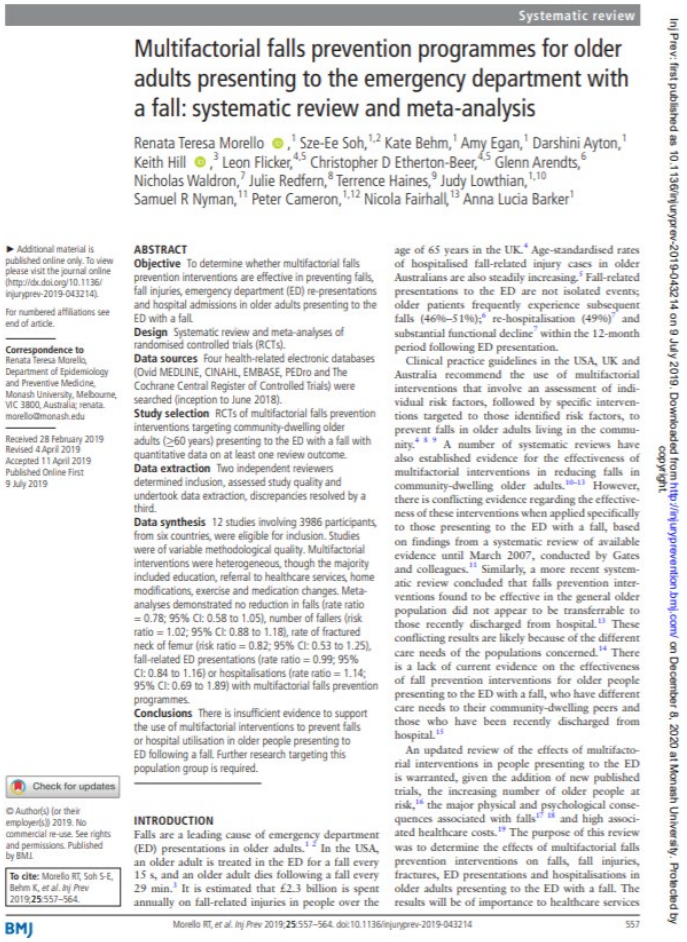
Older adults presenting to the emergency department with a fall

- Multifactorial interventions were heterogeneous, though the majority included education, referral to healthcare services, home modifications, exercise and medication changes.
- Meta-analyses demonstrated with multifactorial falls prevention programmes: no reduction in;
  - falls (rate ratio = 0.78; 95% CI: 0.58 to 1.05),
  - number of fallers (risk ratio = 1.02; 95% CI: 0.88 to 1.18),
  - rate of fractured neck of femur (risk ratio = 0.82; 95% CI: 0.53 to 1.25),
  - fall-related ED presentations (rate ratio = 0.99; 95% CI: 0.84 to 1.16) or
  - hospitalisations (rate ratio = 1.14; 95% CI: 0.69 to 1.89).

12 trials

4K participants



Systematic review

Multifactorial falls prevention programmes for older adults presenting to the emergency department with a fall: systematic review and meta-analysis

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ABSTRACT

Objective To determine whether multifactorial falls prevention interventions are effective in preventing falls, fall injuries, emergency department (ED) re-presentations and hospital admissions in older adults presenting to the ED with a fall.

Design Systematic review and meta-analyses of randomised controlled trials (RCTs).

Data sources Four health-related electronic databases (Ovid MEDLINE, CINAHL, EMBASE, PEDro and The Cochrane Central Register of Controlled Trials) were searched (inception to June 2018).

Study selection RCTs of multifactorial falls prevention interventions targeting community-dwelling older adults (≥60 years) presenting to the ED with a fall with quantitative data on at least one review outcome.

Data extraction Two independent reviewers determined inclusion, assessed study quality and undertook data extraction, discrepancies resolved by a third.

Data synthesis 12 studies involving 3986 participants, from six countries, were eligible for inclusion. Studies were of variable methodological quality. Multifactorial interventions were heterogeneous, though the majority included education, referral to healthcare services, home modifications, exercise and medication changes. Meta-analyses demonstrated no reduction in falls (rate ratio = 0.78; 95% CI: 0.58 to 1.05), number of fallers (risk ratio = 1.02; 95% CI: 0.88 to 1.18), rate of fractured neck of femur (risk ratio = 0.82; 95% CI: 0.53 to 1.25), fall-related ED presentations (rate ratio = 0.99; 95% CI: 0.84 to 1.16) or hospitalisations (rate ratio = 1.14; 95% CI: 0.69 to 1.89) with multifactorial falls prevention programmes.

Conclusions There is insufficient evidence to support the use of multifactorial interventions to prevent falls or hospital utilisation in older people presenting to ED following a fall. Further research targeting this population group is required.

INTRODUCTION

Falls are a leading cause of emergency department (ED) presentations in older adults.[1 2] In the USA, an older adult is treated in the ED for a fall every 15 s, and an older adult dies following a fall every 29 min.[3] It is estimated that £2.3 billion is spent annually on fall-related injuries in people over the age of 65 years in the UK.[4] Age-standardised rates of hospitalised fall-related injury cases in older Australians are also steadily increasing.[5] Fall-related presentations to the ED are not isolated events; older patients frequently experience subsequent falls (46%–51%);[6] re-hospitalisation (49%)[7] and substantial functional decline[7] within the 12-month period following ED presentation.

Clinical practice guidelines in the USA, UK and Australia recommend the use of multifactorial interventions that involve an assessment of individual risk factors, followed by specific interventions targeted to those identified risk factors, to prevent falls in older adults living in the community.[4 8 9] A number of systematic reviews have also established evidence for the effectiveness of multifactorial interventions in reducing falls in community-dwelling older adults.[10–13] However, there is conflicting evidence regarding the effectiveness of these interventions when applied specifically to those presenting to the ED with a fall, based on findings from a systematic review of available evidence until March 2007, conducted by Gates and colleagues.[13] Similarly, a more recent systematic review concluded that falls prevention interventions found to be effective in the general older population did not appear to be transferrable to those recently discharged from hospital.[13] These conflicting results are likely because of the different care needs of the populations concerned.[14] There is a lack of current evidence on the effectiveness of fall prevention interventions for older people presenting to the ED with a fall, who have different care needs to their community-dwelling peers and those who have been recently discharged from hospital.[15]

An updated review of the effects of multifactorial interventions in people presenting to the ED is warranted, given the addition of new published trials, the increasing number of older people at risk,[16] the major physical and psychological consequences associated with falls[17 18] and high associated healthcare costs.[19] The purpose of this review was to determine the effects of multifactorial falls prevention interventions on falls, fall injuries, fractures, ED presentations and hospitalisations in older adults presenting to the ED with a fall. The results will be of importance to healthcare services

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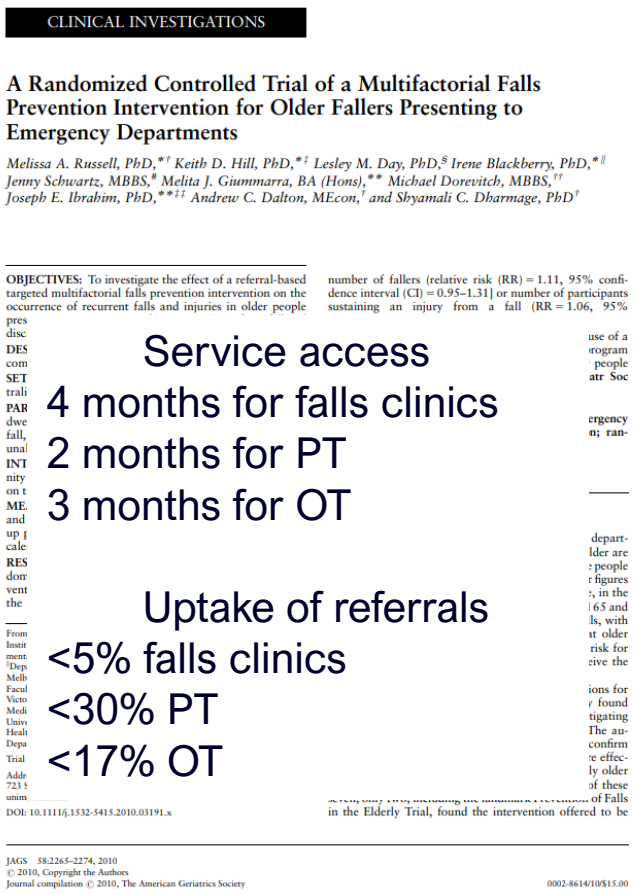
Implementation failure?



CLINICAL INVESTIGATIONS

A Randomized Controlled Trial of a Multifactorial Falls Prevention Intervention for Older Fallers Presenting to Emergency Departments

Melissa A. Russell, PhD,† Keith D. Hill, PhD,*‡ Lesley M. Day, PhD,§ Irene Blackberry, PhD,*‖ Jenny Schwartz, MBBS,# Melita J. Giummarra, BA (Hons),** Michael Dorevitch, MBBS,†† Joseph E. Ibrahim, PhD,**‡‡ Andrew C. Dalton, MEcon,† and Shyamali C. Dharmage, PhD†*

OBJECTIVES: To investigate the effect of a referral-based targeted multifactorial falls prevention intervention on the occurrence of recurrent falls and injuries in older people

number of fallers (relative risk (RR) = 1.11, 95% confidence interval (CI) = 0.95–1.31] or number of participants sustaining an injury from a fall (RR = 1.06, 95%

Service access
4 months for falls clinics
2 months for PT
3 months for OT

Uptake of referrals
<5% falls clinics
<30% PT
<17% OT

DOI: 10.1111/j.1532-5415.2010.03191.x

in the Elderly Trial, found the intervention offered to be

JAGS 58:2265–2274, 2010
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0002-8614/10/$15.00

7

emergency departments

361

participants

This study does not support the use of a referral-based targeted multifactorial intervention program to reduce subsequent falls or fall injuries in older people who present to an ED after a fall.

What did the successful trials do differently?

- ✓ Timely: Provided intervention within 30 days of ED discharge
- ✓ Intensity: Included provision of intervention by research staff rather than referral based
- ✓ Participation: Higher levels of uptake of recommendations

Patient centred & positive?

Older people see relevance in falls prevention strategies that adopt a patient-centred approach by including education and involvement in decision-making.

Mead & Bower 2000

Guidelines to increase uptake of falls prevention strategies have also suggested older adults choose activities that have personal meaning and are compatible with their social norms.

Bunn 2008

Presenting information as positive health messages or as ‘life enhancing’ rather than ‘at risk’ may also improve participation.

Bunn 2008

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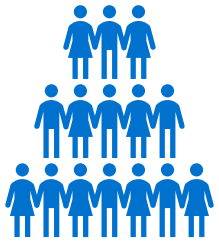
RESPOND RCT



543 people aged
60-90 yrs

Presented to one of 2
Australian ED's
(WA and Victoria)

RESPOND
Respond to the first fall to prevent the second

Planned discharge
home within 72 hours

Participants were enrolled if they could walk without hands-on assistance, use a telephone, and were free of cognitive impairment (Mini-Mental State Examination > 23).
Recruitment occurred between 1 April 2014 and 29 June 2015.
Participants were randomised to receive either RESPOND (intervention) or usual care (control).

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RESPOND be your best

- ✓ Falls risk assessment
- ✓ Provision of education
- ✓ Motivational interviewing
- ✓ Participatory decision making
- ✓ Patient-centred goals
- ✓ Coordination of services

Delivered by RESPOND-trained health care professionals

< 2 weeks

10 hours over 6 months

12 month data collection

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A patient-centred program to prevent falls

RESPOND comprised:

1. home-based risk assessment
2. 6 months telephone-based education, coaching, goal setting, and support for evidence-based risk factor management
3. linkages to existing services

Primary outcomes were falls and fall injuries in the 12-month follow-up. The mean age of participants was 73 years; 55% were female.

430
participants analysed

17
days from recruitment to home visit

7
contacts over 6 months

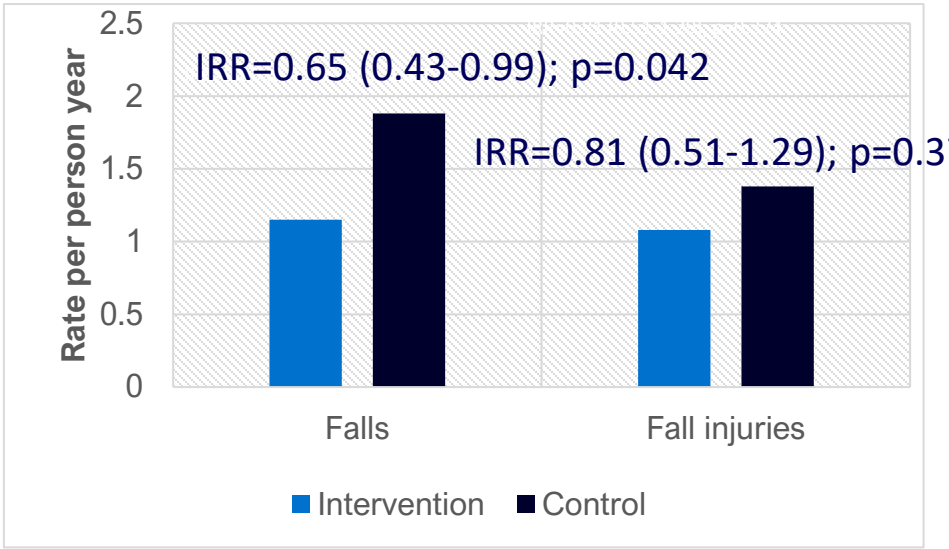
3
hours of intervention provided

PLOS | MEDICINE

RESEARCH ARTICLE

Evaluation of RESPOND, a patient-centred program to prevent falls in older people presenting to the emergency department with a fall: A randomised controlled trial

Anna Barker[1], Peter Cameron[1,2], Leon Flicker[3,4,5], Glenn Arendts[3,5], Caroline Brand[1,6,7], Christopher Etherton-Beer[3,4,5], Andrew Forbes[1], Terry Haines[8,9], Anne-Marie Hill[10], Peter Hunter[2], Judy Lowthian[1,11], Samuel R. Nyman[12], Julie Redfern[13], De Villiers Smit[2], Nicholas Waldron[14], Eileen Boyle[10], Ellen MacDonald[15], Darshini Ayton[1]*, Renata Morello[1], Keith Hill[10]



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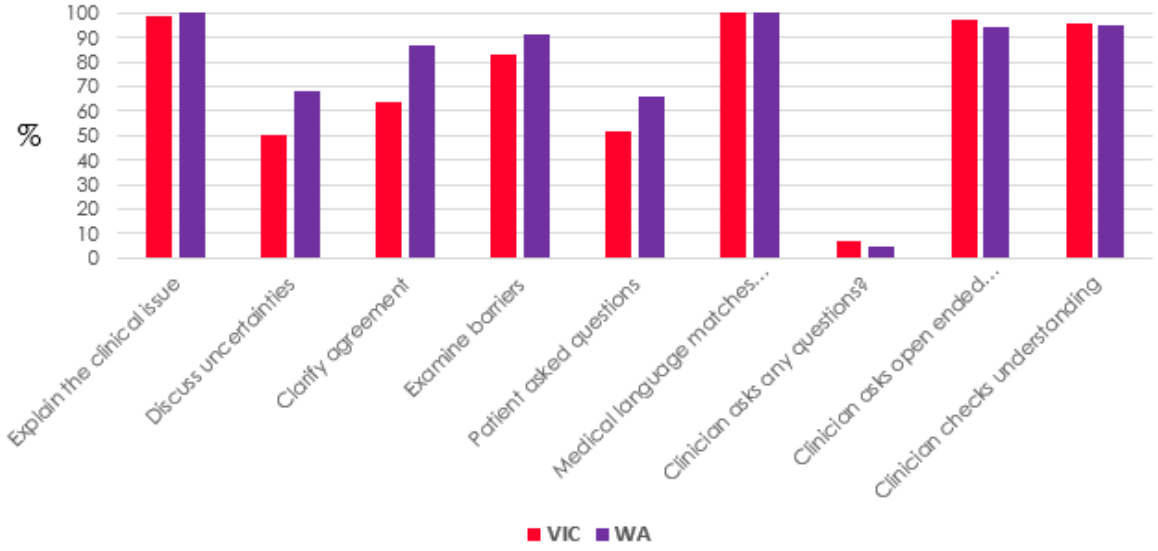
Patient-centredness

RESPOND component	Vic n (%)	WA n (%)	Total n (%)
Provision of education	42 (91%)	47 (100%)	89 (96%)
Community linkage	43 (93%)	45 (96%)	88 (95%)
MI: Open ended Q's	45 (98%)	45 (96%)	90 (97%)
MI: Affirmation	46 (100%)	42 (89%)	88 (95%)
MI: Reflection	38 (83%)	42 (89%)	80 (86%)
MI: Summary	34 (74%)	45 (96%)	79 (85%)

Participatory decision making



Morris et al. BMC Health Services Research (2019) 19:906
https://doi.org/10.1186/s12913-019-4614-z

BMC Health Services Research

RESEARCH ARTICLE Open Access

A mixed methods process evaluation of a person-centred falls prevention program

Rebecca L. Morris[1*], Keith D. Hill[2,3], Ilana N. Ackerman[1], Darshini Ayton[1*], Glenn Arendts[4,5], Caroline Brand[1,6], Peter Cameron[1,7], Christopher D. Etherton-Beer[4,8], Leon Flicker[4,8], Anne-Marie Hill[3], Peter Hunter[1,7], Judy A. Lowthian[1,9], Renata Morello[1], Samuel R. Nyman[10], Julie Redfern[11], De Villiers Smit[1,7] and Anna L. Barker[1]

Abstract

Background: RESPOND is a telephone-based falls prevention program for older people who present to a hospital emergency department (ED) with a fall. A randomised controlled trial (RCT) found RESPOND to be effective at reducing the rate of falls and fractures, compared with usual care, but not fall injuries or hospitalisations. This process evaluation aimed to determine whether RESPOND was implemented as planned, and identify implementation barriers and facilitators.

Methods: A mixed-methods evaluation was conducted alongside the RCT. Evaluation participants were the RESPOND intervention group ($n = 263$) and the clinicians delivering RESPOND ($n = 7$). Evaluation data were collected from participant recruitment and intervention records, hospital administrative records, audio-recordings of intervention sessions, and participant questionnaires. The Rochester Participatory Decision-Making Scale (RPAD) was used to evaluate person-centredness (score range 0 (worst) - 9 (best)). Process factors were compared with pre-specified criteria to determine implementation fidelity. Six focus groups were held with participants ($n = 41$), and interviews were conducted with RESPOND clinicians ($n = 6$). Quantitative data were analysed descriptively and qualitative data thematically. Barriers and facilitators to implementation were mapped to the 'Capability, Opportunity, Motivation – Behaviour' (COM-B) behaviour change framework.

Results: RESPOND was implemented at a lower dose than the planned 10 h over 6 months, with a median (IQR) of 2.9 h (2.1, 4). The majority (76%) of participants received their first intervention session within 1 month of hospital discharge with a median (IQR) of 18 (12, 30) days. Clinicians delivered the program in a person-centred manner with a median (IQR) RPAD score of 7 (6.5, 7.5) and 87% of questionnaire respondents were satisfied with the program. The reports from participants and clinicians suggested that implementation was facilitated by the use of positive and personally relevant health messages. Complex health and social issues were the main barriers to implementation.

Conclusions: RESPOND was person-centred and reduced falls and fractures at a substantially lower dose, using fewer resources, than anticipated. However, the low dose delivered may account for the lack of effect on falls injuries and hospitalisations. The results from this evaluation provide detailed information to guide future implementation of RESPOND or similar programs.

Trial registration: This study was registered with the Australian New Zealand Clinical Trials Registry, number ACTRN12614000336684 (27 March 2014).

Keywords: Falls prevention, fractures, older adults, emergency department, process evaluation, complex intervention, mixed methods

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“The girl that I was speaking to asked me originally, What would you like to do? What exercise do you like?
What would you like to have a go at?”
What’s something that you might be interested in?” So I told her.
So then she went off and found these different things around the area for me, so it was all very much about what I wanted. But she would be throwing in suggestions, and I’m sure if I hadn’t been very forthcoming, I’m sure she would have put things out for me to try”.

Focus group 4, WA

“I don’t react well when people tell me what to do”.

Focus group 6, WA

Key ingredients

Timeliness

Intensity

Patient-centredness

Participation

RESPOND supports and builds on the existing literature regarding the key ingredients for successful fall prevention programs.

Complex health and social issues increase challenge of providing timely and intense dosage of intervention.

RESPOND was delivered in a patient-centred manner. This is valued by participants.

RESPOND was delivered in a timely manner and with sufficiently intense dosage to increase participation in falls prevention activities compared with usual care.

RESPOND achieved an increase in rate of attendance at community health services, with a lower dose than planned – efficient use of resources!

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ASPREE-Fracture

To determine whether daily low-dose aspirin:

- ❑ Reduces the incidence of fracture (primary aim)
- ❑ In part by reducing the incidence of fall-related hospital presentation (secondary aim)

- Healthy participants aged ≥ 70 years:
  - ❑ randomised to daily aspirin 100 mg (n=8,322) or placebo (n=8,381)
  - ❑ followed up for median 4.7 years
- Primary outcome: fracture confirmed by medical imaging
- Secondary outcome: Fall-related hospital presentation
  - ❑ Definition of fall: “an event which results in a person coming to rest inadvertently on the ground or floor or other lower level”.
- All outcomes adjudicated by an endpoint adjudication committee

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Fracture event rates and hazard ratios for the aspirin vs placebo treatment groups

	Aspirin N=8,322		Placebo N=8,381		HR (95% CI)	p-value
	No. participants	Rate/1000 person-y (95% CI)	No. participants	Rate/1000 person-y (95% CI)		
First fracture event	781	21.53 (20.05,23.09)	813	22.31 (20.80,23.90)	0.97 (0.87- 1.06)	0.5
All fracture events*	894	23.57 (22.05, 25.16)	941	24.58 (23.03, 26.20)	0.96 (0.87, 1.06)	0.4
Fracture events with fall	470	12.39 (11.29,13.56)	458	11.96 (10.89,13.11)	1.04 (0.90-1.19)	0.6
Fracture events without fall	424	11.18 (10.14,12.29)	483	12.62 (11.52,13.79)	0.89 (0.77, 1.02)	0.085

Abbreviations: CI, confidence interval; HR, hazard ratio.
* If a participant had multiple fractures occurring on the same occasion, this was counted as one fracture-event.

IRRs for fall-related hospital presentations in aspirin vs placebo groups

	Low-dose aspirin vs placebo		
	IRR	95% CI	P value
Fall-related hospital presentations	1.17	1.03-1.33	0.011
Fall-related hospital presentations with fracture	1.06	0.90-1.25	0.4
Fall-related hospital presentation without fracture	1.29	1.07-1.55	0.004

Abbreviations: CI, confidence interval; IRR, incidence rate ratio

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- We care for the things our clients care about
- We champion dignity, choice and independence
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Virtual Hospital - Future Care

Silver Chain client base

Pre-hospital care to prevent hospital admissions

Mobile ED to reduce ED demand

Virtual hospital

Virtual command center to support face to face care & decision making

- ✓ Digital supply chains, automation, robotics, & next-generation interoperability drive operations management & back-office efficiencies
- ✓ Digital & AI technologies enable on-demand interaction & seamless processes to improve client & provider experience
- ✓ Robotic process automation & AI allow caregivers to spend more time providing care & less time documenting it
- ✓ Small, portable devices for mobile diagnostics & point of care testing
- ✓ Specialist medical & nursing panel supports local generalist staff
- ✓ Remote monitoring & patient portal

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