

Trial of a very brief pedometer-based intervention (Step it Up) to promote physical activity in preventative health checks.

EHPS/DHP Annual Conference, Aberdeen.

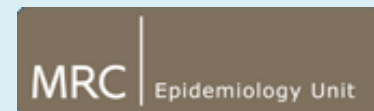
23rd – 27th August 2016

Jo Mitchell

Wendy Hardeman, Sally Pears, Joana Vasconcelos,

Toby Prevost, Stephen Sutton

on behalf of the VBI Trial Team





Background: Public Health

- Physical inactivity is the fourth leading risk factor for death worldwide^{1,2} and is as important a modifiable risk factor for chronic disease as obesity and tobacco³
- The indirect and direct costs of physical inactivity costs \$67.5 billion worldwide⁴
- Global PA recommendations for health – 150 minutes of moderate activity each week⁵.
- Majority of adults fail to meet recommended physical activity guidelines⁴

1. Public Health England. NHS health check implementation review and action plan. 2013. http://www.healthcheck.nhs.uk/latest_news/nhs_health_check_implementation_review_and_action_plan1.
2. Lee et al.: Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet*. 2012;380:219–29.
3. *The Lancet Series. Physical Activity series 2012*. <http://www.thelancet.com/series/physical-activity>
4. Ding et al. 2016. *The economic burden of physical inactivity: a global analysis of major non-communicable diseases*. *Lancet*
5. WHO. *Global recommendations on PA for health*. 2015



Background:

Physical Activity interventions

- Physical activity interventions can be effective but many are too long or complex to be scalable to the general population^{1,2}
- Pedometer-based interventions can increase physical activity³
- Very brief interventions (VBIs, <5 minutes) can reach many adults, are relatively cheap and may have substantial public health impact
- Lack of evidence about effectiveness and cost-effectiveness of VBIs¹



- Step It Up was selected following extensive development, feasibility and pilot testing^{4,5}
- **Sally Pears: Behaviour change in primary care: Very brief interventions for physical activity. 11.00 am**

1. Vijay GC et al. Are brief interventions to increase physical activity cost-effective? A systematic review. *BJSM* 50(7):408-17

2. Wu et al 2011

3. NICE 2013. *Physical activity: brief advice for adults in primary care. NICE public health guidance 44.*

4. Pears et al. (2015): Development and feasibility study of very brief interventions for physical activity in primary care. *BMC Public Health*. 15:333

5. Pears et al. (2016): A randomised controlled trial of three very brief interventions for physical activity in primary care. Under Review.

Step It Up

Walk

Swim

Dance

Run

Stretch

Cycle

Step It Up!



Step It Up

Your Current Physical Activity Level:

- You're already active, well done! Keep up the good work!
- You could benefit from increasing your physical activity.

VBI VERY BRIEF INTERVENTIONS

Very brief interventions to promote physical activity in primary care

UNIVERSITY OF CAMBRIDGE
Public Health and Primary Care
The Primary Care Unit

UEA
University of East Anglia

KING'S College LONDON

MRC Epidemiology Unit

Step Chart



Step Goal	Mon	Tues	Weds	Thurs	Fri	Sat	Sun	Steps & Miles Walked This Week
Week 1 This week I will try to walk steps a day	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Steps walked this week: Miles walked this week:
Week 2 This week I will try to walk steps a day	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Steps walked this week: Miles walked this week:
Week 3 This week I will try to walk steps a day	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Steps walked this week: Miles walked this week:
Week 4 This week I will try to walk steps a day	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Today I <input type="checkbox"/> walked steps	Steps walked this week: Miles walked this week:

Closed



Front



Clip

Back

Open

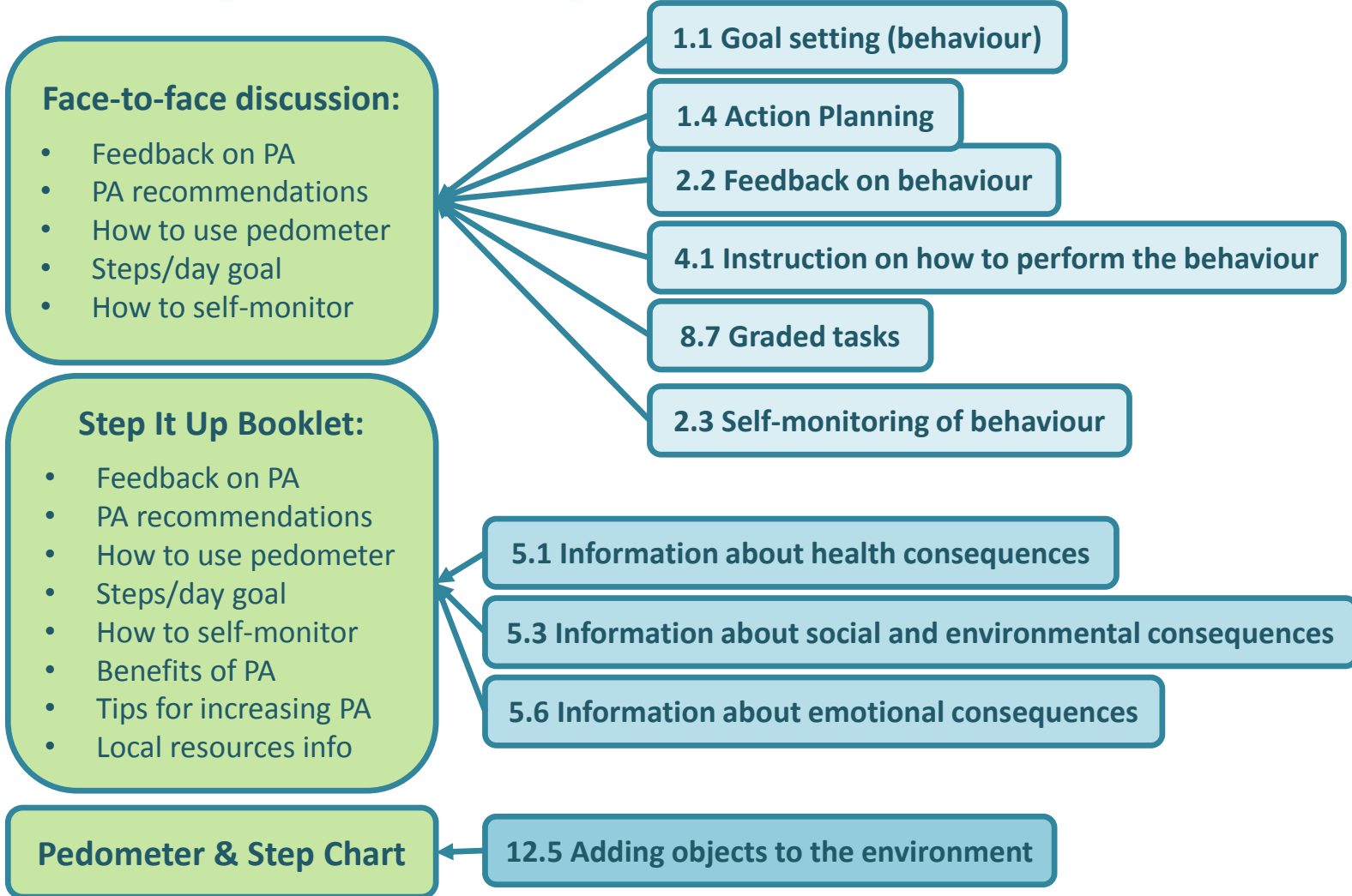


Display number of steps

RESET button

Table of calorie consumption

Step It Up





The VBI Trial: Aim

- Assessed the effectiveness and cost-effectiveness of Step It Up
- Delivered in NHS Health Checks targeting adults aged 40-74 years:
 - Vascular disease risk assessment
 - Appropriate risk management





Trial design

- Two parallel-group, randomised controlled trial with a 1:1 individual allocation, comparing:
 - *Step It Up* intervention delivered by trained practice nurses and health care assistants
 - NHS Health Check only
- Sample size: 1,007 adults aged 40-74 years and eligible for NHS Health Checks from 23 GP practices in the East of England
- 3 months follow up
- Primary Outcome: Accelerometer counts per minute



Procedure

Participant recruitment

- Each practice randomly selected a subsample of eligible patients for trial invitation along with NHS Health Check invitation
- Patients expressed interest in trial when arranging appointment



Start of NHS Health Check

Informed consent, short questionnaire, randomisation through web-based program



**NHS Health Check followed by
*Step It Up***



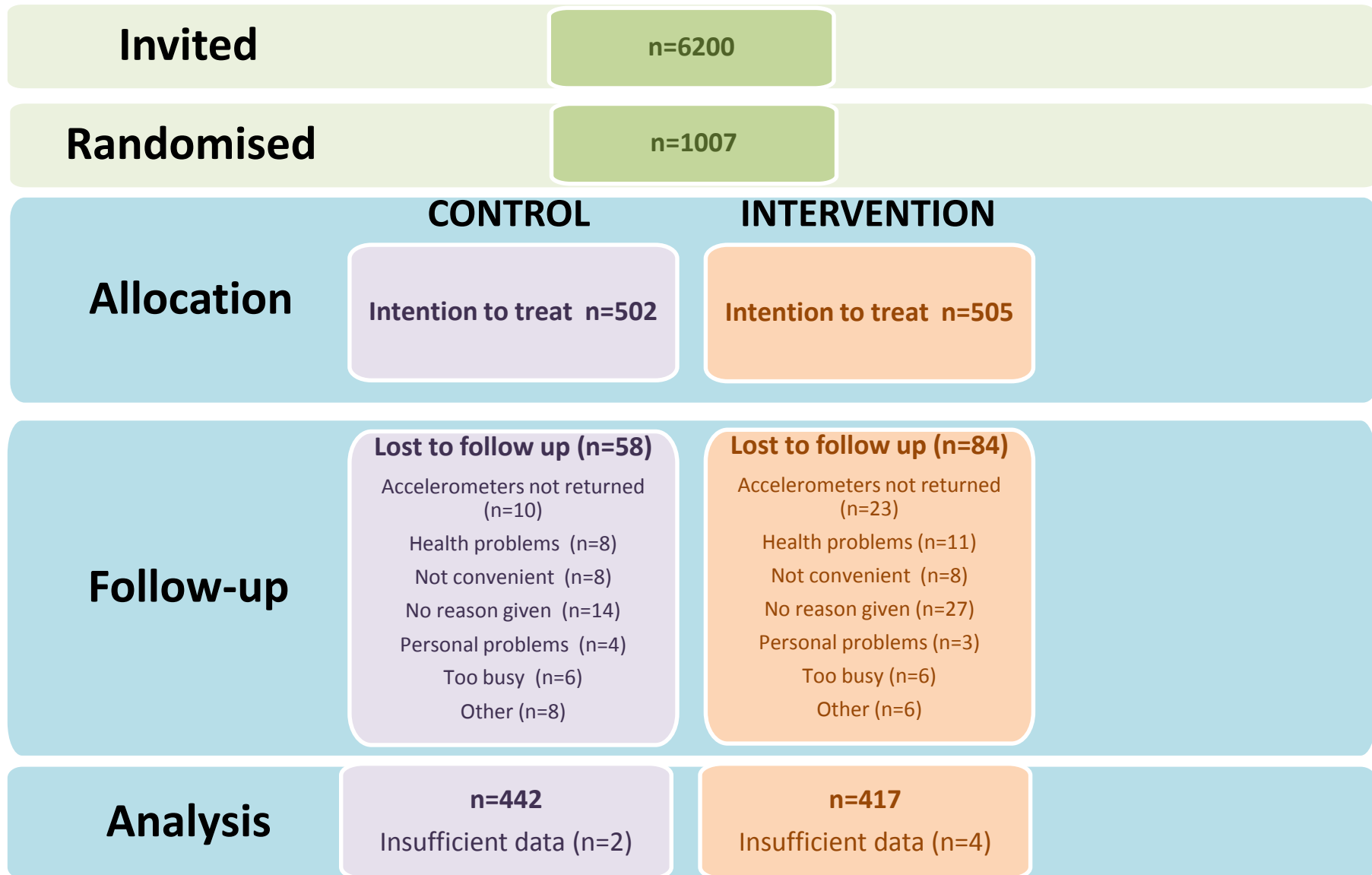
NHS Health Check only



Three month postal follow-up

- **Accelerometer:** Actigraph
- **Questionnaire:** self-reported physical activity (RPAQ), resource use, recall and self-reported use of behaviour change techniques

The VBI Trial Consort Diagram



Baseline characteristics (N=1,007)

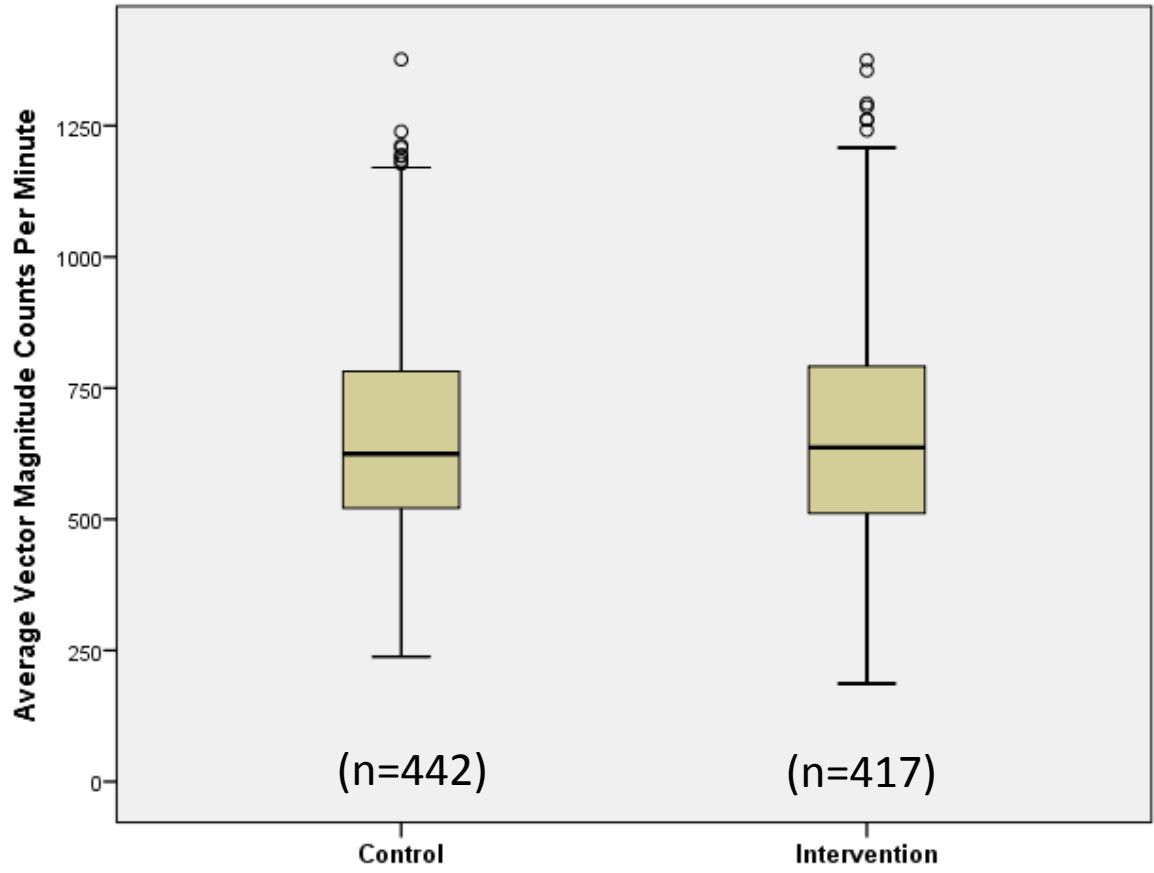
	Control N=502	Intervention N=505
% Female	61%	63%
Age [mean (SD)]	56.5 (9.4)	55.7 (9.6)
Ethnicity % White	95% (476/502)	96% (484/505)
Occupational group		
% Manual	24% (71/295)	27% (84/314)
% Non-manual	68% (200/295)	65% (203/314)
% Other	8% (24/295)	9% (27/314)
Work Status		
% Paid work	61% (286/472)	62% (301/482)
% Unemployed/homemaker	6% (29/472)	6% (28/482)
% Full-time student	0% (0/472)	0% (1/482)
% Retired	32% (152/472)	31% (148/482)
% Other	1% (4/472)	1% (4/482)

31% reported being inactive or moderately inactive



Primary outcome:

Accelerometer counts per minute



Control

Mean (95% CI) = 660 (641, 679)

Intervention

Mean (95% CI) = 668 (648, 689)

Unadjusted difference in means (95% CI): 8.0 (-19.8, 35.9)

Intervention effect (95% CI) adjusted for gender, five-year age group and practice: 8.8 (-18.7, 36.3)
p=0.53

85% (859/1007) followed up with primary outcome



Secondary outcomes: Accelerometer step counts per day

	Control N=442 (88% response)	Intervention N=417 (83% response)	Intervention compared to Control:
	Mean (95% CI)	Mean (95% CI)	Adjusted difference in means (95% CI)
Step counts per day, adjusted for gender, five- year age group and general practice	8191 (7911, 8471)	8419 (8110, 8729)	242 (-172, 656) p=0.25



Secondary outcomes:

Self-reported physical activity (RPAQ)

Self-report PA measures (RPAQ)	Control		Intervention		Intervention relative to Control
	N	Mean ⁺ (95% CI)	N	Mean ⁺ (95% CI)	Comparison of means (95% CI) p-value
PAEE Physical activity energy expenditure (kJ/kg/day)	440	28.0 (26.0, 30.0)	418	29.5 (27.5, 31.7)	5.4% (-4.2%, 16.0%) p=0.28
Home based PAEE (kJ/kg/day)	439	2.7 (2.5, 2.9)	418	2.9 (2.7, 3.1)	6.3% (-5.3%, 19.3%) p=0.30
Work based PAEE (kJ/kg/day)	273	11.8 (10.6, 13.2)	269	13.3 (11.8, 15.0)	9.0% (-6.5%, 27.1%) p=0.27
Leisure based PAEE (kJ/kg/day)	440	12.0 (10.7, 13.4)	416	12.0 (10.8, 13.4)	0.7% (-13.7%, 17.5%) p=0.93
Commuting PAEE (kJ/kg/day)	266	0.63 (0.50, 0.80)	257	0.57 (0.40, 0.70)	-10.0% (-34.0%, 22.6%) p=0.50
Screen/TV time (hours/day)	439	2.77 (2.63, 2.90)	418	2.76 (2.61, 2.91)	0.005 (-0.18, 0.19) p=0.96

+ Means are geometric means for skewed PAEE outcomes and compared as percentage increase of the intervention group to the control group



Conclusions

- This was a high-quality trial: well-balanced sample, 85% retention, no differential dropout, objective PA measure.
- *Step it Up* did not result in significantly higher levels of objective and self-reported physical activity at three months than the NHS Health Check alone.
- Potential explanations: insufficient fidelity of delivery and/or enactment, physically active sample, insufficient intensity.
- Compared to PACE-Lift¹, our participants were younger and more active, and our intervention much less intensive.
- Do our findings support commissioning of a very brief pedometer-based intervention as part of NHS Health Checks?

Acknowledgements: VBI Trial team



UNIVERSITY OF
CAMBRIDGE

Current:

Stephen Sutton : PI, Director
Wendy Hardeman: Deputy Director, visiting scientist
Joanna Mitchell: Trial Coordinator
Miranda Van Emmenis: Trial Assistant
Florence Theil: Trial Assistant
Sally Pears
Ed Wilson
Ann Louise Kinmonth
Simon Griffin

Alumni:

Maaike Bijker (WS3)
Simon Cohn (WS2)
Laura Lamming (WS1)
Dan Mason (WS1)
Philip Miles (WS2)
Katie Morton (WS3)
Richard Parker (WS3)



Wendy Hardeman
Vijay Singh GC
Marc Suhrcke



Soren Brage
Kate Westgate
Simon Griffin



Toby Prevost
Joana Vasconcelos

PPI Panel

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