Randomised controlled trial of the DESMOND structured education programme for people newly diagnosed with Type 2 diabetes: biomedical outcomes, psychosocial outcomes and illness beliefs at 3 years

Diabetes Research Leicester

Kamlesh Khunti[1], Simon Heller[2], Timothy C Skinner[3], Laura J Gray[1], Helen Dallosso[4], Kathryn Realf[4], Marian Carey[4], Melanie Davies[5].

Aims:

- The DESMOND (Diabetes Education and Self Management for Ongoing and Newly Diagnosed) structured education programme[1] showed benefits at 1 year in people newly diagnosed with diabetes[2].
- Significantly greater improvements were seen in weight loss, smoking cessation and illness beliefs in the intervention group. No difference in HbA1c was seen.
- A follow-up was carried out at 3 years to see if these benefits are sustained.

Methods:

- The study was a cluster RCT run in 162 practices (13 sites) in England and Scotland. 824 people newly diagnosed with T2DM joined the trial (Oct 2004 to Jan 2007)
- All study participants were eligible for follow-up at 3 years unless a) they withdrew during the trial or b) we were informed they were no longer at their practice
- Participants eligible for follow-up were sent a postal questionnaire (illness beliefs[3, 4] symptoms of depression[5], physical activity[6] and smoking) and asked to visit their practice for biomedical measures (HbA1c, blood pressure, body weight, blood lipids, waist circumference).

Results – biomedical data:

- 743 participants were eligible for follow-up at 3y. Biomedical data were collected from 604 (81.3%) and questionnaire data from 536 (72.1%) (Figure 1)
- Those followed up were older (p=0.01), had a higher BMI (p=0.04) and waist circumference (p< 0.001) and higher depression score (p < 0.001) than those who were not (Table 1). Importantly there were no significant differences between responders and non responders by group.
- There was a drift towards baseline in HbA1c in both groups. The overall fall from baseline was greater in the intervention arm with a clinically important drop of 0.5% in the intervention group. After adjusting for cluster and baseline values this was not statistically significant (-0.02 (-0.22 to 0.17) p=0.81) (Figure 2).

- When averaging over all time points, those in the intervention group had a significantly lower body mass index compared to the control group (-0.26 (-0.52 to -0.01), p=0.04) and a trend towards lower body weight (-0.69 (-1.42 to 0.040, p=0.06) (Figure 3).
- More participants in the intervention group had a low CHD risk score (UKPDS) adjusted for baseline value and cluster (p=0.29) (Figure 4).

Results - questionnaire data:

- The differences in illness beliefs observed at 1 year were maintained at 3 years. After adjustment for baseline value and cluster, four of the illness belief scores (coherence, timeline, personal responsibility and seriousness) were significantly higher in the intervention group. All showed that intervention participants showed greater understanding of their illness and its seriousness and a better perception of its duration and their ability to affect its course (Table 2).
- The significant difference in the proportion of non-smokers at 12 months is not maintained, although a greater proportion of the intervention group are non smokers at 3 years compared to the control group (91% versus 87% respectively, p=0.16).
- No difference in level of physical activity between intervention groups is seen at 3 years (p=0.58).
- Although no difference was seen between groups in terms of their depression score at 3 years, overall the intervention group showed lower depression scores across the four time points (0.41 (-0.72 to -0.11), p=0.01).

Discussion and conclusion

- Lack of difference in the biomedical and lifestyle measures is not unexpected. A drift towards pre-intervention values is commonly observed.
- The differences in illness belief scores show that attending DESMOND results in positive changes in understanding of diabetes, which are sustained at 3 years
- Attending a single course at diagnosis is beneficial, but patients need to continue receiving ongoing support to help them manage their diabetes
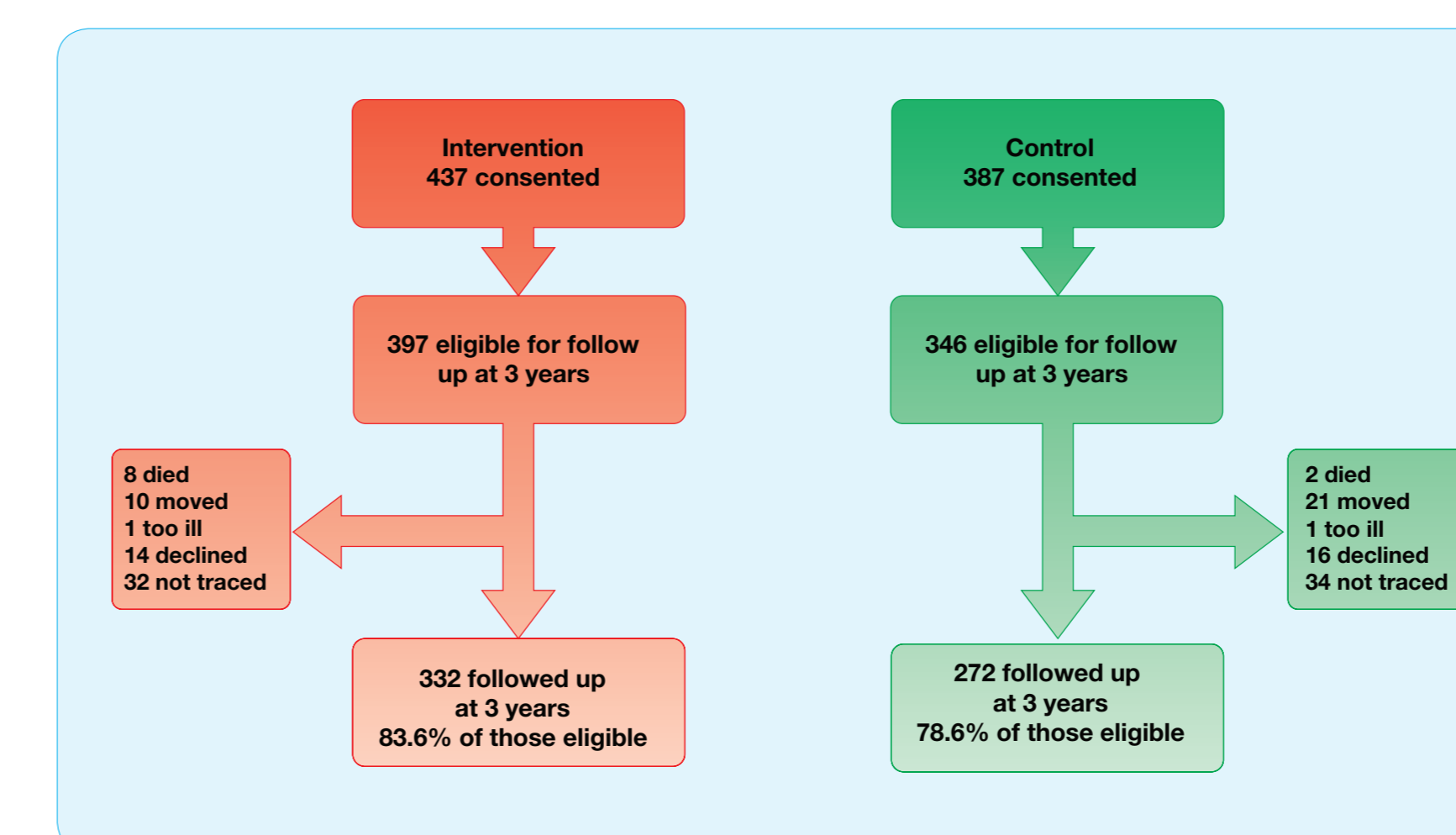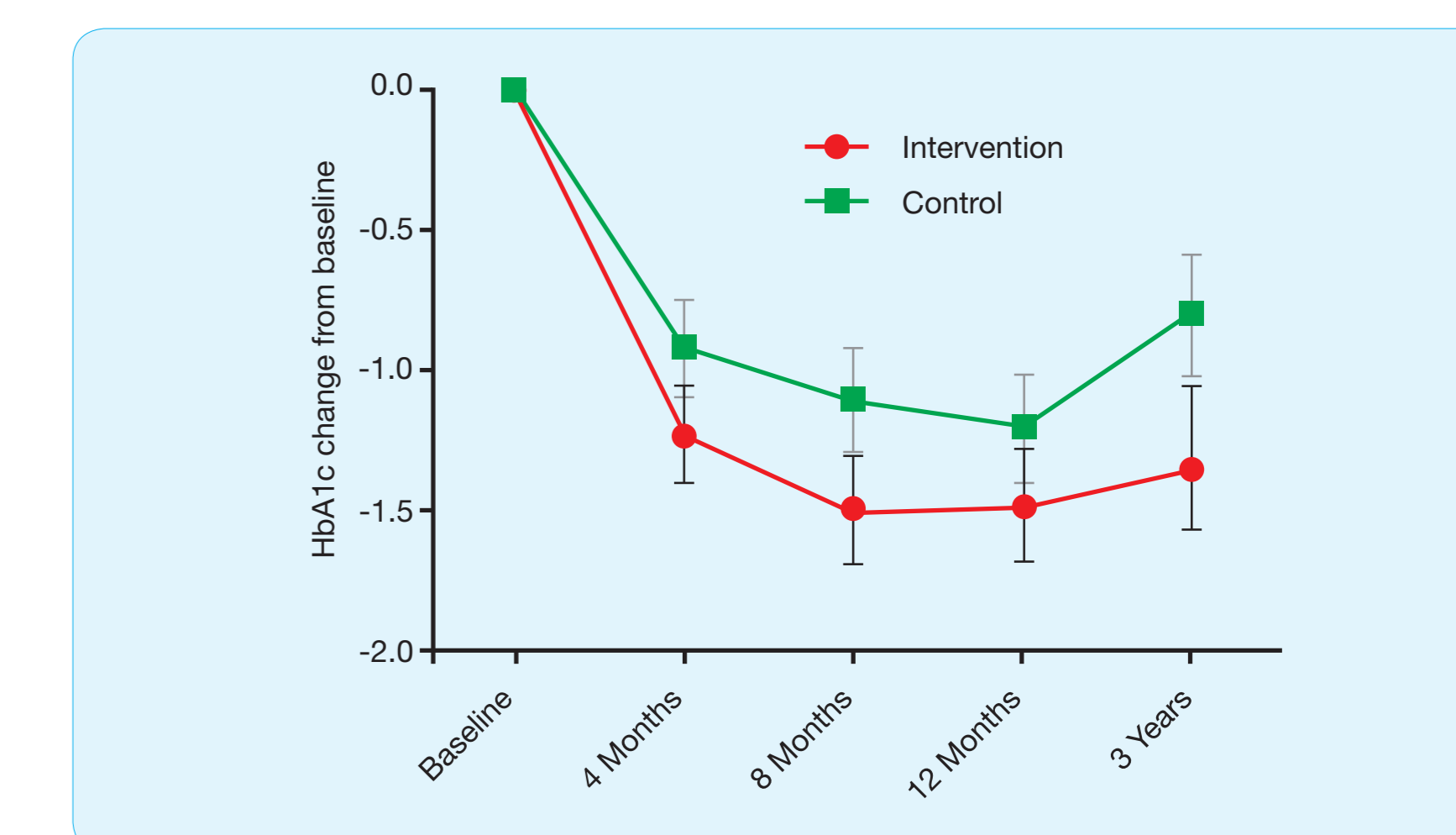
References
1 Skinner TC et al 2006. *Patient Education and Counselling*, 64; 369-377.
2 Davies MJ et al. 2008 *British Medical Journal*, 336; 491-495.
3 Moss-Morris R, et al 2002 *Psychology and Health*;17:1-16.
4 Skinner TC et l. 2003 *Diabet.Med.*; 20:283-9
5 Zigmond AS and.Snaith RP. 1983 *Acta Psychiatrica*, 67:361-70.
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Figure 1: Follow-up at 3 years

Figure 2: HbA1c change from baseline in the 2 arms over 3 years

	Non Responders		Responders	
	Intervention 105	Control 115	Intervention 332	Control 272
Age (y)	57.8 (12.9)	57.5 (12.2)	59.4 (11.6)	61.0 (12.1)
Female	53 (50.5%)	48 (41.7%)	151 (45.5%)	120 (44.1%)
White European	91 (95.8%)	91 (94.8%)	307 (97.2%)	236 (97.1%)
Smokers	15 (16.0%)	19 (19.8%)	42 (13.3%)	34 (14.1%)
HbA1c (%)	8.3 (2.2)	8.1 (2.2)	8.3 (2.2)	7.7 (1.9)
Body weight (kg)	93.7 (21.6)	96.2 (22.5)	91.2 (18.3)	89.7 (18.9)
BMI	33.0 (6.4)	33.8 (7.0)	32.1 (5.9)	31.8 (6.1)
Depression Score	4.1 (3.4)	4.6 (4.0)	3.2 (3.1)	3.4 (3.6)

Table 1: Characteristics of responders and non-responders

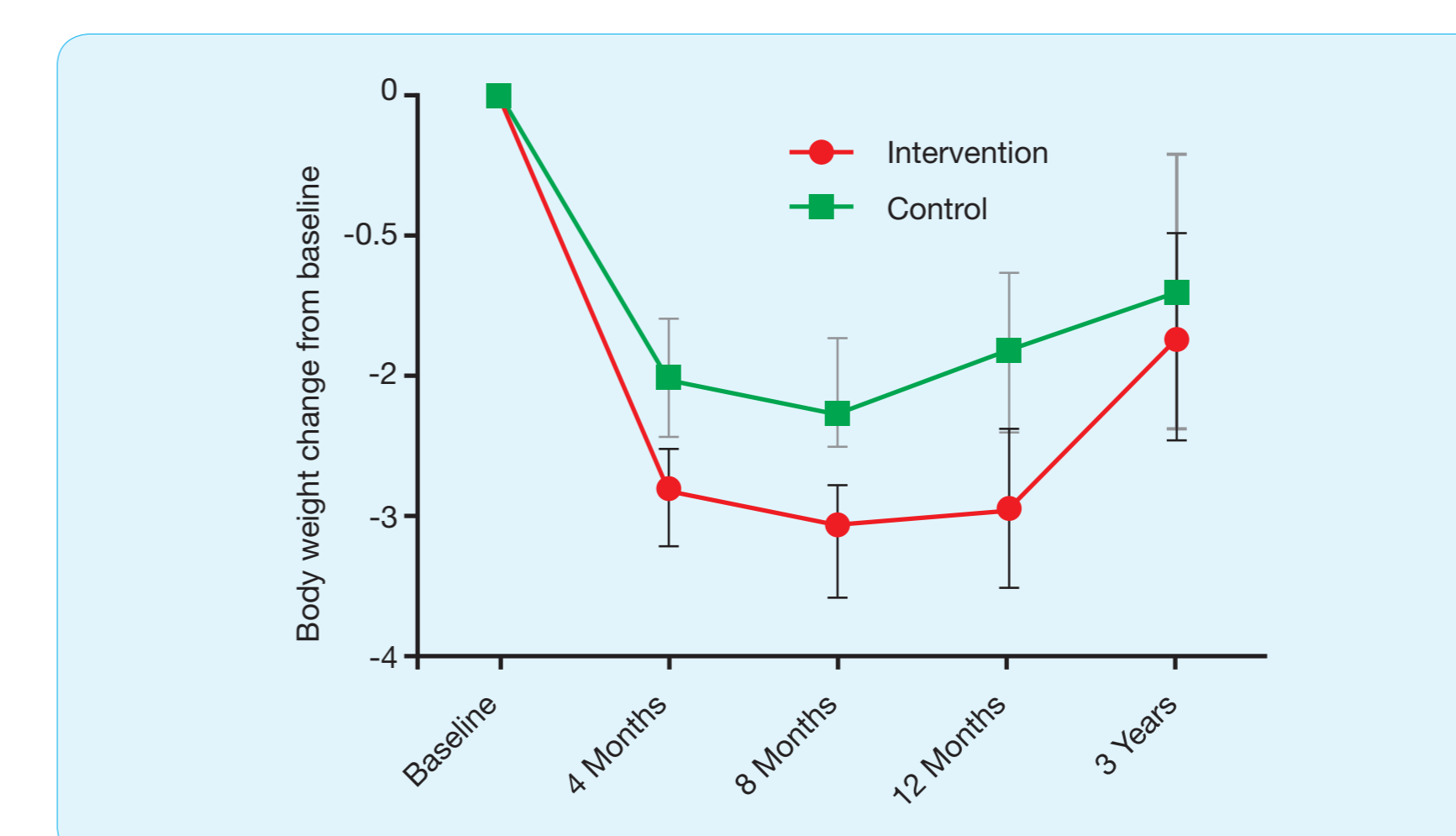|	Median (IQR)		Model summary	P
	Intervention group	Control group	Coefficient (95% CI)	value
Illness coherence	20 (16 to 20)	19 (15 to 20)	0.93 (0.20 to 1.65)	0.01
Timeline	22 (20 to 25)	20 (19 to 25)	0.87 (0.24 to 1.49)	0.01
Personal responsibility	24 (23 to 27)	24 (23 to 26)	0.49 (-0.004 to 0.99)	0.05
Impact	13 (12 to 15)	13 (12 to 15)	0.22 (-0.33 to 0.77)	0.44
Seriousness	17 (15 to 19)	16 (15 to 18)	0.77 (0.23 to 1.30)	0.01

Table 2: Illness beliefs

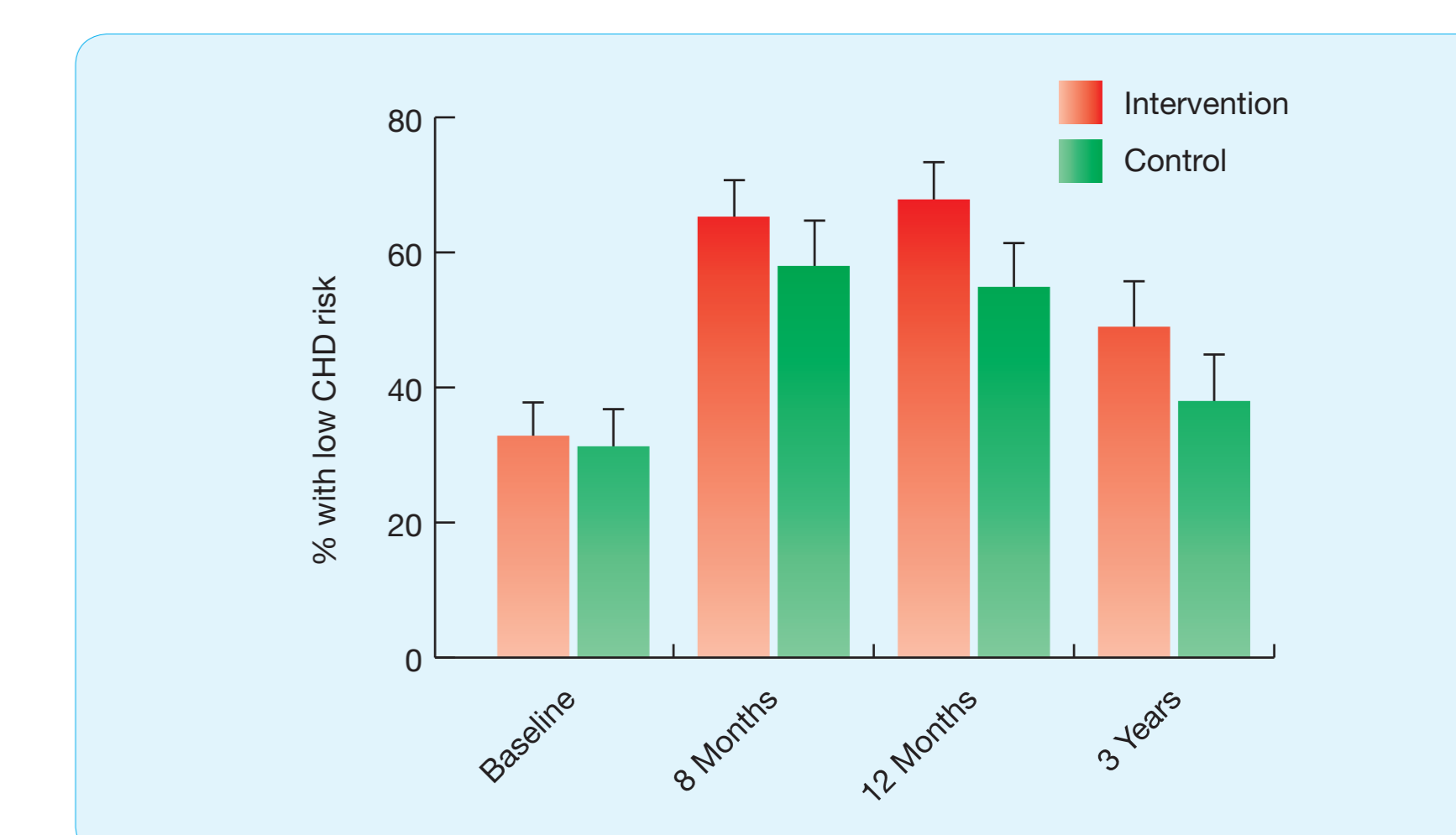Figure 3: Body weight change from baseline in the 2 arms over 3 years

Figure 4: UKPDS 10 Year CHD Risk

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NIHR CLAHRC
Leicestershire, Northamptonshire and Rutland (LNR)

University of Leicester

University Hospitals of Leicester NHS
NHS Trust