

Impact case study (REF3)

Institution: University of Leicester		
Unit of Assessment: UoA24		
Title of case study: Increasing Physical Activity and Promoting Healthy Lifestyles to Prevent and Manage Diabetes		
Period when the underpinning research was undertaken: 2004-2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): 1) Prof Thomas Yates 2) Dr Charlotte Edwardson 3) Prof Laura Gray 4) Prof Melanie Davies 5) Prof Kamlesh Khunti	Role(s) (e.g. job title): 1) Professor of Physical Activity, Sedentary Behaviour and Health 2) Associate Professor of Physical Activity, Sedentary Behaviour and Health 3) Professor of Medical Statistics 4) Professor of Diabetes Medicine 5) Professor of Primary Care, Diabetes and Vascular Medicine	Period(s) employed by submitting HEI: 1) 2008-Present 2) 2011-Present 3) 2008-Present 4) 2006-Present 5) 1993-Present
Period when the claimed impact occurred: 2013-2020		
Is this case study continued from a case study submitted in 2014? N		
<p>1. Summary of the impact</p> <p>Increasing physical activity is vital in preventing and managing type 2 diabetes (T2DM). Since 2008, lifestyle researchers at the Leicester Diabetes Research Centre (DRC) have developed, evaluated and implemented a range of highly successful intervention programmes.</p> <p>The flagship <i>Let's Prevent</i> programme is delivered nationally through <i>Healthier You: the NHS Diabetes Prevention Programme</i>, by the single largest NHS-Industry provider with over 140,000 referrals from primary care settings to date. Completing patients achieve benefits including significant weight loss, improved glycaemic control and reduced diabetes risk.</p> <p>DRC physical activity intervention programmes are commissioned globally and their research has changed clinical practice, national guidance and improved patient health across the world.</p>		
<p>2. Underpinning research</p> <p>In 2008, the NHS rolled out the Health Checks Programme providing, for the first time in England, a framework for universal health checks for adults aged 40-75. A key target and cost-effectiveness driver of the programme was diabetes prevention. An algorithm within the Health Checks Programme recommended that all adults meeting BMI and blood pressure criteria should have their blood glucose levels checked, with high-risk individuals offered a lifestyle programme. However, at time of launch, there was no robust evidence demonstrating that diabetes prevention could be delivered at scale within primary care effectively and economically.</p> <p>To address this crucial research gap, DRC researchers led by Yates, developed two comprehensive prevention programmes: <i>Walking Away from Diabetes</i> and <i>Let's Prevent Diabetes</i></p> <p><u>Walking Away From Diabetes</u></p> <p><i>Walking Away</i> specifically focusses on the promotion and increase of physical activity and was the result of a programme of research that demonstrated (via Randomised Controlled Trial) that combining group-based education with personalised pedometer use was effective in increasing physical activity, and improved glucose regulation in those with a high risk of</p>		

T2DM over 12 months. [R1] *Walking Away* built on this model, using a written curriculum, full education training and quality assurance programme and was successfully piloted through NIHR CLAHRC (Collaboration for Leadership in Applied Health Research and Care) East Midlands. The programme was evaluated in a large RCT [G1] involving 10 GP practices and 808 participants. Increases in objective and self-reported physical activity were observed after 12 months. [R2] The programme was also piloted by DRC between 2011 and 2014 in 4 sites; Brighton and Hove, Leicester, Cumbria and County Cork, Ireland. Early audit data from Cumbria showed the programme was delivered to over 3000 people at a very low cost of £30 per patient per course.

Walking Away was further evaluated through a £2million NIHR HTA grant [G2] to investigate whether combining the core *Walking Away* programme with ongoing text message and telephone coaching could be used to help maintain long-term physical activity behaviour change over a 4 year period.

Let's Prevent Diabetes

Let's Prevent was created to expand *Walking Away* into a broader lifestyle intervention that increased physical activity along with healthy diet and weight loss. Funded by a £2.1million NIHR Programme Grant [G3], *Let's Prevent* was developed using a systematic approach informed by, and adhering to, the Medical Research Council's framework for complex interventions, including multiple iterative development pilot phases. [R3]

Let's Prevent consisted of a core six-hour group-based behavioural educational intervention for individuals with non-diabetic hyperglycaemia (a high-risk state for developing T2DM) led by trained educators. Increasing physical activity was retained as a core aim, supported by the provision of pedometers and personalised step-per-day goals. The programme followed a written, theory driven curriculum, with follow-on maintenance support sessions offered annually.

44 GP practices and 880 participants took part in the large cluster RCT to evaluate *Let's Prevent*. Results demonstrated that the programme effectively increased physical activity, improved HbA1c, cholesterol levels and psychosocial wellbeing after 3 years. [R4] Importantly, *Let's Prevent* proved to be both highly effective at reducing diabetes risk in intervention session attendees (88% reduced risk in those attending all sessions) and cost-effective; incremental cost-effectiveness ratio of £3643/QALY and 86% probability of being cost-effective at a willingness to pay threshold of £20,000/QALY. [R5,R6]

3. References to the research

- R1. **Yates T, Davies M, Gorely T, Bull F, Khunti K.** *Effectiveness of a pragmatic education programme aimed at promoting walking activity in individuals with impaired glucose tolerance: a randomized controlled trial.* *Diabetes Care.* 2009 Aug 1;32(8):1404-10.
- R2. **Yates T, Edwardson CL, Henson J, Gray LJ, Ashra NB, Troughton J, Khunti K, Davies MJ.** *Walking away from type 2 diabetes: a cluster randomized controlled trial.* *Diabetic Medicine.* 2017 May;34(5):698-707.
- R3. Troughton J, Chatterjee S, Hill SE, Daly H, Martin Stacey L, Stone MA, Patel N, **Khunti K, Yates T, Gray LJ, Davies MJ.** *Development of a lifestyle intervention using the MRC framework for diabetes prevention in people with impaired glucose regulation.* *Journal of Public Health.* 2016 Sep 1;38(3):493-501.
- R4. **Davies MJ, Gray LJ, Troughton J, Gray A, Tuomilehto J, Farooqi A, Khunti K, Yates T.** *A community based primary prevention programme for type 2 diabetes integrating identification and lifestyle intervention for prevention: the Let's Prevent Diabetes cluster randomised controlled trial.* *Preventive Medicine.* 2016 Mar 1;84:48-56.

R5. **Gray LJ, Yates T, Troughton J, Khunti K, Davies MJ.** *Engagement, Retention, and Progression to Type 2 Diabetes: A Retrospective Analysis of the Cluster-Randomised "Let's Prevent Diabetes" Trial.* PLoS Medicine. 2016 Jul 12;13(7):e1002078.

R6. Leal J, Ahrabian D, **Davies MJ, Gray LJ, Khunti K, Yates T, Gray AM.** *Cost-effectiveness of a pragmatic structured education intervention for the prevention of type 2 diabetes: economic evaluation of data from the Let's Prevent Diabetes cluster-randomised controlled trial.* BMJ Open. 2017 Jan 1;7(1):e013592.

Underpinning Grants

G1. National Institute for Health Research (NIHR) (UK) Collaborations for Leadership in Applied Health Research and Care (CLAHRC) £560,000; 2009-2014. *Walking Away from Diabetes.* **Prof Davies as PI, Prof Yates as physical activity lead**

G2. National Institute for Health Research (NIHR) HTA grant; £2,026,415; 2011-2019. *The PRmotion Of Physical activity through structured Education with differing Levels of ongoing Support for those with prediabetes (PROPELS): randomised controlled trial in a diverse multi-ethnic community.* **Prof Khunti as PI, Prof Yates as physical activity lead**

G3. National Institute for Health Research (NIHR) Programme Grant for Applied Health Research. £2,081,960.00; 2007-2014 *A community based primary prevention programme for Type 2 Diabetes integrating identification, lifestyle intervention and community services for prevention.* **Prof Davies and Prof Khunti as co-PIs, Prof Yates as physical activity lead**

4. Details of the impact

Changing Clinical Policy, Guidelines and Practice

In 2015, Public Health England commissioned DRC researchers to conduct a systematic review of the evidence for diabetes prevention. Their report identified the key intervention requirements for maximum effectiveness, and highlighted the importance of physical activity. **[E1]** This review began a step-change in the UK regarding diabetes prevention programmes and was followed in 2016 by the NHS Diabetes Prevention Programme *Healthier You*, the first ever nationally commissioned NHS-delivered diabetes prevention service. **[E2]**

In establishing *Healthier You*, the NHS drew heavily on DRC research and individual expertise, using the PHE Report, **[E1]** invited DRC expert guidance and the NICE Guideline 'Type 2 Diabetes: Prevention in People at High Risk' guideline (underpinned and guided by DRC research and staff) **[E3]** to set the key criteria for the programme's service specifications. **[E4]** This service specification included physical activity as one of the core components that had to be included by providers commissioned to deliver the programme.

Internationally, DRC research demonstrating both the importance of increased physical activity and how it can be accomplished, has underpinned significant changes to clinical practice guidelines including the 2018 Diabetes Canada 'Physical Activity and Diabetes' guideline recommendations covering step count levels and recording, the 2019 American Diabetes Association's 'Standards of Care in Diabetes' guidance on recommended types of physical activity and the 2020 joint Research Society for the Study of Diabetes in India and Endocrine Society of India practice recommendations for T2DM management relating to the benefits of physical activity. **[E5]**

Local Impact

Walking Away was successfully piloted by DRC in 4 sites; Brighton and Hove, Leicester, Cumbria and County Cork between 2011 and 2014. This success led to the programme being actively commissioned by participating centres into 2014 as part of their routine clinical care with additional sites in Gibraltar, London, Northamptonshire and Leicestershire added.

Audit data from Leicestershire demonstrated increased levels of physical activity amongst participants of 1000 steps/day. By February 2018, a total of 4573 high-risk patients were referred to *Walking Away* in Southwark, London.[E6]

In 2015, the Northern Ireland Department for Public Health initiated the *Each Step Counts* programme to promote increased physical activity for diabetes prevention. Unveiled in the 2014 DPH Annual Report, it is stated that the programme 'has been developed to complement the existing community-based group intervention based on the *Walking Away From Diabetes* programme.'[E7]

National Impact and NHS *Healthier You*

Following their vital role in establishing the *Healthier You* programme, DRC researchers collaborated with Ingeus UK (a leading service design and delivery company) to tailor the *Let's Prevent* programme to meet the *Healthier You* service specification. This included the inclusion of core sessions dedicated to promoting and increasing physical activity via the provision of pedometers and personalised step-per-day goals founded on key DRC research findings. The application was successful and *Let's Prevent* became the only joint NHS-Industry provider among the original four approved suppliers.

In 2016, *Let's Prevent* was implemented and delivered in the first wave of implementation (27 areas serving a total of 26million people with 20,000 places available), and rolled out nationally the following year. As of June 2020, the programme is being delivered in Northumberland, Tyne and Wear, North Durham, Durham, Darlington, Teesside, Hambleton, Richmondshire, Whitby, Lancashire, South Cumbria, Cheshire, Merseyside; Northamptonshire, Leicestershire, Staffordshire, Shropshire, The Black Country, Hampshire and the Isle of Wight.[E8] The implementation of *Let's Prevent* in the East Midlands region is projected to have the highest number of referrals into *Healthier You* nationally, demonstrating the strength of the Ingeus partnership. This rapid national expansion established *Let's Prevent* as the most widely delivered programme within the *Healthier You* framework during the second wave of implementation, resulting in it being the winning entry in the prevention and early diagnosis category for the Quality in Care (QiC) awards 2018.[E9]

Ingeus audit data shows that between 2016 and 2020, over 140,000 patients have been referred to *Let's Prevent*. In the first year alone, 21,233 patients were referred, 40% of whom attended.

Attendees consistently achieved significant health benefits including the loss of a clinically meaningful amount of body weight (averaging 4kgs each), substantial reduction in diabetes risk and improved glycaemic control.[E10] Of those with non-diabetic hyperglycaemia, 77% achieved normal glycaemic control by the end of the *Let's Prevent* programme. Published case studies further demonstrate the impact of our prevention programme, with people reporting making fundamental changes to their lives after attending the programme [E11].

This data mirrors that of NHS England who reported that the first 17,000 patients attending *Healthier You* lost an average of 3.4kg body weight. [E12] NHS England predict that 390,000 will attend *Healthier You* by 2021, resulting in 4,500 T2DM cases being delayed or prevented. [E13] Long term, *Healthier You* will thereby lead to an estimated undiscounted economic net benefit to the NHS of £1.2billion due to diabetes prevention and reduced healthcare resource demand. [E13] *Let's Prevent* is playing a pivotal role in these substantial improvements. Our work has also directly benefited the local health care economy, where our partnership with Ingeus UK has generated over £1.7 million in health service income into the University Hospitals of Leicester NHS Trust.

National and international impact beyond *Healthier You*

The success of *Let's Prevent* has provided impact beyond *Healthier You*. In 2019, the programme was commissioned into routine primary care across Scotland with early adopting trusts in Lanarkshire, Dumfries and Galloway and Ayrshire and Arran reporting over 400 referrals within the first 9 months, with other sites joining in 2020 (NHS Lothian Borders, Fife and East, NHS Highlands). In 2018 the programme was commissioned and delivered across

Impact case study (REF3)

Western Australia [E14] with audit data from the Bunbury site showing that 193 patients have completed the programme in the first year achieving an average increase of 3.2 points in the Patient Activation Measure.

This demonstrates the increased confidence and worldwide commitment to engage with diabetes prevention underpinned by DRC research and using the *Let's Prevent* model.

5. Sources to corroborate the impact

- E1. Public Health England [Evidence Review of Diabetes Prevention Programmes](#)
- E2. [Healthier You: The NHS Diabetes Prevention Programme](#)
- E3. [NICE Guidance 2017](#) (updating [2012 guideline](#)). Type 2 diabetes: prevention in people at high risk
- E4. NDPP [National Service Specification](#)
- E5. Collated Example International Clinical Practice Guidelines
- E6. Southwark Report on Walking Away Implementation
- E7. Director of Public Health [Annual Report 2014](#)
- E8. Healthier You NHS Diabetes Prevention Programme: [Take control of your health and prevent diabetes](#)
- E9. QiC Diabetes [The Ingeus 'Healthier You' National Diabetes Prevention Programme](#)
- E10. Uptake, attendance and outcome of referrals to the NHS Diabetes Prevention Programme provided by Ingeus UK Ltd: [an interim evaluation](#)
- E11. Healthier You Case Studies [Stop Diabetes](#)
- E12. NHS England [Long Term Plan News](#)
- E13. [NHS England Impact Analysis of implementing NHS Diabetes Prevention Programme, 2016 to 2021](#)
- E14. [Diabetes Western Australia Implementation](#)