

Diabetes and Pregnancy – the how's, why's and wherefores of optimal management including pregnancy outcomes in early- onset type 2 diabetes

Professor Helen R. Murphy MBBChBAO, MD, FRACP

Email: Helen.Murphy@uea.ac.uk

Professor of Medicine, University of East Anglia (UEA), Norwich UK

Honorary Consultant Physician, Norfolk & Norwich University NHS Hospital Trust

Chair National Pregnancy in Diabetes (NPID) audit

Overview

- ✓ T1D pregnancy successes
- ✓ Prevalence of Early-Onset T2D (EOT2D)
- ✓ National Pregnancy in Diabetes (NPID) audit highlights
- ✓ Saving Babies Lives Care Bundle (SBLCB)
- ✓ T2Day programme
- ✓ National T2D prevention & remission programmes
- ✓ NDA GDM audit



Primary Aim of CONCEPTT

- To assess the effectiveness of CONTINUOUS real-time CGM on glycemic control in women with T1D who were pregnant or planning pregnancy

Articles

THE LANCET

Continuous glucose monitoring in pregnant women with type 1 diabetes (CONCEPTT): a multicentre international randomised controlled trial



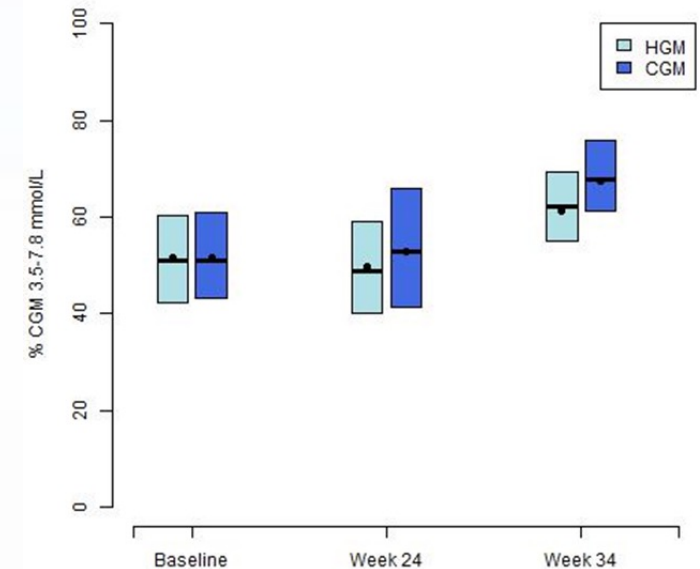
"Use of continuous glucose monitoring during pregnancy in patients with type 1 diabetes is associated with improved neonatal outcomes, which are likely to be attributed to reduced exposure to maternal hyperglycaemia."

*Denise S Feig, Lois E Donovan, Rosa Corcoy, Kellie E Murphy, Stephanie A Amiel, Katharine F Hunt, Elisabeth Asztalos, Jon F R Barrett, Johanna Sanchez, Alberto de Leiva, Moshe Hod, Lois Jovanovic, Erin Keely, Ruth McManus, Eileen K Hutton, Claire L Meek, Zoe A Stewart, Tim Wysocki, Robert O'Brien, Katrina Ruedy, Craig Kollman, George Tomlinson, Helen R Murphy, on behalf of the CONCEPTT Collaborative Group**

NICE NG3 updated guidance 16th December 2020

Intermittently scanned CGM and continuous glucose monitoring

- 1.3.17 Offer continuous glucose monitoring (CGM) to all pregnant women with type 1 diabetes to help them meet their pregnancy blood glucose targets and improve neonatal outcomes. [2020]
- 1.3.18 Offer intermittently scanned CGM (isCGM, commonly referred to as flash) to pregnant women with type 1 diabetes who are unable to use continuous glucose monitoring or express a clear preference for it. [2020]
- 1.3.19 Consider continuous glucose monitoring for pregnant women who are on insulin therapy but do not have type 1 diabetes, if:
- they have problematic severe hypoglycaemia (with or without impaired awareness of hypoglycaemia) or
 - they have unstable blood glucose levels that are causing concern despite efforts to optimise glycaemic control. [2015, amended 2020]
- 1.3.20 For pregnant women who are using isCGM or continuous glucose monitoring, a member of the joint diabetes and antenatal care team with expertise in these systems should provide education and support (including advising women about sources of out-of-hours support). [2020]



T1D Pregnancy outcomes

Outcome

Improved pregnancy glucose levels with:

- ✓ Fewer LGA babies
- ✓ Fewer preterm births
- ✓ Fewer neonatal intensive care unit admissions

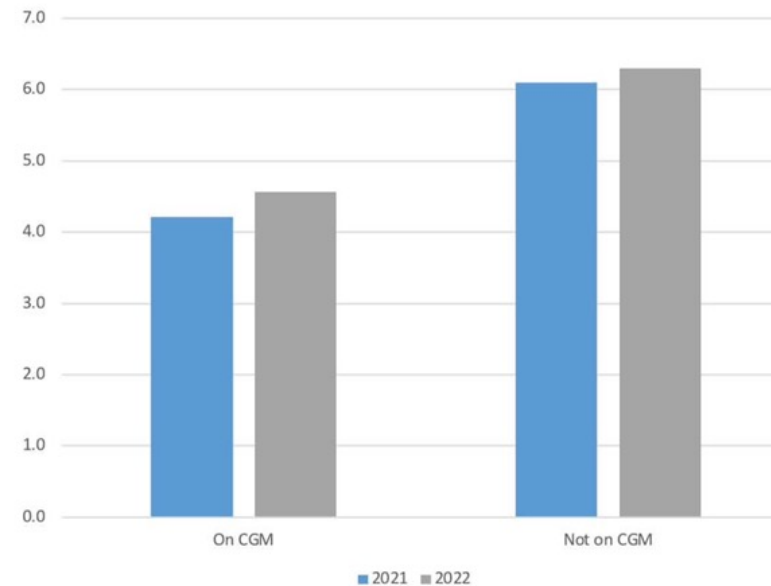


DIABETES UK
KNOW DIABETES. FIGHT DIABETES.



Reduced serious adverse pregnancy outcomes

(Birth defects, stillbirth, baby death)



N=2400 'real-world' CGM users

NPID State of the Nation report to be published Oct 2023



The NEW ENGLAND
JOURNAL of MEDICINE

ORIGINAL ARTICLE

Automated Insulin Delivery in Women with Pregnancy Complicated by Type 1 Diabetes

Tara T.M. Lee, M.B., B.S., Corinne Collett, B.Sc., Simon Bergford, M.S.,
Sara Hartnell, B.Sc., Eleanor M. Scott, M.D., Robert S. Lindsay, Ph.D.,
Katharine F. Hunt, M.D., David R. McCance, M.D., Katharine Barnard-Kelly, Ph.D.,
David Rankin, Ph.D., Julia Lawton, Ph.D., Rebecca M. Reynolds, Ph.D.,
Emma Flanagan, Ph.D., Matthew Hammond, M.Sc., Lee Shepstone, Ph.D.,
Malgorzata E. Wilinska, Ph.D., Judy Sibayan, M.P.H., Craig Kollman, Ph.D.,
Roy Beck, Ph.D., Roman Hovorka, Ph.D., and Helen R. Murphy, M.D.,
for the AiDAPT Collaborative Group*

Listening to women: experiences of using closed-loop in type 1 diabetes pregnancy

Prof. Julia Lawton,Dr. David Rankin, and Prof. Helen Murphy

Published Online: 5 Oct 2023 <https://doi.org/10.1089/dia.2023.0323>

Most young people with EOT2D are female

- ✓ 1,144 in paediatrics ~ 8/clinic
- ✓ 8,245 (84%) aged 19-25 yrs
- ✓ 66% are women
- ✓ 66% in primary care ~1/GP clinic
- ✓ 54% of diabetes pregnancies
~20/clinic
- ✓ 33-50% previous GDM pregnancy

Age group	Number of people
Under 12 years	105
12-15 years	545
16-18 years	910
19-25 years	8,245
All 0-25	9805

Number of young people with Type 2 diabetes in England
(Young People with Type 2 Diabetes, 2019-20; NDA & NPDA)



Pregnancy Outcomes in Young Women With Youth-Onset Type 2 Diabetes Followed in the TODAY Study

*TODAY Study Group**

Diabetes Care 2022;45:1038–1045 | <https://doi.org/10.2337/dc21-1071>

Report on **260 pregnancies** in 141 women in the TODAY (Treatment Options for Type 2 Diabetes in Adolescents and Youth) Study

260 pregnancies in 141 women & girls



42% were non-Hispanic Black

35% were Hispanic



20.5 years



7.3 years



35.4 kg/m²



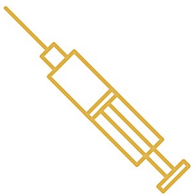
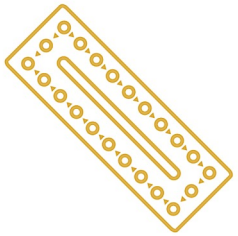
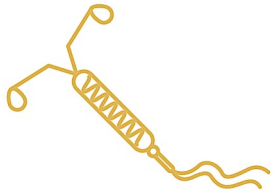
HbA1c 8.9%



30% albuminuria



37% hypertension

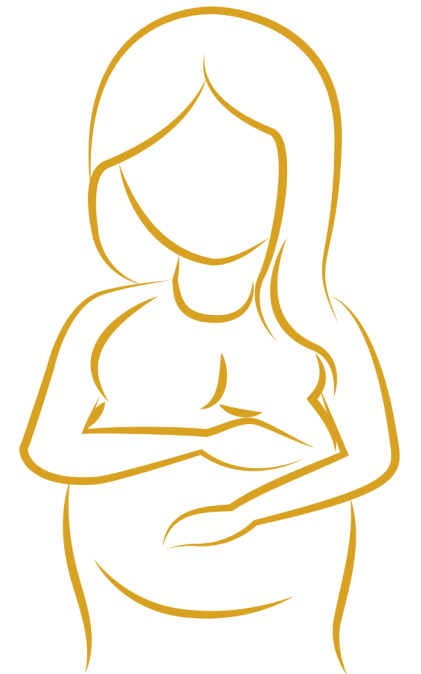


Pre-pregnancy counseling was reported in 16% of the people

Only 15% reported using any method of contraception prior to the first pregnancy

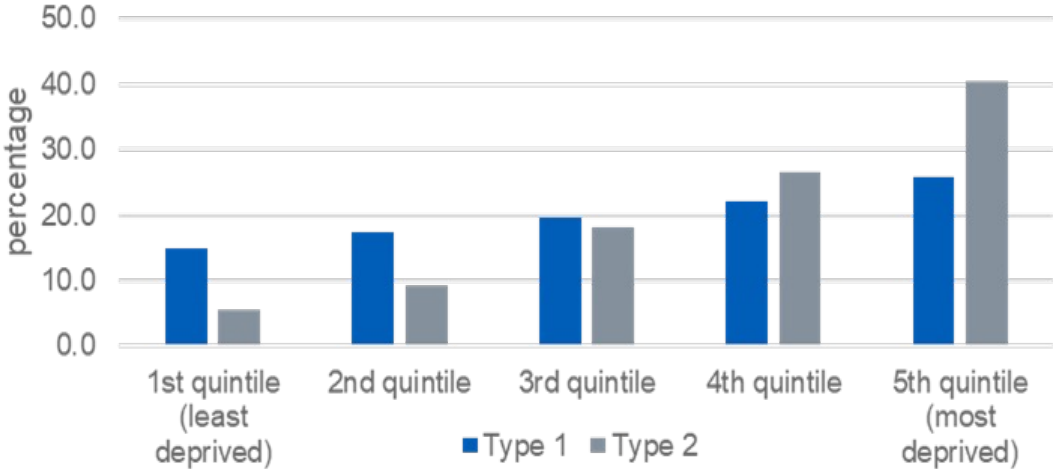
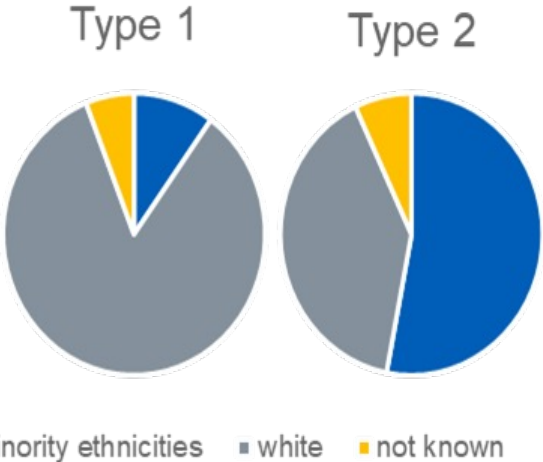
65% had a maternal pregnancy complications

25% had a miscarriage or stillbirth

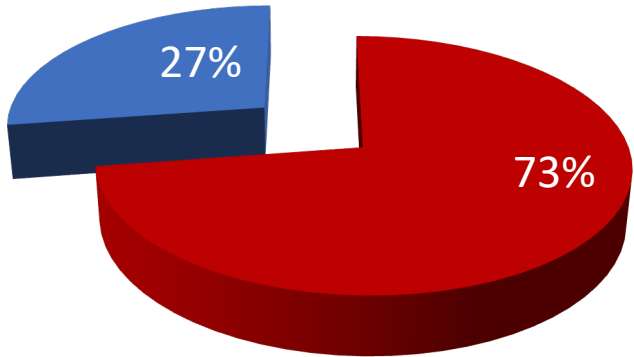


National Pregnancy in Diabetes (NPID) audit

- 2002-03 CEMACH 2,359 pregnancies (1707 T1D, 652 T2D)
- 2019-2022 NPID 4,828 pregnancies (2161 T1D, 2667 T2D)



CEMACH 2002-03

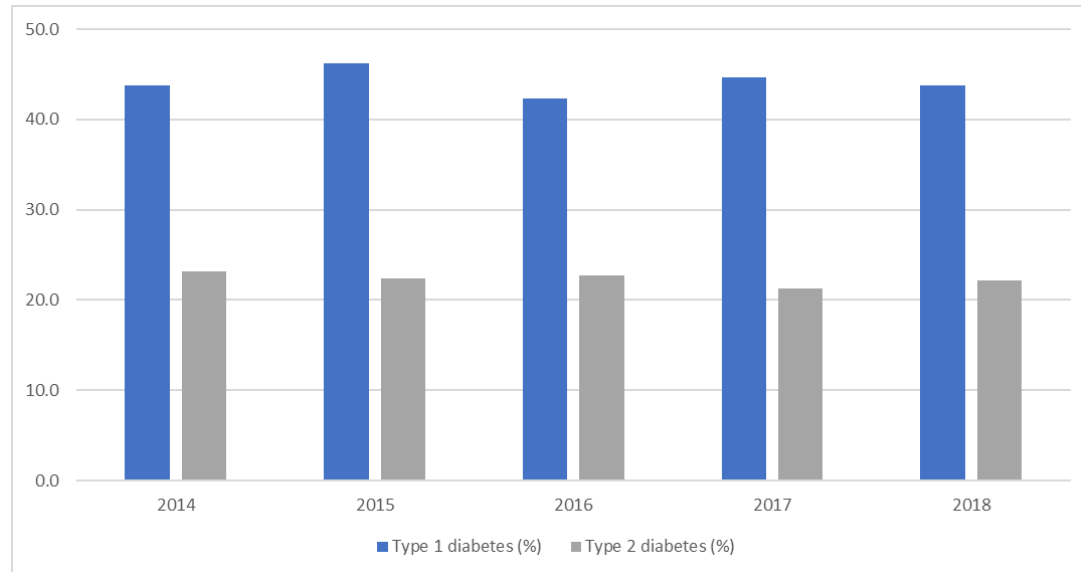


Articles

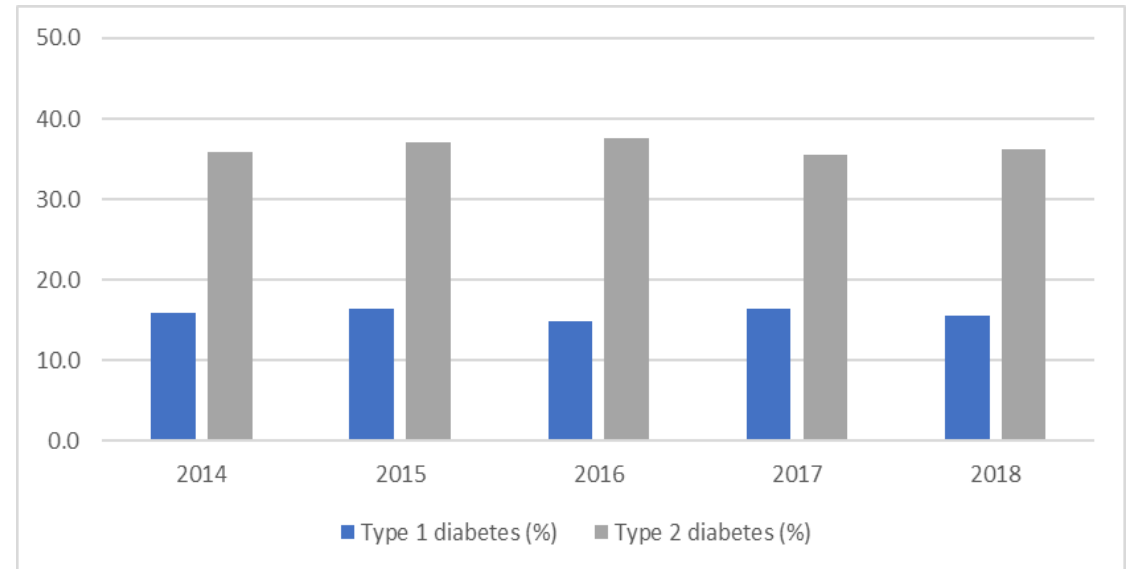


Where women adequately prepared for pregnancy?

5mg folic acid before pregnancy



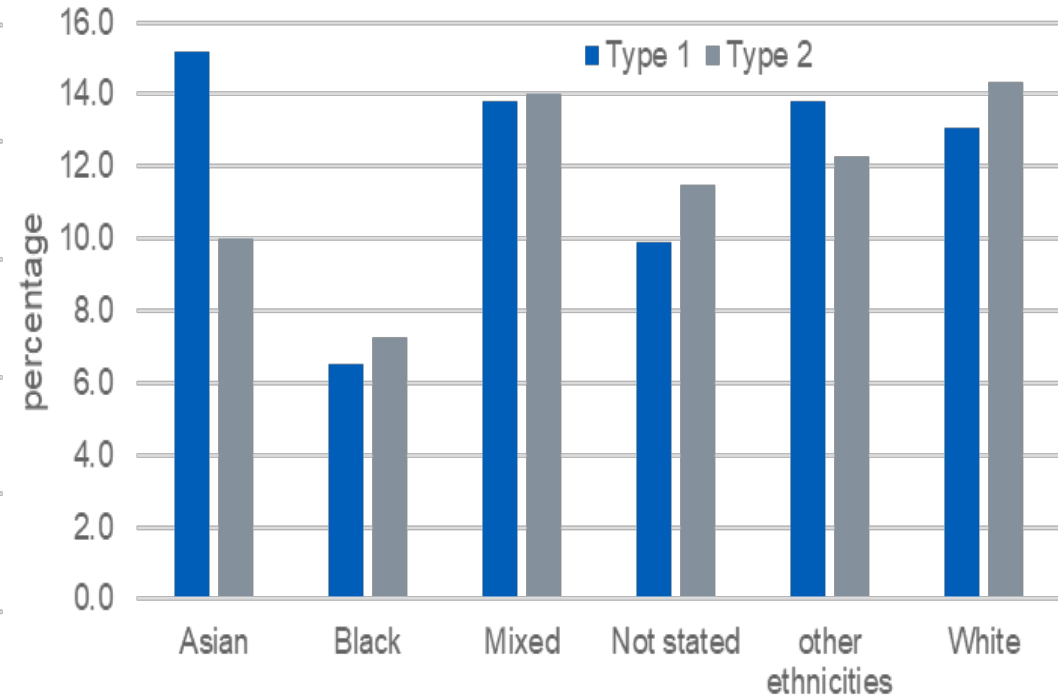
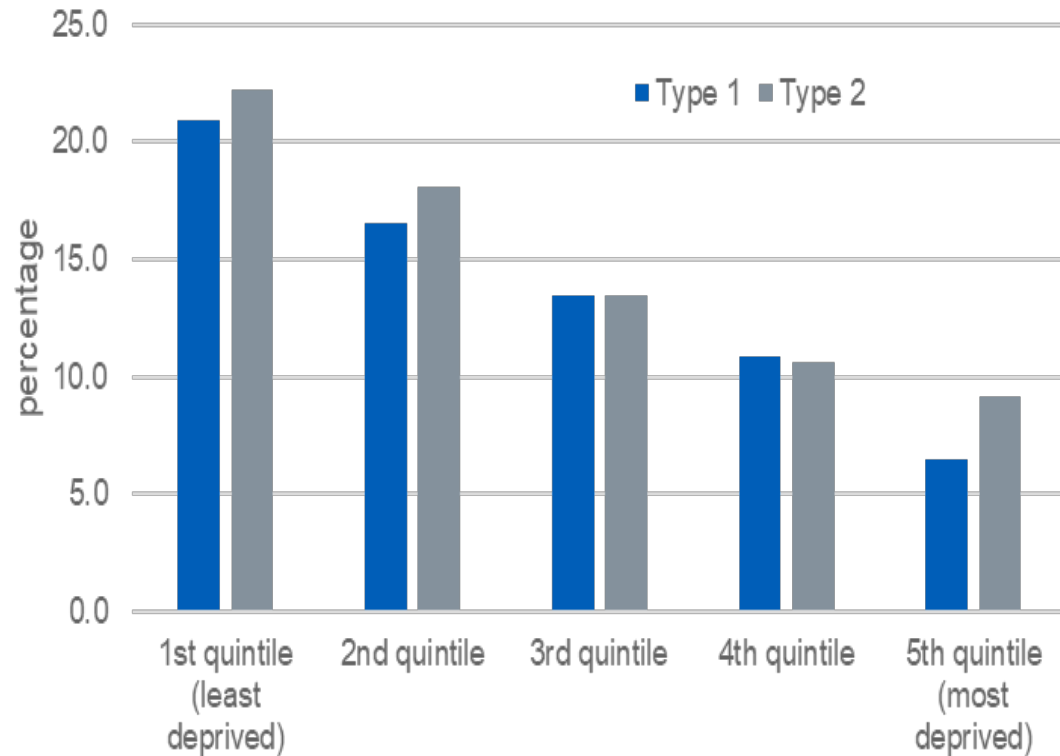
Maternal HbA1c in early pregnancy



ONLY ONE IN EIGHT PREPARED FOR PREGNANCY!

65% women with EOT2D taking metformin before pregnancy
2/3 had HbA1c >48mmol/mol but only 18% taking insulin

Health inequalities in pregnancy preparation



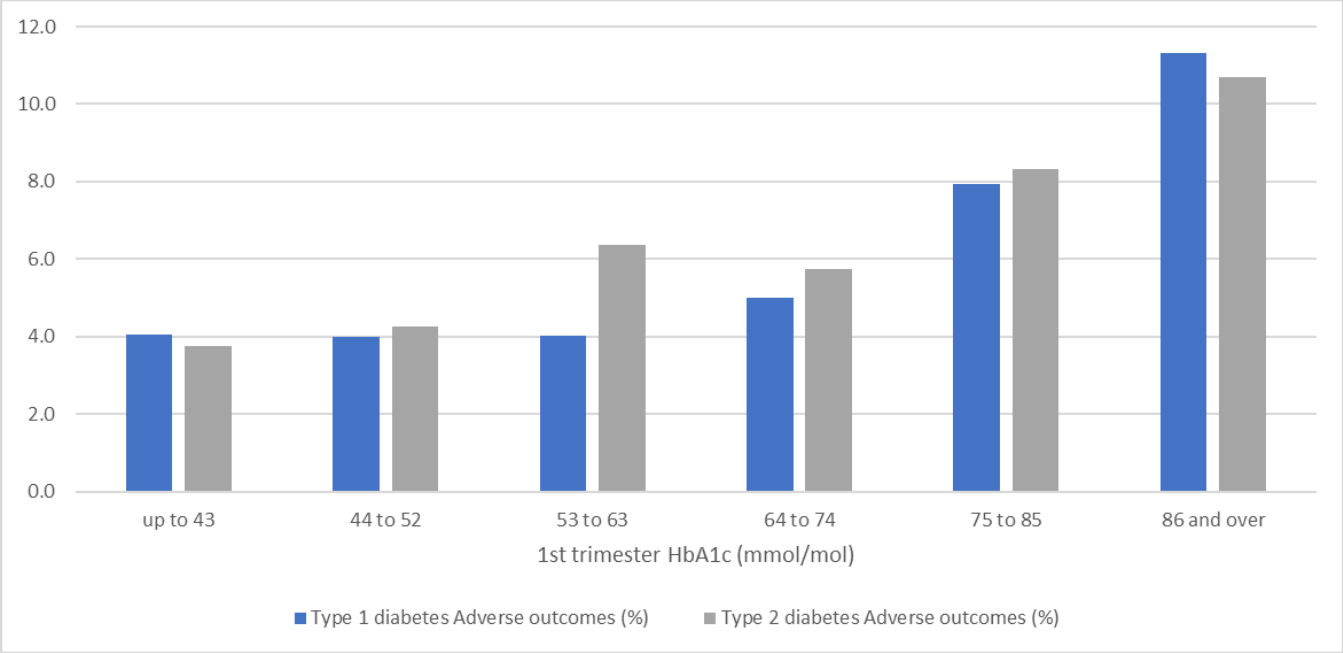
Planning for a safe & healthy pregnancy

Risks and complications



For women with diabetes who do not plan their pregnancy, the risk of a serious complication (e.g. stillbirth, serious heart or birth defect) is about 1 in 10.

Reassuringly, if you do plan your pregnancy with your diabetes team, your risk of serious complications falls closer to that of women without diabetes (1 in 50).



Already pregnant? We can help.

If you are pregnant and you didn't plan your pregnancy we can help you. The specialist team at the hospital will see you as soon as possible to give you support, information and care.

This is what you need to do

1. As soon as you can, contact your GP/diabetes team. They will assist with:
 - A referral to the maternity unit. You can expect an appointment within 1-2 weeks
 - Getting a prescription for Folic Acid. You may need a 5mg dose and this is only available by prescription
 - A review of your medications
2. Start testing your blood glucose levels before meals, 1 hour after meals, and before bed so that your diabetes treatment can be safely adjusted.



Remember...

Your diabetes team are here to help you!

We can help you with contraception, planning your pregnancy and help you to have a healthy baby. If you have any questions about contraception or pregnancy get in contact today.

The Eastern Academic Health Science Network

eahsn.org.uk is working with local healthcare teams to support women with diabetes who are planning pregnancy.

Email: EAHSN.diabetes@nhs.net

Useful resources/links

fpa.org.uk The website of the Family Planning Association – all you ever wanted to know about contraceptive methods, plus an easy-to-use tool to find the best contraceptive methods for you.

diabetes.org.uk Good section on pregnancy in the "Living with diabetes" section, on contraception in the "teenagers" section, and giving up smoking advice.

womenwithdiabetes.net Lots of information, video clips and other women's stories.

gofolic.org.uk Information on the benefits of folic acid and the Before You Frolic, Go Folic! Campaign.

Pregnant with diabetes app Free from Google play. Loads of information including planning for pregnancy

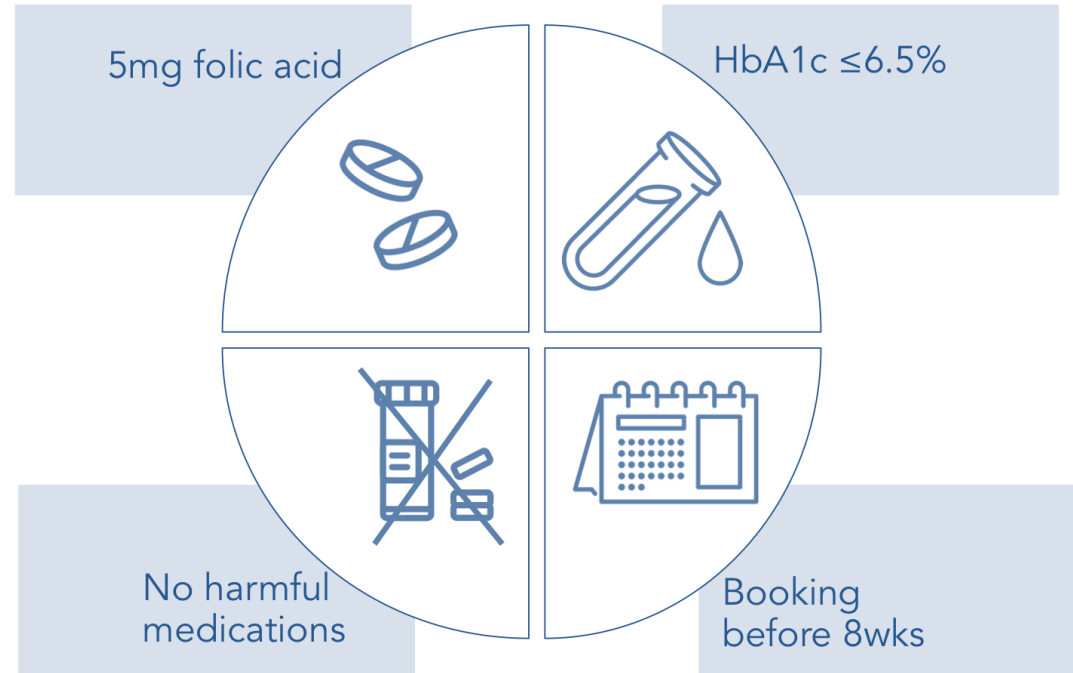
If this information has come at a bad time, causes you concern or is not relevant to you, please accept our sincere apologies and feel free to let us know.



Sex, contraception and pregnancy

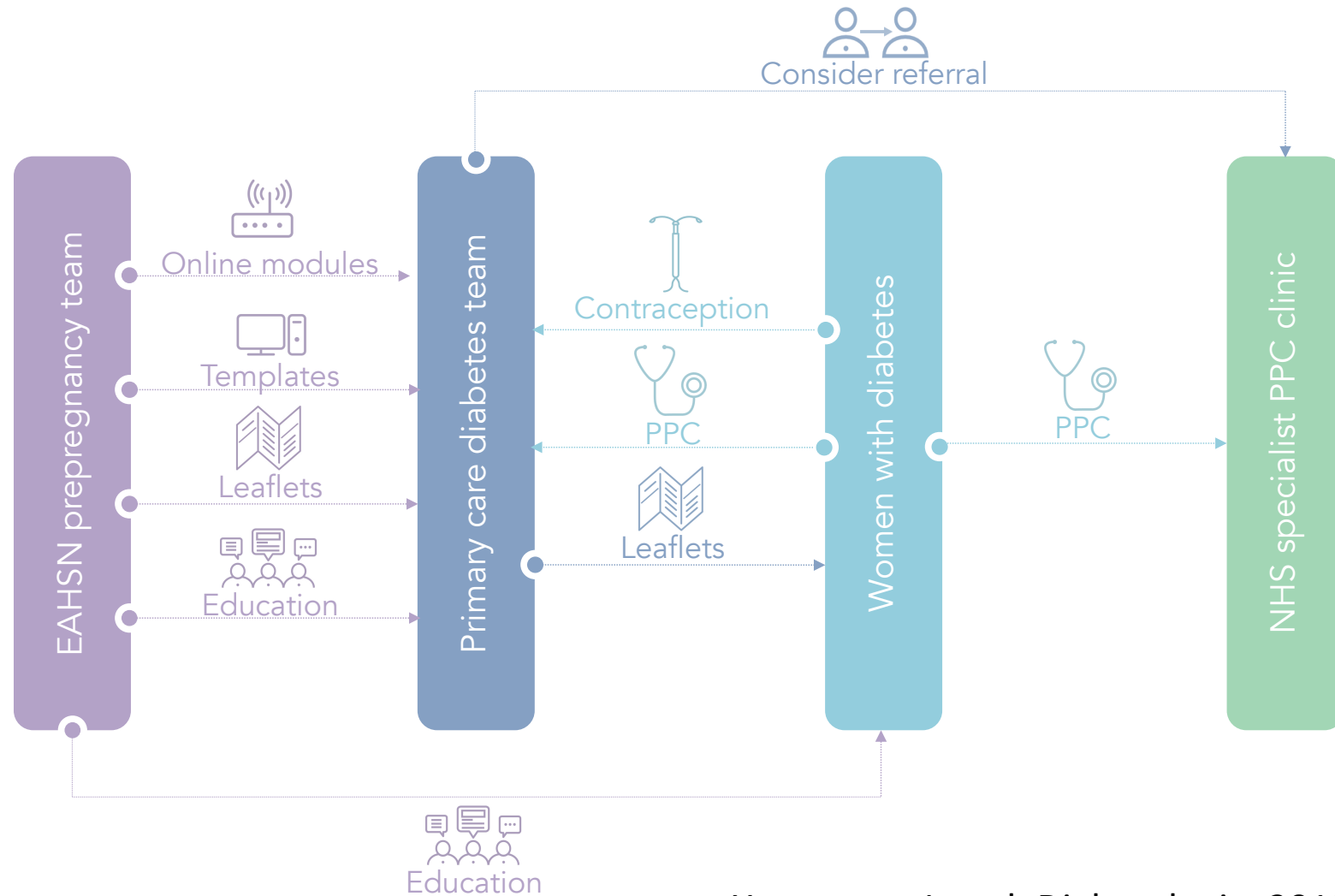
Important information for women with Type 1 and Type 2 diabetes

Planning for a safe & healthy pregnancy

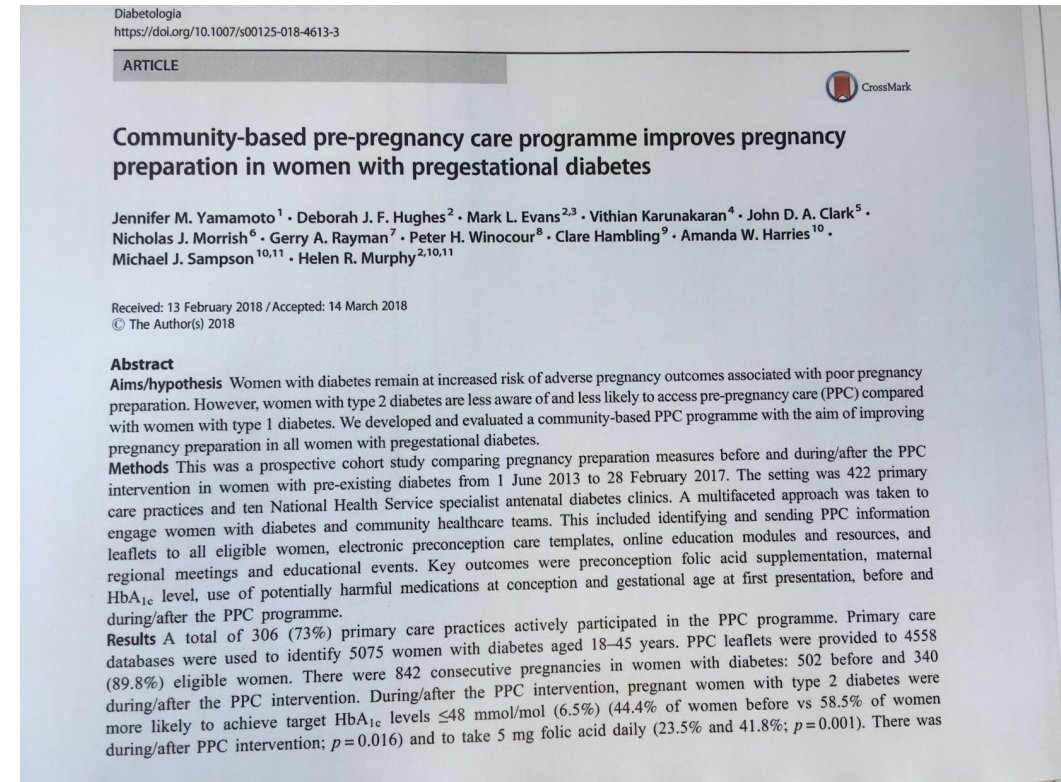
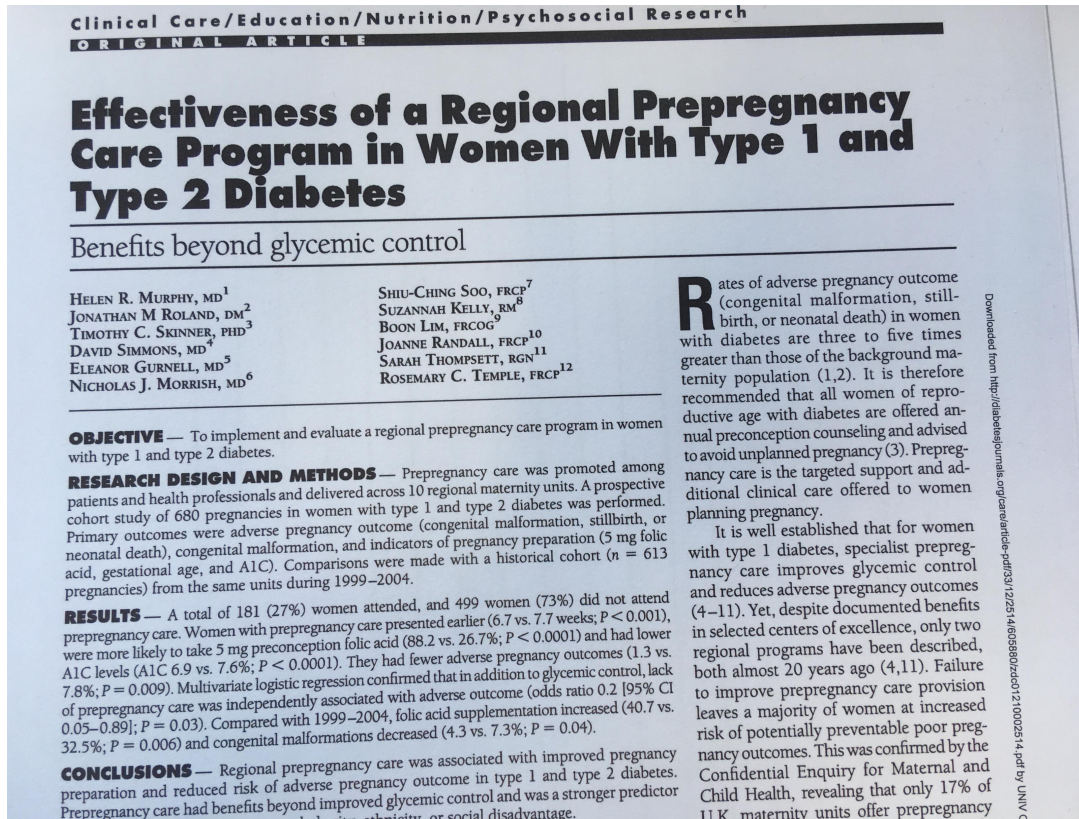


<https://www.tommys.org/pregnancy-information/planning-pregnancy/planning-for-pregnancy-tool>
<https://abcd.care/resource/planning-pregnancy>

Community-based pre-pregnancy care improves pregnancy preparation in T2D



Pre-pregnancy care is as effective in T2D as T1D



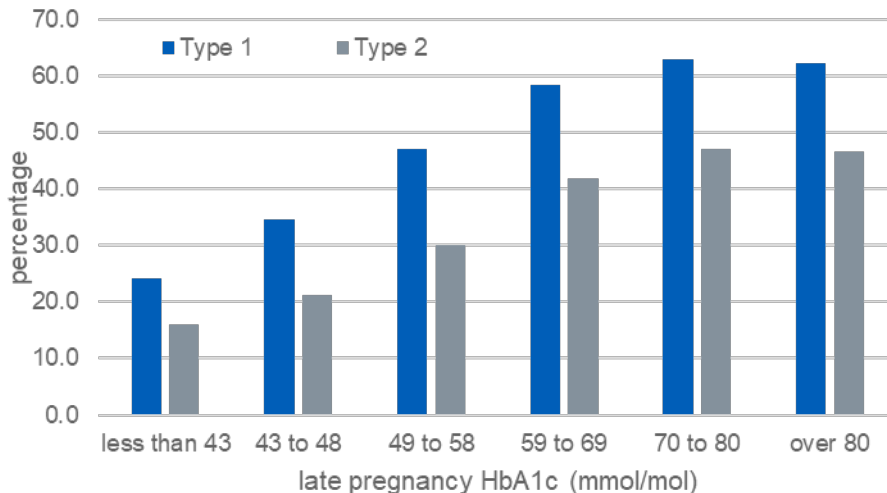
Pre-pregnancy care effective – Murphy HR Diab Care 2010

Community-based PPC effective – Yamamoto J Diabetologia 2018

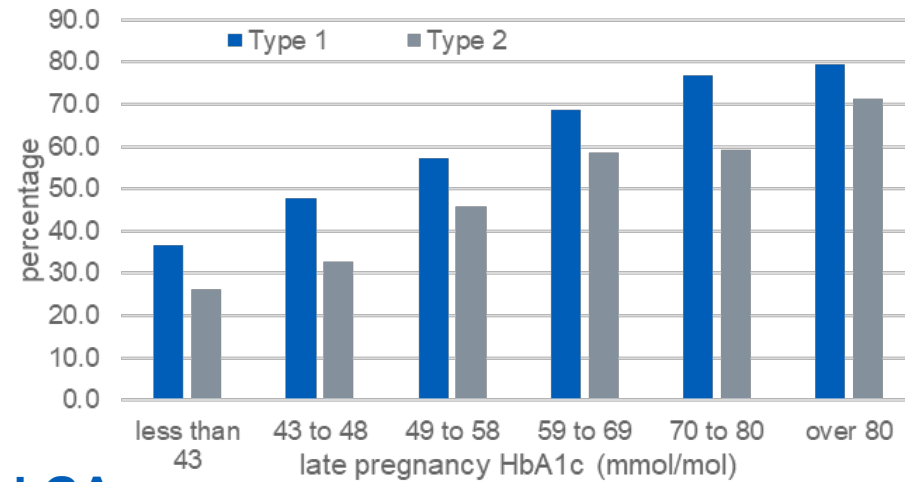
HbA1c during pregnancy

- Women with HbA_{1c} >43 mmol/mol after 24 weeks have significantly higher rates of preterm birth, LGA and NICU admission

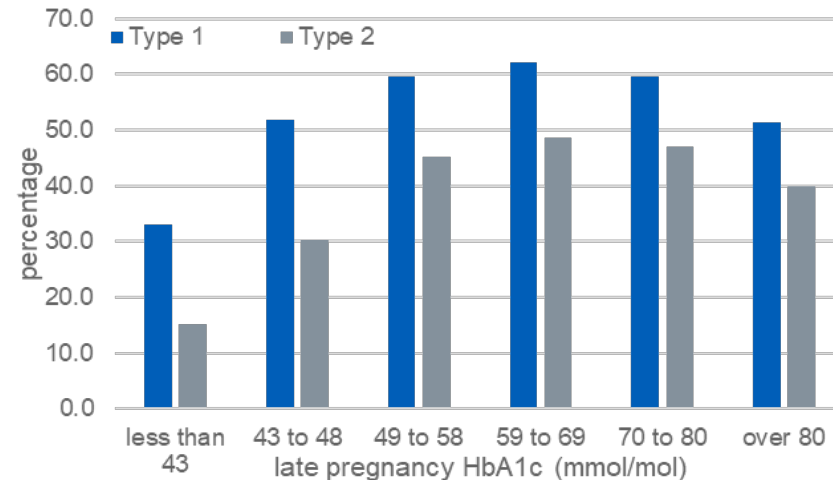
Preterm delivery



Neonatal unit admission



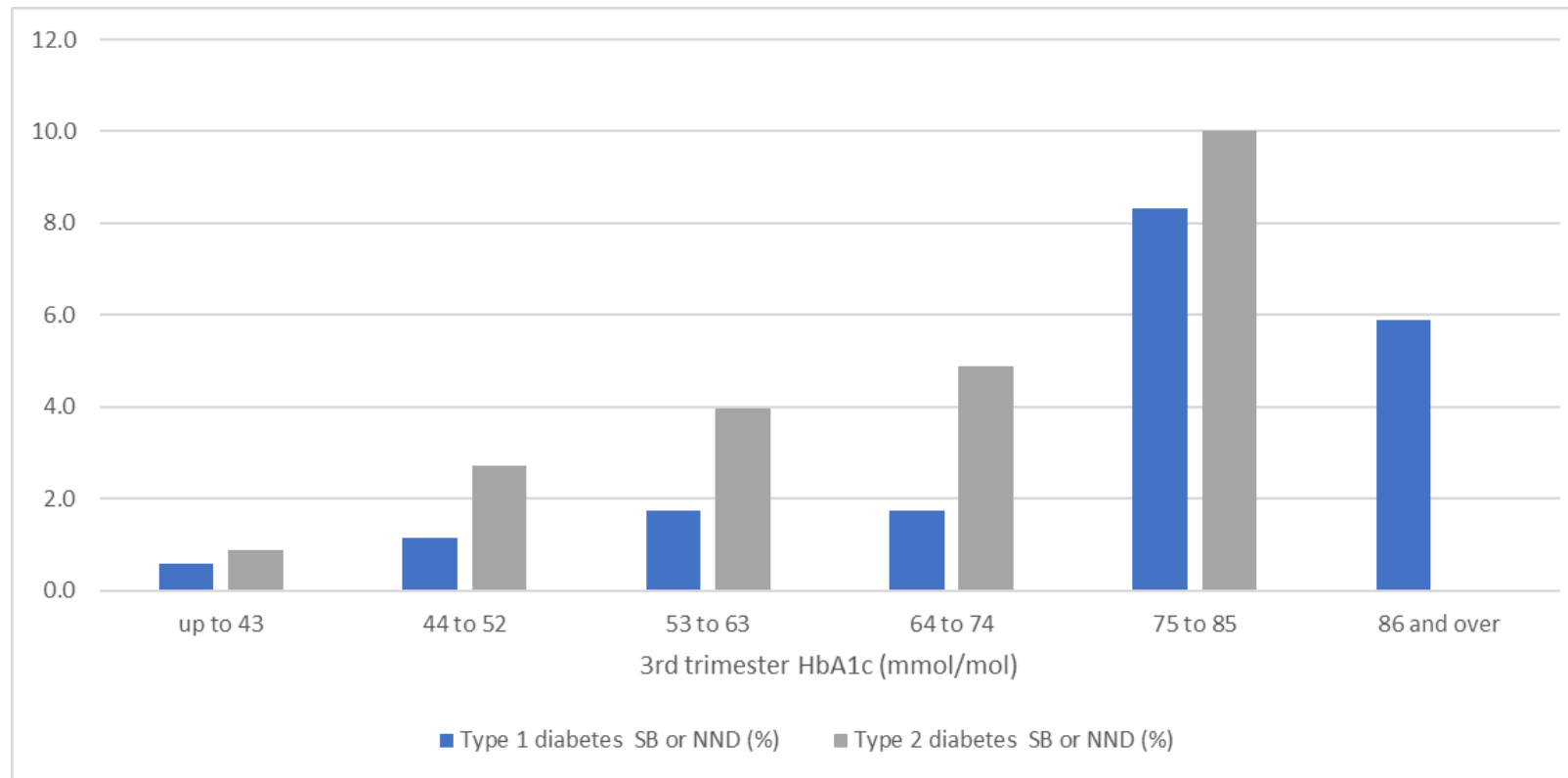
LGA



Perinatal deaths - Saving Babies Lives Care Bundle

Type 2: 200 deaths (110 stillbirths, 90 neonatal deaths)

Type 1: 145 (85 stillbirths, 60 neonatal deaths)



Risk Factors

- HbA1c >43mmol/mol: OR 3.0
- Deprivation: OR 2.3
- Type 2 vs T1D : OR 1.65



>48mmol/mol

44-48mmol/mol

<43mmol/mol

HbA1c >43mmol/mol after 24/40 key modifiable risk factor for perinatal death in T2D

Missed opportunities before, between and after pregnancy?

- Median inter-pregnancy interval for women whose first pregnancy ended in adverse outcome : 1 year (IQR 0.4-2.1)
- Postnatal contraception should be prioritised



Mills et al. *BMC Pregnancy and Childbirth* (2016) 16:101
DOI 10.1186/s12884-016-0891-2

BMC Pregnancy and Childbirth

RESEARCH ARTICLE

Open Access

Marvellous to mediocre: findings of national survey of UK practice and provision of care in pregnancies after stillbirth or neonatal death



T. A. Mills^{1,4*}, C. Ricklesford^{3,4}, A. E. P. Heazell^{2,3,4}, A. Cooke^{1,4} and T. Lavender^{1,4}

Women's experiences

Stigma and judgement; perceived and self....

'I felt frightened and not listened to.....'

'more focus on the positivity of managing glucose levels and the results for my pregnancy/birth, for example being able to deliver naturally – proper support to manage diabetes without compromising my mental health and unborn baby'

T2Day press release

NHS offers extra help for under-40s with diabetes

Eleanor Hayward
Health Correspondent

The NHS is to offer weight-loss programmes for under-40s with type 2 diabetes as a record number of younger adults develop the disease.

In the UK, 148,000 people aged between 18 to 39 have what medical orthodoxy has regarded as a condition of middle age.

Cases of type 2 diabetes in under-40s have risen faster in Britain than anywhere else in the world, increasing five-fold since 1990.

The new scheme is the first to target this group who are at high risk of deadly complications including kidney failure, heart attack and stroke.

Younger patients will be offered extra one-to-one reviews and support, plus the option of new weight-loss drugs. Treatments could include Ozempic, a weekly injection available on the NHS to treat type 2 diabetes. It is, however, in

short supply globally because of its off-label use as a drug for the overweight.

Patients will also have the option of a 12-week "soup and shakes" diet, which has been proven to put type 2 diabetes into remission.

Early-onset type 2 diabetes is a more aggressive form of the disease. Research shows that life expectancy falls by 11 years on average in those who develop it at 20, compared with a reduced life expectancy of two years when given a diagnosis at 65.

Professor Jonathan Valabhji, national clinical director for diabetes and obesity said: "Type 2 diabetes in people under 40 is a growing problem globally. We know this age group is least likely to complete vital annual health checks. The programme will provide targeted intervention."

Chris Askew, chief executive of Diabetes UK, said the programme was a "vital step to improving care for younger people with diabetes.

NHS

People in England with diabetes to get targeted support in new roll-out

By Paul Gallagher
HEALTH CORRESPONDENT

Tens of thousands of people in England living with early onset type 2 diabetes will benefit from more intensive and targeted care, thanks to a world-first initiative being rolled out by the NHS.

About 140,000 people aged 18 to 39 will receive extra tailored checks from health workers and support with diabetes, such as controlling blood sugar levels, managing weight and minimising cardiovascular risk. Patients will also benefit from

extra one-to-one reviews as well as the option of new medicines and treatments where indicated, to help better manage their diabetes.

NHS England said it was the first health system in the world to put in place a national, targeted programme for this high-risk group.

Addressing the extra risks associated with the condition during pregnancy, there will also be dedicated support available for women, including

access to contraception and folie acid supplements.

Eligible individuals may also be able to access the NHS Type 2 Diabetes Path to Remission Programme - a year-long scheme including 12 weeks of low-calorie total diet replacement products and support to reintroduce food,

which aims to help patients to improve their blood sugar levels, reduce diabetes-related medication and in some cases put

their type 2 diabetes into remission. Professor Jonathan Valabhji, the national clinical director for diabetes and obesity, said: "Type 2 diabetes in people under 40 is a growing problem globally. England is no exception, meaning there is an ever-increasing challenge for the NHS.

"We know that this age group is least likely to complete vital annual health checks but we want to ensure people are able to manage their diabetes well and reduce the risk of serious complications, which is exactly why we have embarked on an ambitious and world-first initiative."

140,000

Number of people aged 18 to 39 who will receive support managing their weight and blood sugar levels

NHS to focus on diabetes checks for under 40s after 'alarming' rise in young people

World-first initiative will offer more intensive and targeted care under new national programme, officials announced

Under-40s with type 2 diabetes are set to have their care 'transformed' by a world-first NHS programme which gives patients tailored support

- Patients will benefit from extra one-to-one reviews and option of new treatments
- **READ MORE:** The four health measurements that EVERYONE should know



At the heart of

News

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New NHS type 2 diabetes programme targets support at young people

National Diabetes Prevention Programme includes women with previous GDM

Healthier You NHS Diabetes Prevention Programme:

- The NHS DPP delivers evidence-based behavioural interventions to support people at high risk of Type 2 diabetes make sustainable lifestyle changes to reduce their risk
- Women with GDM and non-diabetic hyperglycaemia (NDH) were previously eligible
- Eligibility now expanded to include normoglycaemic women with prior GDM
- Establish **CLEAR PATHWAYS** between **Maternity Services** and **General Practice** to confirm normoglycaemia; (FPG < 5.5mmol/l / HbA1c < 42 mmol/mol)
 - The 6-8 week postnatal review✓
 - Annual HbA1c check✓



Take home messages

- ✓ Fantastic success T1D pregnancy from CGM and HCL
- ✓ EOT2D need targeted care and support including better access to safe effective contraception/ pre-pregnancy care (T2Day)
- ✓ Aim for HbA1c <43mmol/mol before & during T2D pregnancy
- ✓ Maternal glucose key modifiable risk factor – role of CGM?
- ✓ Saving Babies Lives
- ✓ T2D prevention <40yrs = National Priority
 - ✓ National GDM audit
 - ✓ Post-natal glucose/annual HbA1c
 - ✓ Diabetes Prevention & Remission



Prepared in collaboration with:



The National Diabetes Audit (NDA) is commissioned by the **Healthcare Quality Improvement Partnership (HQIP)** as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP). HQIP is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing, and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage, and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies. www.hqip.org.uk/national-programmes



NHS Digital is the trading name for the Health and Social Care Information Centre (HSCIC). NHS Digital managed the publication of the 2020 report.



Diabetes UK is the charity leading the fight against the most devastating and fastest growing health crisis of our time, creating a world where diabetes can do no harm. They provide patient engagement and quality improvement services to the audit programme.

Supported by:

NDAU
Neonatal Data Analysis
Unit



We are grateful to all the families that agreed to the inclusion of their baby's data in the National Neonatal Research Database (the NNRD) and the health professionals and neonatal units for contributing data and the Neonatal Data Analysis Unit team at Imperial College London.

Published by NHS Digital - Part of the Government Statistical Service

<https://digital.nhs.uk> 0300 303 5678 or enquiries@nhsdigital.nhs.uk



Sensor glucose targets during T2D pregnancy

