Preconception and Post Partum
A Growing Problem for Primary Care

Dr Eleanor Scott
Senior Lecturer in Medicine
Consultant in Diabetes and Endocrinology, Leeds

A case

42 years old

Cleaner

Married, 2 children age 21 and 18 years

- Gradually gained weight over past 10 years
- Diagnosed with T2DM 5 years ago - diet and gliclazide
- Hypertension diagnosed 3years ago - losartan
- Smoker, strong family history of ischaemic heart disease – simvastatin, aspirin
- Irregular periods – put down to possibly heading for early menopause

8 months ago – HbA1c 10%

- GP commenced her on Avandamet

3 months later HbA1c 8.4% but c/o nausea

- told likely due to Avandamet, advised to persist

3 months later HbA1c 8.2% but c/o weight gain and abdominal bloating, and also tearful and upset easily

- told likely to be related to Avandamet (Rosiglitazone) and dose reduced.
- element of depression – Paroxetine commenced

Despite this continued to gain weight particularly around her waist, nauseous and tearful.
One weekend developed abdominal pains and it became too much – went to A&E

MSU – no UTI

Pregnancy test – positive

Dating scan – 26 weeks gestation fetus

To summarise..

Very unhappy woman, who completed her family 18 years previously

Poor glycaemic control

On numerous drugs contraindicated in pregnancy

At the end of her second trimester

Not received preconception advice

Not received advice about contraception

Yet had been having regular appointments with her GP

The large majority of T2DM women of child bearing age are being managed in primary care and treated for cardiovascular risk, with widespread disregard for pregnancy risks

Why we need better preparation for pregnancy in diabetic women

Background

650 000 women give birth in England and Wales each year

~ 5% involve women with diabetes

The prevalence of diabetes (Type 1 and 2) is increasing each year

Diabetes in pregnancy is associated with risks to the woman and developing fetus

Miscarriage, pre-eclampsia and pre term labour are more common in women with diabetes

Diabetic retinopathy can worsen rapidly in pregnancy

Stillbirth, congenital malformations, macrosomia, birth injury, perinatal mortality and postnatal adaptation problems are more common in babies born to women with diabetes

Baby at increased risk of developing obesity and diabetes

Most of the damage is done very early
(first 6-7 weeks of pregnancy)

CEMACH - Diabetes

(Confidential Enquiry into Maternal and Child Health)

CEMACH 2005

Audit between 2002-2003 of 3,808 diabetic pregnancies across UK

CEMACH 2007

National Enquiry into 521 diabetic pregnancies across UK

CEMACH – Diabetes Key Findings

Major congenital malformations increased 2 fold

Stillbirth increased 4 fold

Perinatal mortality rates increased 4 fold

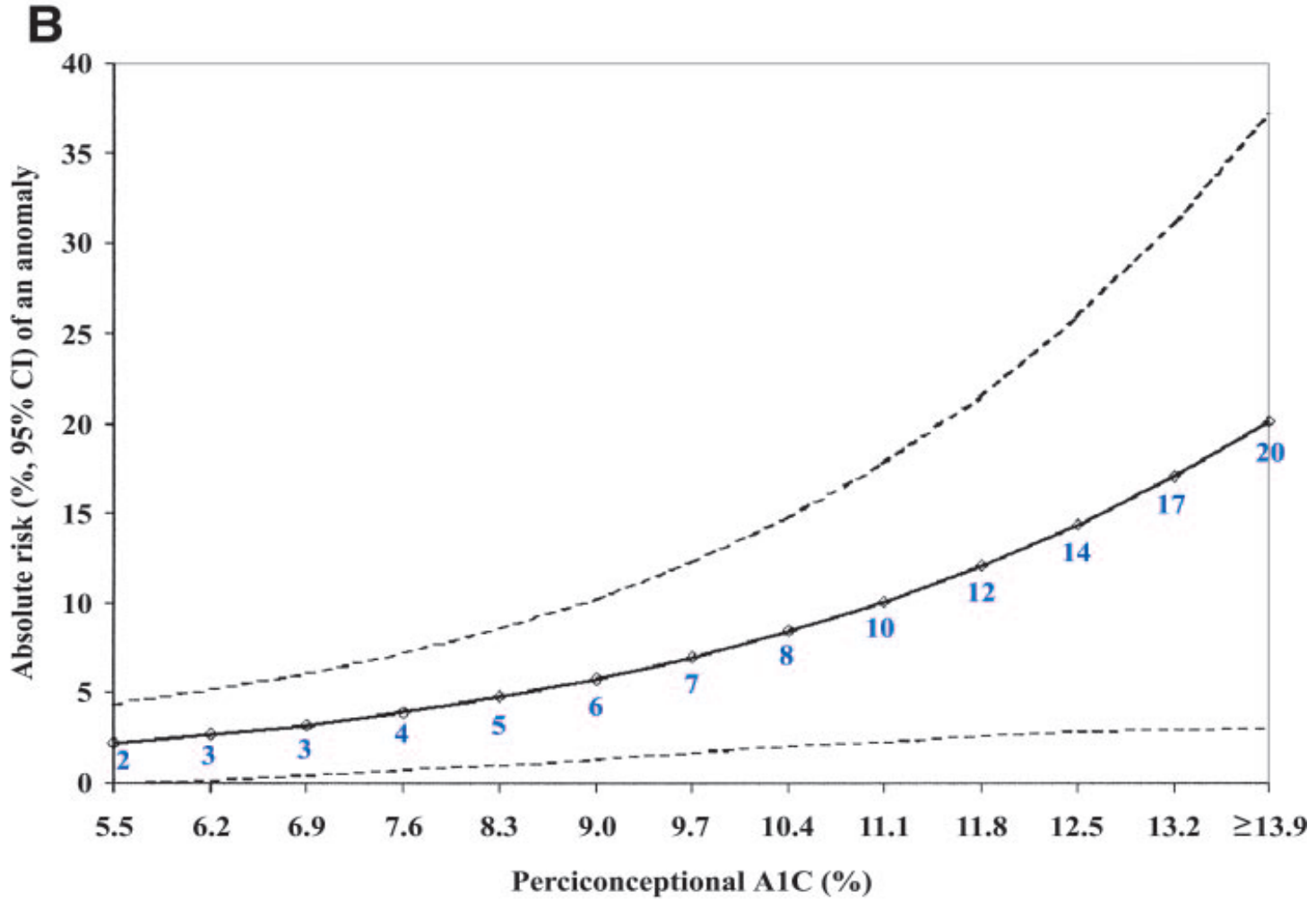
Pregnancy outcomes were similarly poor in women with Type 2 DM as those with Type 1DM

Poor glycaemic control (HbA1c) at the start of pregnancy was the most significant risk factor for both congenital malformations, and stillbirth

What is considered poor glycaemic control in the preconception period?

A) HbA1c >6.1%
B) HbA1c >7.2%
C) HbA1c >8.5%
D) HbA1c >10%
E) Don’t know

Risk of congenital anomalies depending on periconception HbA1c



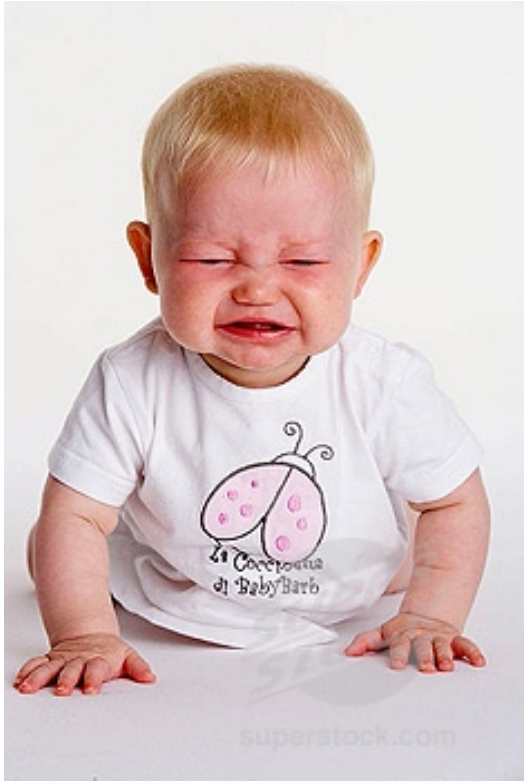
Guerin 2007 Diabetes Care

Periconception HbA1c and risk of serious adverse pregnancy outcome (congenital malformation/ perinatal death) in 933 women with Type 1 diabetes

Jensen DM Diabetes Care June 2009

HbA1c	Congenital malformations %	Perinatal mortality %	Serious adverse outcome %
>10.4	10.9	5.5	16.3
8.9-10.3	3.9	6.3	7.8
7.9-8.8	5.0	3.3	7.7
6.9-7.8	4.9	2.6	7.7
<6.9	3.9	2.1	5.6
Background population	2.8	0.75	3.5

CEMACH – Diabetes Key Findings



Women with diabetes were inadequately prepared for pregnancy (73% suboptimal preconception care!)

Only 35% women had evidence of receiving pre-pregnancy counselling

Evidence of pre-pregnancy counselling was lower in T2DM

(25% T2DM compared to 38% T1DM)

Use of folic acid supplements was also lower

(29% T2DM compared to 43% T1DM)

Observation from diabetic pregnancies

Leeds Teaching Hospitals Trust – 2 years ago

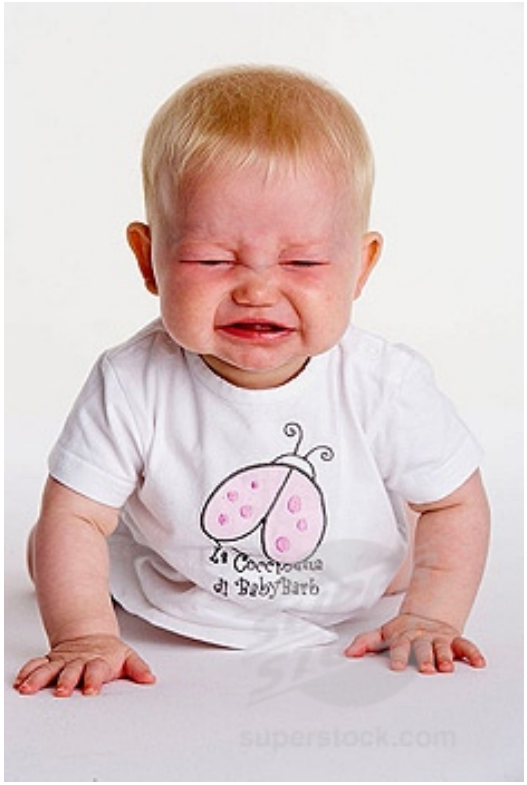
- T1DM
  Average HbA1c 7.6%
  40% attended preconception clinic
- T2DM
  Average HbA1c 8.4% at conception
  14% attended preconception clinic

CEMACH Diabetes 2005

Women with diabetes were inadequately prepared for pregnancy

(73% suboptimal preconception care!)

CEMACH – Diabetes Key Findings



Poor evidence, if any, of :

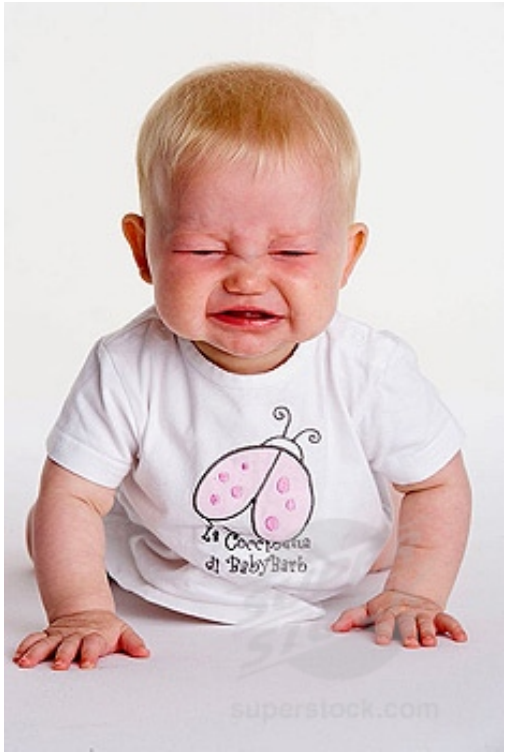
Pre-pregnancy counselling
Preconception use of folic acid
Safe glycaemic targets being achieved

79% had suboptimal glycaemic control before pregnancy!

Only 54% had documentation of HbA1c in the 12 months prior to pregnancy!

Only a minority had been using contraception in the preceding 12 months despite known poor glycaemic control

CEMACH – Diabetes Key Findings



Suboptimal preconception care was associated with poor pregnancy outcome (five-fold increased risk adjusted for maternal age and deprivation)

Lack of pre-pregnancy care was especially true for women with Type 2 diabetes

Only 17% of maternity units in England, Wales and Northern Ireland reported providing structured multidisciplinary preconception care for women with diabetes.

CEMACH – Diabetes Recommendation

Commissioners of services **must** ensure that **all** women with diabetes are provided with **specialist preconception services** with access to **all** members of the specialist multidisciplinary team

NICE clinical guideline 63

July 2008

Diabetes in pregnancy

Management of diabetes and its complications from pre-conception to the postnatal period

Preconception awareness

Starting from adolescence

‘Health care professionals should give information (and document this) on the benefits of preconception glycaemic control at each contact’

HbA1c <6.1% (Where safely achievable)

Preconception awareness

Starting from adolescence

'*Should record pregnancy intentions and contraceptive use at each contact*'

The importance of avoiding unplanned pregnancy should be explained

Women with diabetes who are planning to become pregnant should be offered pre-conception care and advice before discontinuing contraception

Advise to avoid pregnancy altogether whilst HbA1c >10% (risk of congenital malformation ~ 10%)

(If they aren't using contraception and have diabetes – beware – this is an extremely high risk group!!)

Which forms of contraception are preferable in a woman with diabetes?

A) Barrier methods preferable

B) All except combined OCP

C) All except coil and combined OCP

D) Any

Preconception care

'Offer women seeking pregnancy specialist preconception advice'

To include structured education

Advice on diet, body weight and exercise, including weight loss for women with a BMI>27kg/m^2

NICE 2008 - Diabetes in pregnancy

Preconception care

Glycaemic targets (HbA1c <6.1%)

Self monitoring of blood glucose

Monthly HbA1c

Close follow up and active advice (dietary, exercise, insulin adjustment) to achieve these targets

NICE 2008 - Diabetes in pregnancy

Preconception care

How to manage pregnancy related nausea and vomiting, maintain glycaemic control, and avoid hyperglycaemia (and ketoacidosis) at all costs

How to manage hypoglycaemia and hypo unawareness

NICE 2008 - Diabetes in pregnancy

Preconception care

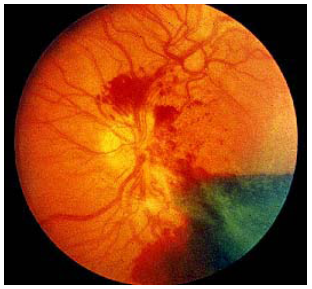
Review medication and change those contraindicated in pregnancy

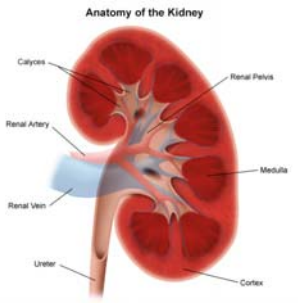
Metformin (and insulin) may be used before and during pregnancy, but be extremely careful of other drugs (cardiovascular risk prevention)

NICE 2008 - Diabetes in pregnancy

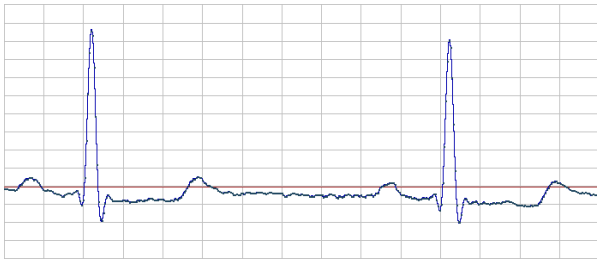
Preconception care

Assessment of long term complications prior to stopping contraception:





- BP control
- Microalbuminuria/nephropathy
- Retinopathy
- Hypoglycaemia unawareness
- Autonomic neuropathy



NICE 2008 - Diabetes in pregnancy

Preconception care

Smoking and alcohol cessation advice

Folic acid supplement (5mg/day)

Vitamin D supplementation

How Effective is Preconception Care? Observations from the Leeds Diabetes Preconception clinic

43 patients
20 T2DM
(13 Asian; 2 Afrocarribean;5 Caucasian)
23 T1DM
(1 Asian; 22 Caucasian)

Average HbA1c
9.5% on first visit.
6.5% prior to pregnancy

More than that – women are fully equipped with the knowledge to manage their diabetes successfully during pregnancy

Their drugs and diabetic complications have been assessed and managed

Effectiveness of preconception care clinic

Murphy H et al. Diabetes Care, Dec 2010

UK study of 680 women with T1DM/T2DM.

Prepregnancy care in a dedicated MDT clinic

Prepregnancy care associated with decrease in adverse outcomes (stillbirth, neonatal death, congenital malformation) from 7.8% to 1.3%

Pre pregnancy care had benefits beyond improved glycaemic control and was a stronger predictor of adverse pregnancy outcome than obesity, ethnicity or social disadvantage

Cost-effectiveness:

- A large study of preconception care has shown huge cost benefits with just over five dollars saved for every dollar spent

  (*Herman WH et al. J Reprod Med 1999; 44: 33-8)*

- California Diabetes and Pregnancy Program - 24 women with pre-pregnancy care and 74 women with no pre-pregnancy care found a net cost saving of $34,000 per patient with pre-pregnancy care. $5.19 dollars saved for every dollar spent on the program

  (*Scleffer RM et al. Am J Pub Health 1992; 82: 168-75*)

Contemporary challenges

Obesity

Type 2 Diabetes

Gestational Diabetes

Obesity

Pregnant women who are overweight or obese and their babies face an increased risk of complications during pregnancy and childbirth (irrespective of diabetes)

Mother

IGT, GDM, miscarriage, pre-eclampsia, thromboembolism and death.

More likely to have instrumental delivery or caesarean section

Baby

Macrosomia, congenital anomaly, obesity (in later life) and fetal death

CEMACH 2007

> 50% of mothers who died during pregnancy, childbirth or within 42 days of childbirth were overweight or obese.

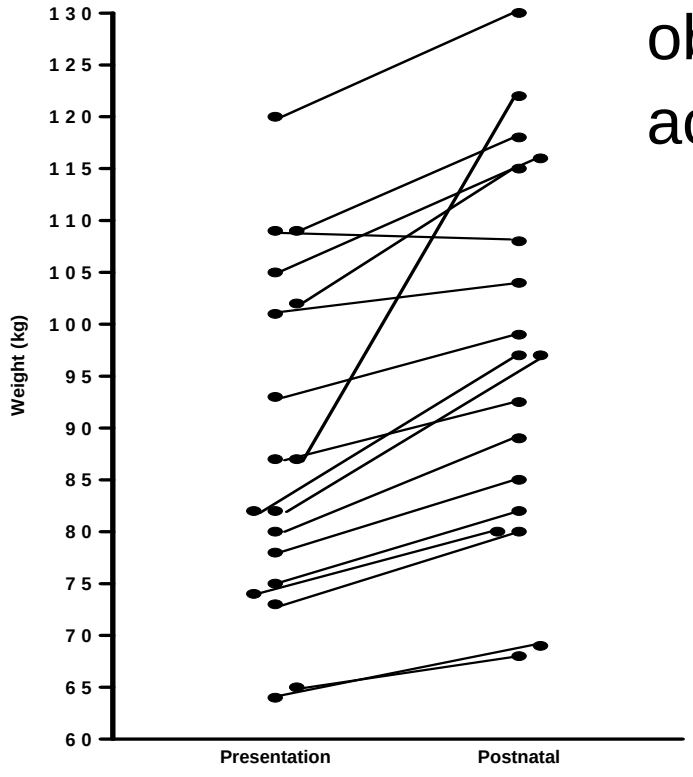
A BMI>30 kg/m^2 = more likely to die

Diabetes and Obesity

From a diabetes perspective excess weight gain during pregnancy:

- doubles the risk of macrosomia (Hillier 2008) and caesarean and preterm delivery (Cheng 2008)
- is directly associated with increase risk of childhood obesity at age 3 years (Olson 2008) and in adolescence (Oken 2008)

Diabetes and Obesity
Audit – 18 T2DM pregnancies



94% of patients were either overweight or obese at presentation, with 56% patients actually having obesity.

Average weight 6 months postnatally was 97.2 kg (range 68-130 kg)

The average BMI postnatally was 38.1 kg/m^2 (range 26.3-50.8 kg/m^2)

The average weight retained was 9.2 kg, which equates to an average increase of ~ 10% of their bodyweight.

Diabetes and Obesity – challenges postpartum

A failure to lose this weight postnatally has health and economic implications as it leads to:

- a deterioration in glycaemic control
- increased need for drug therapy
- overall increased risk of micro and macrovascular complications
- increased morbidity during next pregnancy

Management of Obesity and Diabetes postpartum

Women must be helped to lose weight post partum

That includes:

- Weight gained in pregnancy
- If overweight prior to pregnancy, need to be encouraged to lose this too

Gestational Diabetes

29 year old lady

2 children (6 and 4 years)

Hypertension – on ACEi

BMI 42

Mother T2DM

Gestational diabetes in last pregnancy

Positive pregnancy test – planned pregnancy

What would you do?

A) Refer her to community midwife for OGTT
B) Send a referral to antenatal clinic
C) Check a blood glucose
D) Check HbA1c

What actually happened…

Attended antenatal clinic at 29 weeks gestation

Community Midwife had booked her in for GTT at 28 weeks

GTT Glucose 0hr 18mmol/l, 2 hr 28mmol/l

Glycosuria, no record of blood glucose over past 2 years (although 6 week postnatal glucose normal)

HbA1c 12%

Had developed T2DM

Gestational Diabetes – post partum

Gestational diabetes is increasingly common, in large part due to the increase in obesity in the population.

Past history of gestational diabetes is a big risk factor for development of T2DM

NICE recommends fasting blood glucose at 6 week postnatal check, annual fasting blood glucose thereafter

Weight management important post partum to reduce the risk

Test for development of diabetes preconception:

- If T2DM has developed – refer for preconception care
- If it hasn't she needs OGTT at 14-16 weeks gestation, repeated at 28 weeks if negative.

Pre-pregnancy care and commissioning project

Diabetes

Clinical Director for Diabetes Dr Rowan Hillson put pregnancy and preconception management of diabetic women at the top of her agenda

June 2009-December 2010

This national project aimed to develop an integrated care pathway for delivery of pre-conception care to women with type 1 and type 2 diabetes.

Work with commissioners to ensure its is realistically commissionable given financial restraints in NHS

An integral part of this pathway was the development of education materials for women with diabetes who are preparing for pregnancy

Working group: Diabetologists, Obstetricians, Midwives, Diabetes Specialist nurses, GPs, Dietitians, Commissioners, Patients

Diabetes pregnancy preconception care:

GETTING IT RIGHT

NHS

Diabetes

Providing you with the information, tools and guidance to make sure women with diabetes get the preconception care they deserve at:

www.diabetes.nhs.uk/pregnancy

Diabetes care areas - click here to navigate to care area page

- Cardiovascular care
- Children and young people
- Diagnosis and continuing care
- Education
- Emotional and psychological support
- End of life
- Equality in diabetes
- Eye services
- Footcare
- Emergency and inpatient
- Kidney care
- Mental health and learning difficulties
- Neuropathy care
- Pregnancy

Areas of care

Preconception (Pre-pregnancy) Care for Women with Pre-existing Diabetes

Diabetes can cause a range of problems in pregnancy, during delivery and for the baby after birth. Of particular concern is the increase in congenital abnormalities (birth defects) in this group. While 1 in 100 babies are born with a congenital abnormality, this risk is increased 2 - 3 fold in women with diabetes. Effective preconception care can reduce these risks. The National Institute for Health and Clinical Excellence lists preconception care as a "key priority" to improving pregnancy outcomes in women with diabetes.

All women with type 1 or type 2 diabetes considering pregnancy should be referred for preconception care to a specialist service.

These web pages provide information for commissioners, professionals involved in the care of women with diabetes, and women with diabetes themselves to commission, deliver and receive effective preconception care in order to improve pregnancy outcomes for women with diabetes.

Please click the relevant link below:

Commisioners

Healthcare Professionals

Women with Diabetes

Primary care

www.diabetes.nhs.uk

Contraception +++

Regular review and documentation of pregnancy plans and risks and importance of glycaemic control

Blood glucose monitoring (allow plenty of test strips)

Monthly HbA1c

Help to lose weight (pre and postnatal)

Care over medication (should they be on CV risk reduction therapies?)

Folic acid 5mg/day

Refer to secondary care preconception clinic for full preconception education programme with MDT

Secondary Care - MDT Diabetic Preconception clinics

For detailed specialist diabetic preconception care, education and problem solving

One-stop shop

Consultant Diabetologist	Consultant Obstetrician
Diabetes Specialist Nurse	Dietitian

Individualised, patient centred approach

One off advice and/or frequent follow up to achieve optimum glycaemic control

Glycaemic control is not just about HbA1c but about avoiding the swings (hypo-hyper) and being equipped with the ability to self manage diabetes throughout pregnancy

Responsive, timely service. Utilise CGMS, DAFNE, CSII etc

Assessment and management of complications

Effective care before pregnancy improves pregnancy outcomes in women with diabetes ... so let's be **S.A.F.E.R**.

STOP	Think ahead...
A1c	Is your HbA1c (blood glucose) on target or too high?
Folic acid	How much folic acid should you take?
Enjoy	Enjoy planning your pregnancy and giving your baby a healthy start.
Referral	Early referral to specialist care.

www.diabetes.nhs.uk/pregnancy

Preconception (Prepregnancy) care for ALL women with diabetes

Effective care before pregnancy improves pregnancy outcomes in women with diabetes. The National Institute for Health and Clinical Excellence (NICE) lists preconception care as a "key priority" to improving pregnancy outcomes in women with diabetes.

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Folic acid	How much folic acid should you take?
Enjoy	Enjoy planning your pregnancy ... and giving your baby a healthy start.
Referral	Early referral to specialist care.

A1c ... Is it too high?

If your long term blood glucose test for diabetes (HbA1c) is high, more than 64 mmol/mol (or 8%) around the time of conception and in the first few weeks of pregnancy it may affect your baby's development or increase the risk of miscarriage.

Any reduction in A1c has been found to reduce risk. However an HbA1c of less than 43 mmol/mol (6.1%) is recommended for pregnancy, provided you are not troubled by hypos.

To reach these targets you will need to test your blood glucose frequently. Please ask your nurse or doctor to refer you to a specialist diabetes preconception team who will be able to support you to achieve this.

Folic acid, other medication and lifestyle

Folic acid

All women are recommended to take folic acid from three months before conception. This helps prevent Neural Tube Defects (NTD), such as Spina Bifida.

However, women with diabetes need a higher dose of 5mg which is only available on prescription.

Medication

Many medications are not suitable for the growth and development of your baby. In particular those given for: high blood pressure, high cholesterol and some diabetes treatments. It is very important that you check with your GP before trying for a baby as your treatment may need to be changed to one that is more suitable for pregnancy.

Diabetes complications

It is important that women with diabetes have their eyes, kidneys and heart assessed before pregnancy.

Weight management

It is important to maintain a healthy weight. If you are overweight it is advised to lose weight before pregnancy to increase your chances of becoming pregnant and having a healthy pregnancy.

This will also improve your blood glucose control.

Smoking & alcohol intake

Smoking and alcohol can harm your baby.

You are advised not to smoke or drink alcohol during pregnancy.

To support you to stop smoking seek advice from your GP.

Enjoy ... Preparing for pregnancy

This is going to be a very special time in your life.

Enjoy preparing for pregnancy and giving your baby a healthy start.

In the meantime it is important that you use effective contraception until advised by your specialist team that it is safe for you to become pregnant. Your GP or Family Planning Clinic will be able to advise.

Referral...

To help you achieve these things and prepare for a healthy pregnancy you will need the help and regular support of a specialist diabetes preconception team.

Ask your GP or Practice Nurse to refer you to the local diabetes preconception service.

Summary and Take Home Messages

We are bad at ensuring diabetic women are adequately prepared for pregnancy

The effect of this is that pregnancy outcomes for a woman with diabetes are poor

Summary and Take Home Messages

Preconception care is vital to ensure that mothers with diabetes and their babies have a safe and healthy pregnancy and birth as possible

Also likely to have longer term implications on the health of the nation as ‘in-utero’ programming impacts on obesity and diabetes as the child becomes an adult

Primary and secondary care has a real responsibility to ensure that women with diabetes are provided with relevant, up to date information and diabetes management preconception

Summary and Take Home Messages

Secondary care needs to provide organised preconception services (NHS Diabetes website)

Commissioners need to commission them

Primary care needs to be aware of need to refer patients to preconception services especially T2DM

‘Providing information and access to specialist care if you are planning a baby’ is one of Diabetes UK Diabetes Watch 15 essential diabetes care services. These are going to be monitored to ensure quality of care in the UK.

Summary and Take Home Messages

Planning to have a baby or being pregnant is a huge motivator for women to improve their health

In women with diabetes it is often the first (and only) time they have found a reason to achieve glycaemic control

If this isn't being achieved I believe it shows poor education being given by healthcare providers

Bullet points for New Clinical Solutions

- Beware the T2DM woman of childbearing age
- Gestational diabetes is a risk factor for devloping T2DM before the next pregnancy
- Ask about pregnancy plans and check contraception at each visit
- Weight management
- Care over cardiovascular prevention drugs
- Refer for specialist preconception diabetes care (make sure this is commissioned)
- NHS Diabetes website (www.diabetes.nhs.uk)