

**MANAGEMENT OF
DIABETES IN PREGNANCY
PRIMARY CARE SUMMARY**

September 2001

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This report has been published by the Clinical Resource Efficiency Support Team (CREST). CREST is a small team of health care professionals established in 1988 under the auspices of the Central Medical Advisory Committee. Its aim is to promote clinical efficiency in the health service in Northern Ireland while ensuring that the highest possible standard of clinical practice is maintained.

CREST wishes to thank the Working Group for producing this guidance. Special thanks are due to Dr Diane Corrigan, Chairperson and Dr David McCance for the major contribution they made to the production of this booklet.

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PREGNANCY AND DIABETES

Summary of Recommendations for Primary Care Staff

- Advise about the importance of PLANNED pregnancy.
- Offer contraception. See Appendix 2 for details on appropriate methods.
- Patients wishing to become pregnant need
 - > RUBELLA immunity check
 - > Periconceptual folic acid (0.4mg/day) throughout first trimester.
 - > Possible referral to local diabetic clinic for advice on need to change from oral hypoglycaemics to insulin, review of other medication (such as need to stop statins and ACE inhibitors) and to maximise blood sugar control.
- ENCOURAGE GOOD CONTROL: capillary monitoring at least 4 times daily aiming for pre-prandial glucose levels 3.5-5.5 mmol/l and postprandial < 8 mmol/l. HbA1c should be within the upper part of the normal range.
- ADVISE TO STOP SMOKING.
- > In view of risk of hypoglycaemia, advise STOPPING ALCOHOL.
- ARRANGE URGENT TELEPHONE REFERRAL (same day) on diagnosis of pregnancy.

KEY POINT – Role of the General Practitioner

- The care of the pregnant woman with diabetes should be hospital based but the general practitioner has a vital role to play in pre-pregnancy advice and urgent (same day) referral on diagnosis of pregnancy.

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1.0 INTRODUCTION

Women with diabetes have much poorer outcomes of pregnancy than those without diabetes. CREST has prepared guidelines which seek to address the unacceptably high perinatal mortality and malformation rates in babies born to diabetic mothers. To achieve this we require a uniform standard of joint diabetic and obstetric specialist care in the management of diabetic pregnancy in Northern Ireland.

Effort needs to be made to:

- Increase the proportion of pregnancies in diabetic mothers that are planned.
- Improve control of diabetes before pregnancy occurs.
- Improve the care of mothers and babies in the antenatal, delivery and postnatal stages.

CREST has issued a detailed report on this issue, which has been circulated to all obstetricians, diabetologists and paediatricians in Northern Ireland. This shorter version is intended as a summary for use in the primary care setting.

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2.0 BACKGROUND

Type 1 diabetes mellitus is the most common pre-existing medical disorder complicating pregnancy in Northern Ireland.

In Northern Ireland approximately 100 pregnancies occur each year in women who have diabetes. Of these women, 75% have pre-existing type 1 diabetes, 15% have insulin treated diabetes during pregnancy (pre-existing type 2 diabetes, newly diagnosed type 1 or gestational diabetes) and the remaining 10% have gestational diabetes treated with diet alone.

Researchers have shown that:

- In population-based studies of diabetes in pregnancy, perinatal mortality rates were **5 times** that of the background population.
- The risk of major malformations is markedly increased in infants of diabetic mothers and the abnormalities tend to be more severe, multiple and fatal.
- These abnormalities occur early in pregnancy, between the fifth and ninth week and so are likely to be established at the first antenatal visit.
- Studies from many centres have shown that the higher the blood glucose levels, as assessed by glycosylated haemoglobin (HbA1C), in early pregnancy the greater the incidence of abnormalities. Improved diabetic control can reduce the incidence of malformations from over 12% to fewer than 2%.
- Women with diabetes also have more complications during their pregnancies, including progression of retinopathy and poor fetal growth.
- Milder hyperglycaemia is also a risk factor for obstetric complications.

The need for early detection and treatment of gestational diabetes is the rationale for regular screening for glycosuria during all pregnancies.

The St. Vincent Declaration and Diabetes UK (previously the British Diabetic Association) have proposed measures to facilitate reduction of perinatal mortality, neonatal morbidity and congenital malformation in babies born to diabetic mothers. An optimal outcome may be obtained if good diabetic control is achieved before and

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during pregnancy. This requires careful planning of the pregnancy, early antenatal care, frequent obstetric and diabetic surveillance and access to neonatal supportive care.

Diabetes UK recommends that:

- Care of the pregnant diabetic should take place in centres managing sufficient numbers of cases.
- There should be multidisciplinary care teams comprising a diabetes specialist physician, obstetrician, ophthalmologist, neonatologist and diabetes teaching nurse.
- Near normoglycaemia should be maintained before and during pregnancy.

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3.0 THE CURRENT PATTERN OF CARE IN NORTHERN IRELAND AND RECOMMENDATIONS FOR CHANGE

A recent 10-year review (1985-1995) of diabetic pregnancy in Northern Ireland found perinatal mortality rates (36.7/1000) and congenital malformation rates (64.7/1000) 4-5 times higher than the background population. These rates are similar to those reported in the north of England.

The Northern Ireland audit identified that some 13 hospitals in the province provided care for pregnant diabetics during that decade. Of the 986 pregnancies, 416 or 42% were booked for their antenatal care and delivery in the Royal Maternity Hospital (RMH), which is the regional centre for the province. A further 85 cases were referred mid-pregnancy to RMH having originally been booked for care at a local hospital. Of the 485 pregnancies booked and delivered in local hospitals during the decade, 90 were in the six smallest hospitals. The annual average on each of the latter sites is therefore very low.

Data from the 10 year audit of diabetic pregnancies, combined with information from the Neonatal Intensive Care Outcomes Research and Evaluation Group (NICORE) indicates that in Northern Ireland, 80% of the babies born to diabetic mothers are admitted to neonatal units. Of these, half require intensive care and one in six requires level I neonatal intensive care*. Although a small number have short stays, the median length of stay for the group who require level I care is 5 days.

These patients are unsuitable for shared GP/obstetrician antenatal care. Optimum antenatal care requires a minimum of 18 hospital visits for diabetic control. If organised separately, a further twelve visits are needed for obstetric and ultrasound checks. For some patients, appointments may be also required at ophthalmology clinics. **It is one of the aims of these guidelines to reduce the number of hospital visits to a minimum, consistent with providing the best level of care.**

**Level I care is that given in an intensive care nursery which provides continuous skilled supervision by qualified and specially trained nursing and medical staff. Such care includes support of the infant's parents. Minimal medical staffing should consist of both an experienced paediatric registrar and a senior house officer on duty and available in the intensive care area at all times, with an appropriately trained consultant in charge. Source BAPM.*

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There are a number of criteria that would identify those hospitals able to offer the best possible care for pregnant diabetics. These include:

- A joint antenatal clinic staffed by a team comprising a nominated and experienced physician and obstetrician, supported by a specialist nurse or midwife.
- A designated ward for all inpatient obstetric care of diabetic women.
- Level I neonatal care.
- Formal arrangements for provision of emergency advice and rapid admission.
- A daily physician ward round.
- A daily obstetrician ward round.
- Standardised record keeping and patient information

It has been recommended in the main CREST guidance that commissioners should examine the services available within Trusts offering obstetric services against these criteria. The aim should be to arrange all antenatal and intrapartum care for pregnant patients with diabetes or gestational diabetes to take place in designated centres which meet the criteria.

It is expected that, following designation, commissioners and designated provider Trusts should take steps to circulate to all GPs and community midwives, written information on the clinic in their area. This should include the names of team members and relevant contact numbers to facilitate early referral.

Despite the availability of specialist clinics in designated centres, a proportion of cases will continue to need onward referral to the regional centre at RMH. The following section describes those pregnancies at higher risk, where consideration should be given to such referral.

- 1) Patients with diabetic nephropathy should have detailed pre-pregnancy counselling with regard to the increased risks to the mother and fetus associated with the presence of nephropathy.
- 2) Patients with pre-pregnancy serum creatinine > 140 micromoles/l or 24 hour urinary protein $> 1\text{g}/24$ hours should be referred for specialist nephrologist care.

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- 3) Patients with macrovascular complications (coronary artery disease) and organ transplantation (such as kidney) should be referred to the regional centre in Belfast.
- 4) There may be a case for referral of patients with other high risk situations such as pre-proliferative retinopathy or previous severe pre-eclampsia at the discretion of the physician/obstetrician.

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4.0 WHAT CAN BE DONE IN THE PRIMARY CARE SETTING TO IMPROVE OUTCOMES?

General Practitioners and practice staff can help improve outcomes by:

- Ensuring that both adolescents and women patients with diabetes are aware of the importance of planned pregnancy.
- Ensuring that adequate and appropriate contraception is available (Appendix 2).
- Making contact with young women with diabetes who default from hospital clinics and liaising with hospital clinics in their management.
- Checking rubella status and commencing folic acid for those patients expressing a wish to become pregnant.
- Referring those patients who express a wish to become pregnant to their local diabetic clinic for specific advice on pre-conception care.
- Stressing the need for patients to make contact as a matter of urgency if they should become pregnant.
- Referring the patient to the designated local specialist clinic by phone on the day that pregnancy is diagnosed.

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5.0 PATIENT CHOICE

It is acknowledged that women have the right to choose where they would like to receive their diabetic/antenatal care. Despite the potential advantages of the team approach in terms of outcome, some may still express a wish to be cared for at non-designated centres, even though these will not be able to provide the same service. This may be influenced by the proximity of their local hospital compared to the designated centre.

As already stated optimum antenatal care for these patients requires multiple clinic visits. It is one of the aims of these guidelines to reduce the number of hospital visits to a minimum, consistent with providing the best level of care. One of the advantages of attendance at a designated centre is that the diabetic and obstetric visits are co-ordinated at the same jointly run clinic. At the regional centre, ophthalmology appointments can also already be arranged on the same day. For this reason, patients with eye complications may find attendance at the regional centre most convenient. Over time, other designated centres should also try to hold their joint clinic on the same day as an existing ophthalmology clinic.

GPs who refer newly diagnosed patients to an obstetric clinic for booking, need to be aware of both the clinical and organisational advantages for their patients of attendance at a designated centre. However, if a patient still wishes to receive care at a local hospital rather than a designated centre, the hospital clinician accepting responsibility for the patient should:

- a) Record that advice has been given to the patient that their care may not meet the standard available in the centre.
- b) Notify the identified centre in that area that the patient is under their care.
- c) Adhere to the protocol (Appendix 4 of full CREST guideline) in terms of the frequency and timing of the necessary investigations.
- d) Use the standardised registration card (Appendix 2 of full CREST guideline) to monitor progress.
- e) Have available for ward staff, protocols for the administration of betamethasone, management of labour and management of neonatal hypoglycaemia.

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6.0 HOW WILL WE KNOW THAT CHANGE IS HAPPENING?

CREST intends to review the numbers of designated clinics by March 2002.

All obstetricians and diabetologists will be using standardised record sheets from Autumn 2001. These will be used in an ongoing regional audit programme encompassing measures of structure, process and outcomes. Draft audit designs for the hospital service are included in the full CREST document, along with proposed timescales for these audits to take place.

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APPENDIX 1

Membership of the Management of Diabetes in Pregnancy Working Group

Chairman: Dr D Corrigan
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Members: Mrs A Alexander
Midwife, Royal GHT

Dr M Boyle
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Mrs K McMullan
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APPENDIX 2

CONTRACEPTION FOR WOMEN WITH DIABETES

All forms of contraception carry some risk and every woman must be considered individually.

Additional considerations for diabetic women include:

- The importance of periconceptual control of diabetes.
- The constraints imposed by the complications of diabetes.

The Combined Oral Contraceptive Pill

- Effective if taken reliably.
- First generation high dose oestrogen pills may increase insulin requirements and increase risk of vascular disease.
- Second and third generation pills have a much lower dose of oestrogen and can probably be used safely in the majority of women with diabetes.
- Contraindications: diabetic complications, high arterial risk, age>35 years.

The Progestogen-only Pill

- There is no epidemiological evidence associating this pill with vascular side effects and detrimental effects on lipids or clotting factors are minimal.
- This is reliable if taken regularly but omission may be more likely to result in pregnancy than with the combined pill.
- Menstrual irregularity can be problematic but usually responds to a temporary increase in dose or use of an alternative preparation.
- If amenorrhoea occurs and is of concern, a pregnancy test should be performed; a negative result suggests that the preparation is working effectively.
- Injectable progestogens/implants are suitable for some patients.

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Intrauterine Contraceptive Device

- An advantage is the lack of detrimental metabolic effects and need for compliance.
- Failure rate is high (2/100 women per year).
- There is no convincing evidence for the IUCD promoting pelvic inflammatory disease.
- There is disagreement as to whether or not nulliparous women with diabetes should use this form of contraception.

Mechanical Contraception

- This method has no metabolic consequence, is still popular and has been widely promoted to reduce risk of infection with HIV.
- High failure rates usually result from omission or incorrect usage and the method is not recommended if it is essential to avoid pregnancy.
- Highly motivated couples taught to use the diaphragm and sheath correctly, may find this an effective and acceptable form of contraception.

Sterilization

- Requested by many mothers when their family is complete.
- The reduced life expectancy of those with longstanding diabetes should be borne in mind when making this decision.
- Sterilization is occasionally advised if there is felt to be a serious risk to the woman's health.
- For some couples vasectomy is appropriate.

Natural Methods

- Highly motivated couples, taught to use these methods correctly, may find this an effective and acceptable form of contraception.

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Emergency Contraception

- This is safe for diabetic women and should be prescribed if needed.

KEY POINTS – Contraception for Diabetic Women

- All women of childbearing age need contraceptive advice if pregnancy is not intended
- Barrier methods/low-dose oral contraceptive if low arterial risk
- Stop contraception only when adequate control is achieved
- Sterilization may be preferable when the family is complete
- Emergency contraception can be used by diabetic women