

Scottish Perinatal Network – Maternal Medicine Group

Guidance on the Management of Diabetic Ketoacidosis (DKA) in Pregnancy

Document Control Sheet

Title	Guidance on the Management of Diabetic Ketoacidosis (DKA) in Pregnancy
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Disclaimer

The recommendations in this guidance represent the view of the Network, arrived at after careful consideration of the evidence available. When exercising their clinical judgement, healthcare professionals are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to follow the guideline recommendations, and it remains the responsibility of the healthcare professional to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Contents

Guidance on the Management of Diabetic Ketoacidosis (DKA) in Pregnancy	4
Recognition of Urgency	4
Recognition of various presentations	4
Place of care and who to involve	5
Treatment goals.....	5
Discharge planning.....	6

GUIDANCE ON THE MANAGEMENT OF DIABETIC KETOACIDOSIS (DKA) IN PREGNANCY

The guiding principles in this document supplement the Joint British Diabetes Society for Inpatient Care guidance on [Managing diabetes and hyperglycaemia during labour and birth](#)¹ and are based on the principles and practices outlined in Managing Medical and Obstetric Emergencies and Trauma (mMOET)². They are for clinicians in any setting where a pregnant woman with diabetes may present for care.

Recognition of Urgency

Diabetic ketoacidosis (DKA) in pregnancy is a medical emergency that can have serious consequences for the mother and the baby. DKA can occur at any point in pregnancy. Ketones are toxic to the fetus and can lead to miscarriage, stillbirth, or neonatal death. Physiological and hormonal changes in pregnancy mean that pregnant women³ have a lower buffering capacity than usual and are more resistant to insulin. They are more prone to DKA, and it can develop more rapidly than outside of pregnancy.

Recognition of various presentations

DKA should always be considered when a pregnant woman with diabetes feels unwell. It can occur with only very modest elevation in glucose levels or even in the presence of normal glucose levels (i.e. 'euglycaemic ketoacidosis'). It can affect women with either pre-existing or gestational diabetes.

Blood ketone meters should be available in all maternity units and capillary blood ketones should be checked in any pregnant women with diabetes who is unwell, irrespective of blood glucose levels.

Common precipitants	Infection, vomiting, hyperemesis, steroid treatment, insulin omission (including insulin pump failure/problem), non-obstetric causes of abdominal pain
Symptoms	Nausea, vomiting, abdominal pain (consider as alternative to preterm or term labour), polyuria, polydipsia, leg cramps, unexplained breathlessness
Later signs	Dehydration, blurred eyesight, tachypnoea, tachycardia, coma
Biochemical parameters	<ul style="list-style-type: none">• Glucose may not be significantly elevated. Euglycaemic ketoacidosis can occur.• Persistent elevated capillary ketones above 1.0 mmol/L is a concern in pregnancy and DKA should be considered in this situation• Metabolic acidosis: bicarbonate < 15 mmol/L or pH <7.3

¹ Joint British Diabetes Society for Inpatient Care (2023), [Managing diabetes and hyperglycaemia during labour and birth](#)

² Advanced Life Support Group (2022), Managing Medical and Obstetric Emergencies and Trauma (mMOET): A Practical Approach, Wiley-Blackwell; 4th edition

³ Please refer to the SPN's Inclusive Language statement at <https://perinatalnetwork.scot/inclusive-language>

In 2018-20 [MBRRACE-UK \(2022\)](#)⁴ reviewed cases of 61 women who presented with DKA during pregnancy. Opportunities to improve care were identified in 90% of cases. Recommendations were:

- Abnormal urinary ketones should prompt capillary glucose and ketone measurement.
- A VBG is advised if either of these is abnormal or if capillary ketone testing is not easily available to check for acidosis.

Place of care and who to involve

The priority is prompt treatment with a multidisciplinary team involving senior obstetrician, diabetologist or on-call physician in an enhanced maternity care area or level 2 critical care and may involve the critical care / obstetric anaesthetic team. The diabetes specialist team and diabetes specialist midwife (if applicable) should be involved at the earliest opportunity. The most suitable location of care will vary according to site, service, gestation of pregnancy and severity of ketoacidosis; an individualised plan should be made with senior multidisciplinary input. If person is <18 years old involve Specialist Paediatric Consultant.

Treatment goals

Treatment of DKA should involve early aggressive fluid replacement, insulin infusion, electrolyte assessment, monitoring and correction: potassium replacement therapy, identification and correction of cause.

The recommendation is that **a local protocol should be available**. Specialist advice should be sought regarding fluid requirements in patients with confirmed pre-eclampsia and/or renal impairment (CKD) stage 4/5.

Continue with usual prescribed basal insulin along with intravenous insulin. If the woman is using an insulin pump, start intravenous insulin infusion at a fixed rate and discontinue the insulin pump.

At appropriate gestations CTG monitoring should be considered until there is improvement in the maternal condition. The decision for delivery is complex and is based on multiple factors such as the gestational age, the response to treatment of the mother, and may include suitability of the site for delivery and care of the neonate and transport logistics. Maternal stabilisation must take priority before birth planning is considered

Review insulin requirement after delivery; antenatal corticosteroids use may influence insulin requirements in the immediate post-natal hours.

⁴ Knight, M, et al, (2022) [Saving Lives, Improving Mothers Care](#): Lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2018-20

Discharge planning

A summary of in-patient management and follow-up arrangements should be clearly communicated with the mother and her community midwife, diabetes team, obstetrics and GP.

Someone who has presented with ketoacidosis in pregnancy remains at high risk of fetal and maternal complications.

Recommendations:

- Early recognition of DKA is key.
- Early aggressive treatment and biochemical monitoring and correction is crucial.
- Senior members of the multidisciplinary team must be involved to guide management and agree on the most suitable place of care.
- A local protocol for the treatment of DKA in pregnancy should be available; if not already available guidance from [JBDS-IP](#) could be adapted for local use.
- Ensure robust obstetric and diabetes follow-up is in place.