



## Recommendations

# Management of Diabetes Mellitus in Custody

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## Introduction

This guidance is to assist the management of diabetics for Forensic Physicians (FP) and other Health Care Professionals (HCP) working in the custodial environment and is concerned with Type 1 [formerly known as insulin-dependent diabetes mellitus (IDDM)] or Type 2 [formerly known as non-insulin-dependent diabetes mellitus (NIDDM)].

All HCPs should have the means to test blood glucose (BG) with a quantitative meter. Some meters also indicate if ketones are present. Colour strip visual assessment of ketones on urinalysis can also inform clinical decision making. Measurement of the BG to obtain a baseline blood glucose estimation is recommended as soon as possible for all diabetics. Results should be shared with other relevant healthcare staff for ongoing care.

HCPs need to instruct custody staff that if a known diabetic's condition deteriorates, it is safer to assume this is hypoglycaemic and to administer glucose. This may prove lifesaving and would not significantly affect hyperglycaemia. Even if recovery is complete, the HCP must be informed as changes in medication may be indicated.

HCPs should reassure themselves that custody staff are aware of the clinical features of hypoglycaemia which may include:

- Hypoglycaemia may also occur as a complication of heavy alcohol use and stimulant ingestion.
- Risks of complication are increased in those with poor disease control, a frequent situation for those detained in custody.

- Co-morbidity with substance misuse, especially alcohol, is common, and mental illness, in particular depression, has a higher incidence in diabetic patients; these should be fully considered in advice for care during detention and interview.
- feeling weak and dizzy
- feeling hungry
- a higher heart rate than usual
- blurred vision
- temporary loss of consciousness
- confusion
- convulsions
- and even coma (in serious cases)

## History

The following information should always be obtained as a baseline by the HCP:

- determine history (Type 1 or Type 2);
- medications (relevant to diabetes and other conditions);
- doses of medication, time taken and when next due;
- level of diabetic control i.e. recent BG levels, including hospital admissions and episodes of hypoglycaemia;
- other medical conditions associated with diabetes e.g. hypertension, cardiovascular disease, visual impairment, renal, neurological, depression or dermatological complications;
- dietary requirements and when and what last ate;
- note recent exercise;
- note any previous episodes of hypoglycaemia documenting behaviour changes

associated (this might be relevant in a potential claim of automatism as a defence).

### Examination

Consideration should be given to recording:

- pulse;
- blood pressure;
- temperature if indicated;
- condition of skin surfaces;
- appropriate examination of body systems;
- mental state if appropriate.

### Investigations

HCPs should perform an estimation of BG level (clean area of skin before testing with a non-alcohol wipe) with a blood glucose meter. If the detained person (DP) has their own device, witnessed self-testing may be conducted. The baseline level will inform the need for and frequency of further testing.

It may be advisable in insulin-dependent diabetics to check the blood glucose levels more frequently during detention. Urinalysis may assist decision making in relation to reviews.

### Management Plan

A careful management plan should be detailed and shared with the DP, HCPs and custody staff. Particular care should be taken in those with complications such as drug intoxication, alcohol dependence or acute intoxication, head injuries and concurrent infections or complications, e.g. vomiting.

Consideration should be given to the recommended frequency of BG testing for the following HCP review.

### Hyperglycaemia

If blood glucose >25mmol/l and there is evidence of impairment of level of consciousness/confusion or concurrent infection, then refer immediately to hospital. Safe practice would mean that the HCP should consider immediate hospital transfer for those DPs with a BG >30mmol/l.

DPs with levels between 12-25mmol/l would normally be Fit to be Detained (FTBD), but an individual global assessment (this may include urinalysis) needs to be undertaken.

It may be safer practice to maintain BG levels higher than optimal community levels to reduce vulnerability to hypoglycaemia during detention.

In impaired consciousness, regardless of the BG reading, the HCP should carefully consider the need for hospital referral.

### Diabetic Ketoacidosis (DKA)

This may occur with hyperglycaemia.

Typical symptoms of diabetic ketoacidosis include:

- Vomiting;
- Dehydration;
- Deep laboured breathing;
- Non ketotic hyperosmolar states should also be considered;
- Confusion and sometimes even coma.

Symptoms of diabetic ketoacidosis usually evolve over a 24 hour period, with the first sign often being hyperglycaemia.

These symptoms of DKA with urine ketones of greater than 2 are an indication to admit as an emergency.

## Hypoglycaemia

If the HCP measures the BG 2-4mmol/l, they should administer 10g glucose as drink/gel/carbohydrate and review over the next 10 minutes when the BG level should be repeated. The HCP should remain with the DP during this time. 10g of glucose is available from 2 teaspoons sugar, 3 sugar lumps or 1 tube hypostop gel. For those able to swallow, after initial sugar the patient should follow up with complex carbohydrate containing food when they have recovered sufficiently.

First line treatment for those unable to swallow or unconscious is 500 micrograms of glucagon IM, with IV glucose 20% second line if glucagon not available. (Note consideration of alcoholic or liver disease status It should be remembered that glucagon requires the liver to have stores of glycogen and so in alcoholic, or other liver diseases, it may not work.)

The FP should remain with the DP until he is conscious. The DP may need to be transferred to hospital especially if there is a long acting insulin, long acting sulphonylurea, drugs or alcohol on board.

## Medication and Diet

The HCP should recommend that all insulin injections or oral diabetic medications are brought in from home if not on the DP when arrested. The FP may choose to supervise, or instruct an HCP to supervise, the DP's self-administration of insulin. See Faculty Guidance on Safe and Secure Administration of Medication in Police Custody

In the event that the usual insulin is not available, the HCP is recommended to obtain a suitable prescription via A/E or the FP may prescribe a short-acting insulin if not available as medication stock in custody. It would be

prudent to organise regular reviews and BG testing if there has been a change to the normal therapy regime.

Advice may be taken from the Medical Registrar on call.

It may be advisable in DPs where the HCP perceives a risk e.g. attempts to seek diversion, to encourage diabetics to first eat adequate quantities of carbohydrate and then to administer their insulin to prevent episodes of hypoglycaemia.

Hypoglycaemia may rarely occur in patients treated with oral hypoglycaemic medication. BG levels must be shared with other HCPs to facilitate ongoing care.

Custody staff should inform the HCP of any refusal to take main meals and/or medication for assessment.

## Use of Insulin pump therapy in Custody

'Insulin Pump Therapy' also known as Continuous Subcutaneous Insulin Infusion (CSII) is used in the treatment of Type 1 diabetes. Insulin is continuously infused into the subcutaneous tissue by a thin plastic tube usually connected to a soft plastic cannula inserted under the skin. Pumps are about the size of an average mobile phone and run on batteries with safety features to warn the user if the power is running low or if the pump is running out of insulin.

If a person using insulin pump therapy has been arrested the custody officer should call the HCP to assess the DP. The level of supervision required, whilst awaiting the HCPs assessment, will be dependent on an overall risk assessment by the custody officer but may well need to be constant supervision.

Insulin pumps are used by diabetics to help manage their diabetes particularly in those who require multiple daily insulin injections. Before each meal, a bolus dose is taken based on the amount of carbohydrate to be eaten. The HCP should advise on the frequency of medical review and BG monitoring.

The HCP should check whether there is any possibility that the device has been dislodged during arrest and also assess the risk of self-harm (either by overdose of insulin or use of the tubing as a potential ligature). With Bluetooth connection devices it may be possible to keep the meter outside the cell.

If there is any suspicion that any substance other e.g. Illicit drugs than the required insulin dose has been injected via the device the person should immediately be transferred to the emergency department as should possibility of insulin overdose [see management of unconscious hypoglycaemia]

### **Liaisons with other Community HCPs**

If during detention the FP becomes aware of complicating factors or emergency scenarios, e.g. hypoglycaemia, it would be best practice to share this information with the DP's GP, with their consent.

### **Summary Flow Chart**

A summary flow chart follows on the next page to facilitate easy reference for the HCP on management of diabetes in relation to the BG levels during detention in custody. This is particularly with reference to fitness to be detained in custody and fitness to be interviewed.

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Adapted from and Reproduced with permission: Clinical Forensic Medicine 3 Edition Ed W.D.S. McLay Herring J Chapter 6 Custody medicine; physical conditions

Herring J. Fitness to be detained. Ed. Stark MM., Rogers DJ., Norfolk GA. Good Practice Guidelines for Forensic Medical Examiners. Royal Military Police April 2009

