INTRODUCTION

This protocol aims to promote the effective management of patients with diabetes who require insulin as part of their management/treatment plan. It is recognised that the effective use of insulin is essential to reducing the risk of complications associated with diabetes and promoting quality of life.

The management of diabetes also includes:

- promoting healthy lifestyle choices
- monitoring blood glucose levels
- managing and reducing cardiovascular risk factors
- screening for the early detection of complications
- psychological support

The community nursing service supports patients who are unable to self administer their insulin due to physical or cognitive impairment.

TARGET GROUP

All registered nurses employed by NHS Wirral who are involved in the care and treatment of patients with diabetes as outlined in their job description.

COMMUNICATION and DOCUMENTATION

Follow the Standard Operating Procedure (SOP) for Medicine Administration in Community Nursing and the SOP for the Administration of Insulin

Communication and robust documentation is key to ensuring that patients receive appropriate and timely care and treatment. The community nursing team must have sufficient information from the referring clinician to safely manage the administration of insulin or when supporting a person to self administer.
Prior to discharge from hospital the community nursing team will liaise with the Diabetes Specialist Nurses (DSN) or referring clinician regarding specific care goals for patients with multiple or complex needs. Following discharge from hospital a new Patient Medicines Administration Chart must be sent from the referring clinician.

Community nursing team diaries or patient data forms used to allocate work to members of the team should clearly identify the frequency of administration of insulin and/or other health care needs i.e. capillary blood glucose monitoring. Community nursing staff must check the base diary in the morning and afternoon to verify the patients requiring visits have been allocated appropriately.

Where patients have unstable capillary blood glucose levels, if appropriate refer to Wirral Admission Prevention Service (WAPS) for shared care and monitoring of capillary blood glucose levels i.e. outside normal community nursing hours. Where there is shared care between Community nursing services and WAPS, care planning and care interventions must be detailed in the care plan. Any changes detailed in the patient’s care plan following advice from the patient’s General Practitioner or Diabetes Specialist Nurse must be communicated as soon as practically possible to all professionals who are involved in the patient’s care.

CARE PLAN

The patient’s care plan should be patient focused and clearly reflect the patient’s needs regarding the management of their diabetes. The care plan should include:
- The type and frequency of insulin prescribed
- The type of insulin administration device or ‘pen’ and a copy of the manufacturer's instructions.
- The preferred injection sites, ie. Abdomen or thighs
- A system of recording rotation of injection sites
- Observation of the injection sites for lipohypertrophy
- The frequency of capillary blood glucose testing
- Target blood glucose level/range, including the management of hypoglycemia and hyperglycemia. A record that the patient/carer has been advised to have a supply of rescue foods or drinks if applicable
- The management of blood glucose levels during concurrent illness i.e. ‘sick day rules’
- Names and contact details of Diabetic Specialist Nurse or General Practitioner
- The planned review date of the care plan.

A copy of the manufacturer’s instructions for devices must be kept in the patient health records.
The care plan must be updated at least every six months or as indicated by the patient’s changing health care needs. Prior to any potential interventions being carried out the care plan must be read and care to be given verified by the patient. Nurses must check that insulin has not already been given prior to administration by checking the Record of Treatment. Any change in the patient’s insulin prescription will require the Patient’s Medication Administration Chart (PMAC) to be updated to avoid medication errors. The Record of Treatment document must be completed following the administration of insulin.

HYPOGLYCEMIA
Hypoglycaemia is indicated when the capillary blood glucose falls below 4.0 mmols/l.

**Signs and symptoms**

<table>
<thead>
<tr>
<th>Excessive sweating</th>
<th>Blurred vision</th>
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</thead>
<tbody>
<tr>
<td>Faintness</td>
<td>Personality/ mood change</td>
</tr>
<tr>
<td>Paleness</td>
<td>Hunger</td>
</tr>
<tr>
<td>Headache</td>
<td>Irritability</td>
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<tr>
<td>Tingling lips</td>
<td>Lack of concentration</td>
</tr>
<tr>
<td>Pounding heart</td>
<td></td>
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<tr>
<td>Difficulty awakening</td>
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**Treatment**

Initially give 15 to 20g of quick acting carbohydrate of the patients’ choice by mouth in liquid or solid form as soon as possible

Some examples are:
- 3-4 teaspoons of sugar dissolved in water
- 6 sugar lumps
- Gluco gel® (formerly known as Hypostop gel®: glucose 10g/25g oral per tube)
- Lucozade non diet 90-120mls (preferable in renal patients)
- Coca cola® non diet 90mls-120mls
- 150-200mls pure fruit juice e.g orange
- Ribena® Original 15mls diluted with water to taste
- Glucose tablets(Glucotabs®), 4-5 tablets as tolerated or 5-7 Dextrosol® tablets
- Repeat capillary blood glucose test 10 to 15 minutes later. If blood glucose levels remains below 4.0 mmol/l repeat above for maximum of 3 cycles

After initial treatment, a snack providing sustained availability of 10 to 20g of carbohydrate can prevent blood glucose levels falling again.

Some examples are:
- one slice of bread or toast,
• 200-300 mls milk (not soya)  
• 2 biscuits  
• the next meal if it due- which must contain carbohydrate  

If no improvement or if patient deteriorates dial 999  


When blood glucose level has reached target range of 4-7 mmols ascertain possible cause of hypoglycaemia. If patient is well, continue to administer insulin as prescribed. Contact General Practitioner for further advice if patient is unwell. Document advice and interventions given in the patient’s health records. Refer patient to WAPS team if further monitoring of patients condition is required.  

**DIABETIC KETOACIDOSIS**  

Diabetic Ketoacidosis (DKA) is a complex metabolic disorder, characterised by hyperglycaemia. Hyperglycaemia can be due to insufficient insulin and/or ill health. Due to the lack of glucose entering the cells, fatty acids are metabolised resulting in ketones in the blood (ketonaemia). The blood pH becoming acidic (acidosis). The body attempts to rid the blood of ketones by excretion in the urine (ketonuria). Glucose is also excreted in the urine (glycosuria)  

Patients should be treated in hospital **urgently** for the correction ketonaemia, hyperglycaemia, and acidaemia.  

**Signs and symptoms**  
Increased thirst (polydypsia)  
Large amounts of glucose in urine (glycosuria)  
Large amount of ketones in the urine (ketonuria)  
Nausea and vomiting  
Weakness, abdominal pains, generalised aches  
Skin becomes dry  
Blurred vision  
Heavy laboured breathing with acetones on breath  

**Treatment**
• Test urine for ketones and capillary blood glucose level and record in health care record
• Encourage patient to drink fluids such as water or sugar free drinks as tolerated
• Contact GP, GP out of hours or Diabetic Specialist Nurse if under the care of the consultant urgently for advice
• If patient deteriorates suddenly dial 999
• Document advice and interventions given in the patients health care records.

Diabetic Ketoacidosis can occur in any patient who relies on insulin to manage their diabetes. The condition is most likely to develop during concurrent illness, especially if the patient has nausea or vomiting. Never stop insulin during illness unless on the advice of a clinician.

In patients experiencing frequent episodes of hypoglycaemia or hyperglycaemia, refer to care plan for further actions and consider increase in frequency of capillary blood glucose testing. Also consider referral to GP or Diabetes Specialist Nurse if under the care of the hospital consultant as appropriate for review.

HYPEROSMOLAR HYPERGLYCAEMIC STATE

(Previously referred to as HONK-hyperglycaemic hyperosmolar non-ketotic coma).

Hyperosmolar Hyperglycaemic State (HHS) occurs only in people with Type 2 diabetes, who may be experiencing very high blood glucose levels (often over 40mmol/l). It is characterised by hyperglycaemia, hyperosmolarity and dehydration. It does not usually lead to the presence of ketones in the urine, as occurs in ketoacidosis. It can develop over a number of weeks through a combination of illness, dehydration and an inability to take normal diabetes medication due to the effect of illness.

Symptoms
• Frequent urination (polyuria)
• Thirst
• Dry skin
• Disorientation and, in later stages, drowsiness and a gradual loss of consciousness.

Treatment
HHS is a potentially life-threatening emergency. Patients must be treated in hospital urgently.

• Test patients capillary blood glucose level and document in patients health care record
• Contact GP, GP out of hours or Diabetic Specialist Nurse if under the care of the consultant urgently for advice
• If patient deteriorates suddenly dial 999
• Document advice and interventions given in the patients health care records
Hospital treatment for HHS involves replacing the lost fluid caused by high glucose levels and the administration of insulin through a vein, to reduce the blood glucose to an acceptable level.

**CAPILLARY BLOOD GLUCOSE MONITORING**

The frequency of blood glucose monitoring for patients on insulin will be determined by clinical assessment of need and may need to be adapted when:

- There has been a change in treatment for diabetes
- The patient has an infection or is acutely unwell.
- The patient has undergone trauma either accidental or surgical.
- The patient is pregnant
- Patients are on steroid therapy
- There is poor glycaemic control
- Medication is omitted or missed
- There is a reduced level of activity
- There is a reduced food intake

**TARGETS**

Adults with Type 1 diabetes (NICE 2004)

- Before meals: 4-7mmols/L
- 2 hours after meals: less than 9mmols/L

Type 2 diabetes (NICE 2008)

- Before meals: 4-7mmol/L
- Two hours after meals: less than 8.5mmols/L

For patients whose diabetes is stable, on unchanged treatment, testing capillary blood glucose is recommended four times a day (pre-meals and pre-bed) on two days per week. (Home Blood Glucose Monitoring for Patients with Diabetes 2007)

However, in the community twice daily testing (pre-breakfast and pre-tea) on 2 days per week is acceptable.

**INJECTION SITES**

Best practice is to vary areas for injecting insulin to avoid lipohypertrophy. The recommended sites for insulin injection are the

- lower abdomen
- upper outer thighs
- buttocks
• upper arms
  For example if the thigh is the preferred site, ensure injections are rotated within this area.

Insulin absorption is fastest in abdomen and slowest in thigh and buttocks, therefore short-acting insulin is best given into the abdomen and long acting into the thigh. Do not inject into any areas of lipohypertrophy as this causes erratic blood glucose levels. Use one new needle per injection.

Patient’s preference should be considered when changing the site for insulin administration. Document in the record of treatment the site used, when site has been changed and reason for the change.

If patient’s preference for site of injection does not concur with best practice, explain the risks to the patient and document in their records. Seek further advice from the referring clinician if required.

Insulin injection should be made into the deep subcutaneous fat. To achieve this, needles of a length appropriate to the individual's weight and fat distribution should be made available. (BD Diabetes) [www.bd.com/uk/diabetes](http://www.bd.com/uk/diabetes) for further advice on needle lengths

**RISK FACTOR SURVEILLANCE**

Patients should receive an annual review of their diabetes with quarterly or six monthly follow up reviews to screen and manage risk factors associated with diabetes. Liaise with the patient’s General Practitioner, Community Matron or Diabetes Specialist Nurse, Optician and Podiatrist to ensure patient receives timely and appropriate screening.

**POLICIES, PROCEDURES AND STANDARD OPERATING PROCEDURES**

This protocol is to be used alongside related NHS Wirral policies, procedures and standard operating procedures as relevant, accessed via the NHS Wirral intranet

**INCIDENT REPORTING**

Clinical incidents or near misses must be reported and an Incident Form must be completed i.e. if a wrong dose is given, or wrong device used, omitted patient visit and ‘near misses’.

**MISSED VISITS**

**Action**

- Ascertain when patient last received their insulin and when they have last eaten
- Inform patient /carer that a nurse will visit immediately
• Check in the patient home records that insulin has not been administered
• Take capillary blood glucose reading and document result in patient health records.
• Contact General Practitioner (GP) or GP out of hours or Diabetes Specialist Nurse (if under the care of the consultant) at Wirral Hospital University Trust for advice regarding the administration of insulin.
• Document advice in patients health records
• If required, arrange further follow up visits for capillary blood glucose monitoring and general assessment of patient’s condition
• Contact the Wirral Admission Prevention Service (WAPS) if patient requires a visit in the evening
• Inform line manager within the same working shift and complete an incident form.

FAILED VISITS

If a nurse fails to gain access to a patient’s home, the nurse would need to consider the following options:

• An appointment time had been agreed with the patient
• Check with senior nurse the patient has not cancelled visit
• Nurse unable to establish contact with the patient
• Follow policy for “Failure to gain access for adults and children”
• Complete an incident form and inform manager

HOW PROTOCOL WILL BE MEASURED THAT IT IS BEING ACHIEVED

• Health records will demonstrate a current care plan, with evidence of valid consent and re-assessment of patients needs as required
• Health records will evidence partnership working with the patient to best manage their long term condition
• Health records will evidence partnership working with the referring clinician, and updates on patient’s progress as required
• Health records will demonstrate all correct administration of medicines forms have been used

CONSULTATION AND ADVICE FROM:

• Clinical Policy and Procedure Review Group
• Diabetes Modernisation Team
• Diabetes Specialist Nurse, Wirral University Hospital Trust
• Community Matrons
• Diabetes Nurse
• Medicines Management Team
• Dietetic Service
REFERENCE
www.bddiabetes.co.uk  Where to inject insulin? (accessed 11th march 2009)

British National Formulary (BNF) www.bnf.org

Diabetes UK  www.diabetes.org.uk

Home Blood Glucose Monitoring for Patients with Diabetes. Wirral Hospital NHS Trust and Wirral Primary Care Trust. (2007)


The Hospital Management of Hypoglycaemia in Adults with Diabetes Mellitus. NHS Diabetes www.diabetes.nhs.uk  March 2010


Type 1 diabetes: diagnosis and management of type 1 diabetes in children, young people and adults. NICE Clinical Guideline 15 July 2004

Type 2 Diabetes National clinical guideline for management in primary and secondary care (update) NICE Clinical Guideline 28 May 2008