### PROCEDURE FOR BLOOD GLUCOSE MONITORING

<table>
<thead>
<tr>
<th>First Issued</th>
<th>Issue Version</th>
<th>Purpose of Issue/Description of Change</th>
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</tr>
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<tbody>
<tr>
<td></td>
<td>Two</td>
<td>To promote safe and effective blood glucose monitoring using Trust equipment</td>
<td>2015</td>
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**Named Responsible Officer:**

- Quality and Governance Service

**Approved by:**

- Clinical Policies and Procedures Group

**Date:**

- February 2012

**Section:**

- Diagnostics
  - D03

**Target Audience:**

- Community Nursing

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UNLESS THIS VERSION HAS BEEN TAKEN DIRECTLY FROM THE TRUST WEB SITE THERE IS NO ASSURANCE THIS IS THE CORRECT VERSION
## CONTROL RECORD

<table>
<thead>
<tr>
<th>Title</th>
<th>Procedure for Blood Glucose Monitoring</th>
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<td>To promote safe and effective blood glucose monitoring using Trust equipment</td>
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<td>A McGlory, Caroline Hewitt</td>
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## VERSION CONTROL RECORD

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<th>Status</th>
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<tr>
<td>Version 2</td>
<td>AM / CH</td>
<td>R</td>
<td>Guidelines for the monitoring and management of blood glucose in palliative patients on corticosteroids inserted.</td>
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PROCEDURE FOR BLOOD GLUCOSE MONITORING
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PROCEDURE FOR BLOOD GLUCOSE MONITORING

INTRODUCTION
Blood glucose monitoring is used to indicate when blood glucose is not within the normal range (4-7 mmol/litre). It is used to monitor and manage the treatment of both insulin-dependant diabetes mellitus and non-insulin-dependant diabetes mellitus.


TARGET GROUP
All registered nurses employed by the Trust, Assistant Practitioners and Nursing Auxiliaries who have successfully undertaken the specific unit within the NVQ Level 3 and who are required to monitor blood glucose as outlined in their job description.

TRAINING
It is essential that any member of staff undertaking blood glucose monitoring is competent in the use of the monitor. They must also have the underpinning knowledge to assimilate the results obtained and provide advice to the patient accordingly. Frequency of blood glucose monitoring will be dependent on the individual patient and their diabetes type and control.
An understanding that blood glucose analysis should only be used as a guide and a tool, with diagnosis and treatment decisions being based on confirmed laboratory results (DH 1996).
There is an online diabetes training course for the safe use of insulin which is mandatory for all staff who prescribe or administer insulin. To get started type the following into any search engine. http://www.healthcareea.co.uk/nhsdiabetes

RELATED POLICIES
Please refer to relevant Trust policies and procedures.

CONSENT
Valid consent must be given voluntarily by an appropriately informed person prior to any procedure or intervention. No one can give consent on behalf of another adult who is deemed to lack capacity regardless of whether the impairment is temporary or permanent. However such patients can be treated if it is deemed to be within their best interest. This must be recorded within the patient’s health records with a clear rationale stated at all times. Refer to Trust Consent Policy for further information and guidance.

QUALITY CONTROL
Any blood glucose monitor used by a member of staff must have undergone the appropriate quality control testing prior to use.
INTERNAL QUALITY CONTROL

- Always use both quality control solutions
- Apply 1 drop of Solution 1 to test strip and document result obtained in quality control book (one book per meter; these books must be kept for 11 years)
- Repeat for Solution 2
- Check that results are within agreed limits as stated on test strip container – do not use machine if results are outside suggested parameters
- The quality control solutions last for 3 months from date of opening
- Date both bottles with the 3 month expiry date

When to carry out procedure:
- Prior to use each day
- Monthly if the machine is not in use
- When starting a new pack of test strips
- After changing meter batteries
- After an unexpected result – to check technique
- To check performance of meter and strips
- If the meter has been dropped

EXTERNAL QUALITY CONTROL
External quality control would be carried out four times a year using sample control solutions coordinated by the community nursing office. Results from external quality control testing must be submitted for each machine when requested.

There is a requirement to monitor the quality of the results of the device and the person operating it. This is both a hospital and a Government directive.
N.B. The external quality control procedure must not be the responsibility of a single practitioner; all team members must participate in carrying out this procedure as this also tests the technique of the tester.

It is the responsibility of the caseload manager/team leader to ensure there are systems in place to monitor compliance with this procedure and provide evidence this is in place, should there be a need to track external quality controls.

METER CODING
Before the meter is used for the first time, and with each new box of test strips, the meter must be set to ‘match’ the strips in use. This process is referred to as ‘coding’.

Coding Process

1. Ensure the meter is turned off. Turn meter over so you are looking at the back. Remove old Code Key if one is installed (Code key is in the vial of test strips)
2. Insert new Code Key until it snaps into place
3. Turn meter ON. A 3-digit code number appears. This number must match the code number on your vial test strips. If it does not, repeat step 1.
4. FREQUENCY OF CAPILLARY BLOOD GLUCOSE MONITORING FOR PATIENTS USING INSULIN THERAPY

Patients using insulin may need to adapt the frequency of their blood glucose testing due to numerous factors.

These include:-

- concomitant illness
- pregnancy
- following a change in treatment
- occupational factors such as driving
- If treatment includes tablets such as steroids
- poor glycaemic control

For patients who are stable it is recommended to routinely test blood glucose four times a day (pre-meals and pre-bed) on two days per week. (Wirral PCT 2007 Home Blood Glucose Monitoring for Patients with Diabetes).

Frequency will be determined by clinical assessment of need. Where there is shared care between day community nursing services and the night community nursing service, there needs to be a clear action plan for linking with the Diabetic Nurse Specialist should the clinical need arise.

Hyperglycaemia is a recognised side effect of corticosteroid therapy, in both diabetic and non-diabetic patients. It is therefore important to monitor blood glucose levels in all palliative patients on the Community Nursing caseload receiving corticosteroid therapy.

If the patient and informal carer/family member is unable to perform the blood glucose monitoring procedure, patients who have a palliative diagnosis on the Community Nursing caseload will have their blood glucose levels tested by the Community Nursing Service when they are commenced on corticosteroids whether they are diabetic or non-diabetic. As a minimum, patients should have their blood glucose levels monitored at day 2, day 7 and day 14 from the date when the patient started to take the medication. Please refer to Merseyside and Cheshire Palliative Care Network Audit Group Guidelines for the monitoring and management of blood glucose in patients on corticosteroids (Appendix 1). Community Nursing staff are to refer back to the patient’s General Practitioner for further treatment according to the guidelines when required.

PRIMARY CARE ASSESSMENT UNIT

The Accuchek System Inform 11 is used within the Primary Care Assessment Unit. Calibration of this system is maintained by Wirral University Teaching Hospital (WUTH) within the clinical chemistry laboratory. Checking of the machine must take place on a daily basis at ward level. It is the responsibility of the nurse in charge of the early shift to co-ordinate the routine daily checks as per manufacturer’s instructions.

Strips for the system are ordered from WUTH pharmacy and are delivered on a weekly basis. Staff do not need to independently input the strip codes into the machine as this will be automatically inputted by WUTH pharmacy.
The replacement daily check solution will be delivered by the clinical chemistry laboratory and only those trained and who have an allocated individual code can use the Accuchek System Inform 11. Under no circumstances can individuals give other staff their code.

Patients’ identities are scanned into the system via the patient’s name band, or alternatively, the patient’s name can be inputted into the system. Whilst taking the blood glucose sample, trained staff should follow the guidelines and the manufactures instructions. Results are automatic and can also be reviewed in the clinical chemistry laboratory.

The Accuchek System Inform 11 machine must be cleaned as per manufactures guidelines and returned to base for re-charging. The system remains on charge at all times. Trust staff are to contact the clinical chemistry laboratory if any problems become apparent.

**BLOOD GLUCOSE MONITORING PROCEDURE**

**Equipment Required**
- Blood glucose monitor
- Quality Control / Patient record book
- Test Strips
- Finger prick device and single use lancets
- Quality control solution
- Gauze swabs
- Single use disposable apron
- Single use disposable non sterile gloves
- Yellow lidded sharps container

<table>
<thead>
<tr>
<th>PROCEDURE</th>
<th>RATIONALE</th>
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</thead>
<tbody>
<tr>
<td>Explain procedure and obtain informed consent and document in patients nursing care plan</td>
<td>To allow the patient / client to make an informed decision and gain co-operation</td>
</tr>
<tr>
<td>Check that quality control test has been carried out that day – test machine if necessary</td>
<td>To ensure machine is functioning correctly</td>
</tr>
<tr>
<td>Advise patient to wash their hands prior to procedure – assist if necessary</td>
<td>To prevent sample contamination</td>
</tr>
<tr>
<td>Decontaminate hands prior to procedure</td>
<td>To reduce the risk of transfer of transient micro-organisms on the healthcare workers hands</td>
</tr>
<tr>
<td>Apply single use disposable apron</td>
<td>To protect clothing or uniform from contamination and potential transfer of micro-organisms</td>
</tr>
<tr>
<td>PROCEDURE</td>
<td>RATIONALE</td>
</tr>
<tr>
<td>-----------</td>
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</tr>
<tr>
<td>Apply single use disposable non sterile gloves</td>
<td>To protect hands from contamination with organic matter and transfer of micro-organisms</td>
</tr>
<tr>
<td>Prepare single-use disposable lancet device as per manufacturers instructions</td>
<td>To ensure correct use of equipment</td>
</tr>
<tr>
<td>Remove new test strip from vial, replace lid tightly</td>
<td>To prevent deterioration of remaining strips</td>
</tr>
<tr>
<td>Within 30 seconds, insert test strip (yellow window facing up) into test strip slot. The meter should turn on automatically</td>
<td></td>
</tr>
<tr>
<td>Check that current meter code and test strip code match</td>
<td>To ensure machine is calibrated to test strip</td>
</tr>
<tr>
<td>Using the lancet, obtain a blood sample from the side of the finger. Sites should be rotated if testing is frequent. Avoid using thumb or index finger. The finger may bleed without assistance, but may need ‘milking’.</td>
<td>Side of finger is a less painful site to use. Reduce the risk of infection from multiple puncturing and prevents areas from toughening. Less painful (most frequently used digits have a more sensitive nerve supply). Droplet needs to be of sufficient size to cover test pad.</td>
</tr>
<tr>
<td>Apply a drop of blood to the strip by holding the patient’s finger to the edge of the strip until the yellow window is completely filled with blood. DO NOT PLACE BLOOD ON TOP OF THE STRIP.</td>
<td>The blood will be drawn into the strip automatically. A bleep should be heard which indicates that the test is beginning.</td>
</tr>
<tr>
<td>If any part of the yellow window remains yellow after the initial drop of blood has been applied, a second drop of blood may be applied to the edge of the test strip within 15 seconds of the first drop.</td>
<td>If more than 15 seconds have passed, the test result may be erroneous and you should discard the test strip and repeat the test.</td>
</tr>
<tr>
<td>Dispose of used lancet into a sharps container</td>
<td>To reduce the risk of needle stick injury</td>
</tr>
<tr>
<td>Remove test strip from meter and switch meter off. On completion of procedure remove and dispose of PPE to comply with waste management policy. Decontaminate hands following removal of PPE.</td>
<td>To prevent cross infection and environmental contamination. To remove any accumulated transient and resident skin flora that may have built up under the gloves and possible contamination following removal of PPE.</td>
</tr>
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<tr>
<td>Clean blood glucose monitor in line with cleaning and disinfectant policy</td>
<td>Decontamination of medical equipment is essential to the effective delivery of patient care</td>
</tr>
<tr>
<td>Document all actions, observations and results (including consent and patient perceptions) in nursing records.</td>
<td>Ensure compliance with Nursing and Midwifery Council and local record keeping guidelines</td>
</tr>
<tr>
<td>If any clinical concerns regarding the management of blood glucose levels contact either:- <strong>• General Practice (GP)</strong> <strong>• Hospital consultant team</strong> <strong>• GP Out of Hours – in an emergency</strong></td>
<td>Contact GP Out of Hours in an emergency to seek medical advice.</td>
</tr>
<tr>
<td>Explain results to patient and any necessary action needed to change current treatment plan and by when, if required. Document all actions in patient’s record.</td>
<td>If possible, avoid using GP Out of Hours on a routine basis for ongoing advice, as this approach does not enhance continuity of care. If on going problems, the care plan needs to be reviewed with the expert advice of a specialist diabetic nurse</td>
</tr>
<tr>
<td>Patient to be fully informed of actions and any potential changes required to care plan in order to give informed consent.</td>
<td></td>
</tr>
</tbody>
</table>

**EQUIPMENT**

Blood glucose monitoring machines need to be calibrated on a daily basis to ensure efficient and reliability of results. External quality controls on blood glucose monitoring machines is carried out four times a year using sample control solutions and must be submitted for each machine; this is to further ensure efficacy of results.

**PRIMARY HEALTH CARE TEAM**

Liaise closely with General practitioners and/or Practice Nurse if diabetes care is being provided by the practice.

**SPECIALIST SUPPORT**

Contact Diabetes Specialist Nurse for advice and clinical guidance as required. Contact the team at Wirral University Teaching Hospital at Arrowe Park Site/Clatterbridge depending on the patients’ consultant.

**COMMUNICATION ACROSS DAY AND NIGHT COMMUNITY NURSING SERVICE**

Where both services are providing nursing care for patients with diabetes, there needs to be a detailed plan of how communication will be maintained, frequency of communication and how information is shared if any specialist diabetes nursing advice is sought to help maintain effective glycaemic control.
INCIDENT REPORTING
Clinical incidents or near misses must be reported and a Trust Incident Form must be completed.

SAFEGUARDING ADULTS
In any situation where staff may consider the patient to be a vulnerable adult, they need to follow Trust Safeguarding Policy and discuss with their Line Manager and document outcomes.

REFERRALS
Any referrals to health professionals, therapists or other specialist services must be followed up and all professional advice or guidance documented in the patient’s health care records.

EQUALITY ASSESSMENT
During the development of this procedure the Trust has considered the clinical needs of each protected characteristic (age, disability, gender, gender reassignment, pregnancy and maternity, race, religion or belief, sexual orientation). There is no evidence of exclusion of these named groups. If staff become aware of any clinical exclusions that impact on the delivery of care a Trust Incident form would need to be completed and an appropriate action plan put in place.

REFERENCES


Guidelines for the monitoring and management of blood glucose in patients on corticosteroids (Appendix One)

1. **Patient commenced on corticosteroids**
   - **Non-diabetic**
     - Capillary blood glucose (minimum 2, 7, 14 days)
       - CBG<7mmol
         - Patient asymptomatic
           - Monitor CBG weekly
         - Patient symptomatic
           - Consider fasting blood glucose to confirm diabetes (>7mmol/1)
           - Consider diet control / oral hypoglycaemics / referral to diabetic team. Monitor as required to optimise glycaemic control
       - CBG 7-15 mmol
         - Consider monitoring as per usual diabetic regimen (minimum weekly)
       - CBG>15 mmol
         - Review clinical need for steroid therapy
   - **Diabetic**
     - Monitor as per usual diabetic regimen (minimum 2, 7, 14 days)
       - CBG 7-15 mmol
         - Patient asymptomatic
         - Patient symptomatic
       - CBG>15 mmol
         - Review clinical need for steroid therapy
         - Consider increasing diabetic medications / discuss with diabetic team. Monitor as required to optimise glycaemic control

Merseyside and Cheshire Palliative Care Network Audit Group December 2009