CLINICAL GUIDELINE

Administration of Insulin by Injection and Blood Glucose/Ketone Monitoring for Community Nursing staff

A guideline is intended to assist healthcare professionals in the choice of disease-specific treatments.

Clinical judgement should be exercised on the applicability of any guideline, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following a guideline, it is good practice to record these and communicate them to others involved in the care of the patient.

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Important Note:

The Intranet version of this document is the only version that is maintained.
Any printed copies should therefore be viewed as 'Uncontrolled' and as such, may not necessarily contain the latest updates and amendments.

Administration of Insulin by Injection and Blood Glucose/Ketone Monitoring for Community Nursing staff

Guidelines and Procedures

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Contents

Introduction

The number of people with diabetes on insulin therapy is increasing, as both the population ages and people live with diabetes for longer. Within the community setting there are a group of patients who require to have their insulin injections administered by a Registered Nurse as, due to a variety of reasons, they are not able to self administer.

Scope

This guideline applies to all Registered Nurses working within the District Nursing Service in NHSGG&C who are required to undertake administration of insulin safely and in accordance with local policy in order to reduce the risks associated with administration of insulin.

Professional Accountability

As a registered practitioner you are accountable for your actions and omissions and must always be able to justify your decision making.
It is the responsibility of each practitioner to ensure competency in administration of insulin. Insulin must be administered by Registered Nurses in accordance with Nursing and Midwifery Council (NMC):

- NMC Code: Professional Standards of practice and behaviour for nurses and midwives (2015)
- Royal Pharmaceutical Society Professional Guidance on the Administration of Medicine in Healthcare Settings (Jan 2010)

Criteria

Patients living in the community (16 years and over) who are experiencing difficulties in administering their insulin independently should be assessed by the District Nurse and, where appropriate, referred to the Diabetes Specialist Nurse for additional support and advice.

Any changes to the patient's diabetes management should be clearly documented and communicated to all those involved in the care of that individual

Roles and Responsibilities

Responsibility for the procedure lies with the Registered Nurse undertaking the nursing intervention. The nurse must ensure that they are competent in the following before undertaking the procedure:

Understand and interpret:

- Direction to Administer Form
- Insulin Recording Form
- Insulin Management Plan (where relevant)
- Blood Ketone Management Plan (where relevant)

Knowledge of:

- Injection Sites including rotation of sites and signs of lipohypertrophy
- Rotation of injection sites
- Recognition and response to hyperglycaemia or hypoglycaemia
- Administering a subcutaneous injection
- The use of the District Nurses Blood glucose Dual meter Abbott Freestyle optimum Neo H to monitor blood glucose/ Ketone levels and interpret results (refer to blood glucose monitoring procedure or Ketone monitoring procedure)
- Internal Quality Assurance of blood glucose meters
- External Quality Assurance of blood glucose meters.
- Draw up the prescribed dose of insulin using the recommended safer sharp device i.e. Magellan syringe or BD AutoShield.
- Information/rationale that patients who are using a pen device should be recorded on CNIS as a risk **NB**: Any additional risk assessment should be completed.
- If a pen device is used then the nurse must have knowledge of how the pen device works. Pen device should only be used if insulin is unable to be supplied in vial or while teaching patient to use pen device.
- Disposal of sharps safely as per local policy
  (NHSGG&C Prevention and Control of Infection Clinical Waste Policy)
- Comply with Record Keeping Guidance (NMC Code) and NHSGGC Professional Standards for Record Keeping Policy
- Safe Use of Sharps in Healthcare Policy & Guidance for managers and staff (2017)

Scheduled Visit(s) to Administer Insulin

All patients requiring insulin administration by District Nurse will have their visit(s) scheduled on CNIS. On patient details screen, the nurse must trigger tab: Nurse Administers Insulin. This visit is then clearly flagged on visit page and in team schedule. Patients who require administration of insulin by the district nurse will have their visits recorded in blue.

Time of Insulin administration must be recorded e.g. 9 am

Insulin type or dose must not be recorded on scheduled visit – should state administration of insulin as per insulin management plan or direction to administer form.

Procedure

- Explain procedure to the patient
- Ensure documentation (Insulin Management Plan (IMP), Direction to Administer Form, Insulin Recording Chart, Blood Ketone Management Plan) is completed correctly; instructions are clearly legible and unambiguous prior to insulin administration.
- Check the name of the insulin and dose against the IMP, Direction to Administer Form, Blood Ketone Management Plan.
- Confirm the identity of the patient prior to administering the insulin.
- Check expiry date of insulin
- Record date on new vial when first opened as this will remain viable for 1 month out with a fridge.
- Discard vial after this time has expired and note date on Insulin Recording Chart
- Check the insulin recording chart to ensure insulin has not already been administered by someone else. And consult patient if it is possible other family members may have administered insulin.
- Clean hands and put on gloves
- Check patient's blood glucose level using nurse's blood glucose meter and record the result on Insulin Recording Chart prior to administering insulin.
- Advise patient of correct storage of insulin.
- Record the batch number of insulin on Insulin Recording Chart when new vial is opened.
- Complete Insulin Recording Chart

Administration of Insulin by Registered Nursing Staff

Identification of insulin

Is insulin available in vials?

If Yes
- follow procedure for administration of insulin with insulin syringes

If No
- follow procedure for administration of insulin by pen device

Where insulin is to be administered by a Registered Nurse the use of a vial and syringe is the preferred method. A pen device may be required if insulin prescribed is not available in a vial.

Pre–meal analogue insulin is rapid acting and the person with diabetes requires to eat immediately after insulin administration.

NB:

- Insulin concentrations may vary with some having the addition of GLP-1 **Under no circumstances** should these products be withdrawn from the pen device with an insulin syringe as the wrong concentration of medication will be given. These products are device specific

- **Under no circumstances** withdraw insulin from a cartridge or pre-filled pen using a needle and insulin syringe. This contaminates the insulin and interferes with accurate dose determination using the pen device and can cause the cartridge to shatter.

- Insulin **must not** be drawn up in an insulin syringe or dialled up and stored in advance of the procedure

Equipment Required

The recapping of needles or re-sheathing of other types of sharps are a known cause of injury in the health care setting and recapping must not be done.

NB: Refer to Safe Use of Sharps in Healthcare Policy and Guidance for Managers and staff (2017)

- Recommend Safer sharp Device i.e. Magellan syringe or BD AutoShield with Pen.
- Vial of insulin
- Gloves
- Hand Gel
- Sharps box
- Blood glucose Dual meter Abbott Freestyle optimum Neo H (refer to NHSGG&C Blood Glucose Monitoring Protocol)
- Needle removing device / refer to risk assessment

Procedure:

Injection Site / Injections

- Select injection site – remember to rotate sites and never use same site for consecutive injections Site should be recorded in patient record
- Inject into clean skin
- Insulin should be injected into subcutaneous tissue or soft fat but not muscle.
  NB Not recommended to inject insulin into patient's upper arms as there may be less subcutaneous fat present
- To avoid intramuscular injection, evidence suggests that raising the skin for thin patients is best practice
- Alcohol wipes are not recommended. Alcohol is an astringent and can make the injection more painful as well as hardening the skin
- Hold the insulin syringe in place for a count of 10 to ensure that the insulin disperses from the site of the injection
- Dispose equipment as per safe disposal of sharps policy (NHSGGC Prevention and Control of Infection Policy, Standard Operating Procedure)

Preparing Insulin Syringe

- For Neutral Protamine Hagedorn (NPH) (cloudy) and pre-mixed insulin, invert the vial of insulin backwards and forwards and roll gently between your hands approximately 10 times to ensure insulin is well mixed. DO NOT SHAKE VIAL
- Take the insulin syringe and pull back the plunger to measure the amount of air equivalent to the amount of insulin to be drawn up. Expelling air into the vial prior to an injection creates a vacuum and makes it easier to draw out the insulin
- With the vial standing upright, insert the needle straight through the centre of the rubber cap of the insulin vial and push the plunger down
- Turn the vial upside down. Ensure the point of the needle inside the vial is well beneath the surface of the insulin to avoid unnecessary air bubbles.
- Pull back the plunger until you have measured slightly more than the prescribed dose of insulin.
- Flick or tap any air bubbles to the top of the insulin syringe then push the plunger back to the desired dose expelling the bubbles into the vial.
- Remove the needle from the vial and recheck dose drawn up
- Syringes are for single use only
- Insulin syringe and needle should be disposed of directly into sharps box to avoid needlestick injury

Preparing Pen Device

NB: Safety needles must be used for long term nurse administration where the prescribed Insulin is not available in a vial. If patient administering their own insulin via pen under instruction/ education of nurse they must use a non-safety needle. Patient must also remove own needle.

- Attach a pen needle to pen device. Pen needles come in a range of sizes (4mm to 8mm)
- If using NPH and pre-mixed insulin, invert the pen backwards and forwards 10 times and gently roll the pen between your hands approximately 10 times. The insulin should look evenly mixed.
- Prime the device by dialling up 2 units of insulin. Point pen upwards and depress injector button. Ensure insulin is expelled from needle-repeat priming process if no insulin seen.
- If no insulin is expelled form needle then change needle and repeat above.
- Once flow of insulin is verified, dial up dose of insulin and administer.
- Pen devices are patient specific and should not be shared.
- Pen needles should be used once only and then removed – do not resheath needle

Storage

Unopened insulin vials/cartridges should be stored in the main body of the fridge.
If stored in this way the insulin remains useable up until its expiry date.
Insulin in use should be stored at room temperature and away from direct heat
Partly used insulin pens should never be returned to the fridge to be reused. They must be discarded if no longer required

Safe Disposal of Sharps

As per local NHSGG&C policy (NHSGG&C Clinical Waste Policy – Sharps disposal in the home setting - designated sharps box conforming to BS 7320).

Blood Glucose Monitoring Procedure

The registered nurse must be competent in the use of his/her Dual meter Abbott Freestyle optimum Neo H blood glucose meter. The registered nurse is accountable for the delegation of any aspects of the procedure.
Patient's blood glucose **must** be checked prior to administration of insulin.

Equipment

- Dual meter Abbott Freestyle optimum Neo H (quality controlled)
- Sharps bin
- Blood glucose test strips
- Nitrile gloves if required
- Hand Gel
- Single use sampling lancet

Procedure

- Explain procedure to patient
- Ensure meter has both external and internal quality control (QC) performed.
- Internal quality control should be
    - daily if in use for more than one patient
    - if used **infrequently** should be quality controlled weekly
    - when new vial of strips started,
    - in extremes of temperature,
    - if meter dropped
    - if you have repeated unexpected blood glucose results or
    - suspect that either the meter or strips are not working properly(contact customer care)
    - opening a new bottle of QC solution
- NB meter should be QC at least once a week
- QC results should be noted in the nurse's monitoring diary and the diary kept for 3 years
- When opening a new QC solution record the date on the bottle and discard solution after 90 days
- Ensure patients hands are clean and free from contaminants
- Clean own hands and put on gloves
- Where the meter requires coding ensure the code number on the meter display matches that on the test strip and check expiry date on the test strips
- Insert test strip into the meter
- Use single use sampling device
- Obtain blood sample from the side of the finger excluding forefinger and thumb.
- Do not apply excessive pressure to lanced site as this can dilute sample with tissue fluid
- Take the strip to the blood and allow blood to be absorbed by strip
- Wait until meter displays blood glucose reading before wiping away any blood from the patient's finger
- Remove and safely dispose of test strip from the meter
- Discard single use sampling device in sharps bin
- Remove gloves clean hands
- Document result in patients notes

Interstitial Fluid Glucose Monitoring Systems

The current insulin administration clinical guideline governed by NHS GG&C which provides guidance and support to Community Nurses whilst caring for housebound patients in their own home, states capillary blood glucose (cBG) monitoring prior to insulin administration must be obtained by finger prick. In certain circumstances, patients may have been provided with an Interstitial Fluid Glucose Monitoring System (IFGMS) but require support from the Community Nursing service in administering their insulin. In these circumstances, such devices may be used to obtain patients' interstitial glucose levels prior to insulin administration. Further information on available devices and educational resources can be found via the **Community Nursing Website**.

Considerations should be taken to ensure the following:

- Appropriate staff training must be completed on **the specific** IFGMS **prior** to staff use.
- Staff must deem themselves competent to safely use the selected IFGMS prior to use.
- The user must know each device's limitations to provide an accurate glucose result when hypoglycemia/hyperglycemia is suspected and revert to performing a capillary blood glucose finger prick test to enable safe management of patients' diabetes.
- A robust individual patient care plan must be in place when using Interstitial fluid glucose monitoring devices.
- Awareness of and adherence to locally agreed escalation protocols.
- Patients must be informed by staff and agree to the possibility of them requiring a capillary blood glucose fingerpick test in certain situations.
- All staff checking a patient's glucose level by cBG fingerprick or IFGMS's should have accessed training on the management of hypoglycemia and a printed copy of the GG&C hypoglycemia guidance placed in a patient's held record.
- All staff checking a patient's glucose level by cBG fingerprick or IFGMS's should have accessed training on the management of hyperglycemia and ketone management.
- Any new identified risk should be discussed with local Nurse Team Leader immediately.
- Staff should only use this information for the purposes of checking glucose levels prior to administering insulin.
    - Patients who wish to share information from these devices with healthcare professionals during a home visit must be made aware that they maintain responsibility for any results out-with this time.
    - External data sharing between patients and community district nursing staff using these devices is currently prohibited.

Ketone Monitoring Procedure

The registered nurse must be competent in the use of his/her Dual meter Abbott Freestyle optimum Neo H blood glucose meter including the Ketone monitoring function. The registered nurse is accountable for the delegation of any aspects of the procedure.

Patient will have been supplied by the HSCP their own Dual meter Abbott Freestyle optimum Neo H to be used in house to check ketones as per Ketone Management Plan.

This process is only for patients who are on a Ketone Management plan. The monitor provided to the patient by the HSCP is to be returned if no longer in use, as it belongs to HSCP. Patient held meter to be registered to caseload holder for external quality assurance. It is the responsibility of the caseload holder to ensure external quality control is carried out and documented.

Equipment

- Dual meter Abbott Freestyle optimum Neo H (quality controlled)
- Sharps bin
- Ketone Meter test strips
- Nitrile gloves if required
- Hand Gel
- Single use sampling lancet

Procedure

- Explain procedure to patient
- The Dual meter Abbott Freestyle optimum Neo H will be supplied to the patient for their exclusive use from HSCP.
- Ensure meter has both external and internal quality control (QC) performed.
- Quality Control is the responsibility of the patient's caseload holder.
- Internal quality control should be:
    - This meter must be internal quality controlled prior to any use
    - If meter used **infrequently**, must have weekly internal quality control and documented on CNIS.
    - When new vial of strips started,
    - In extremes of temperature,
    - if meter dropped
    - if you have repeated unexpected Ketone results or
    - suspect that either the meter or strips are not working properly(contact customer care)
    - opening a new bottle of QC solution
- QC results should be noted in the monitoring diary which is patients held and should returned with monitor at end of episode of care and the diary kept for 3 years
- When opening a new QC solution record the date on the bottle and discard solution after 90 days
- Ensure patients hands are clean and free from contaminants
- Clean own hands and put on gloves
- Where the meter requires coding ensure the code number on the meter display matches that on the Ketone test strip and check expiry date on the test strips
- Ketone Strips can be ordered via Pecos or as part of repeat prescription via GP

- Insert test strip into the meter
- Use single use sampling device
- Obtain blood sample from the side of the finger excluding forefinger and thumb.
- Do not apply excessive pressure to lanced site as this can dilute sample with tissue fluid
- Take the strip to the blood and allow blood to be absorbed by strip
- Wait until meter displays Ketone reading before wiping away any blood from the patients finger
- Remove and safely dispose of test strip from the meter
- Discard single use sampling device in sharps bin
- Remove gloves clean hands
- Document result in patients notes
- Patient to be given advice on correct storage of meter i.e. dry place, not exposed to extremes of temperature and not to drop.
- The Dual meter Abbott Freestyle optimum Neo H in the patient home is only to be used for Ketone results. District nurse to use own meter when checking blood glucose.

Insulin Management Plan (IMP) - Patient Specific Direction (PSD) Guidelines

This guideline is for patients who are on either a once daily or twice daily insulin regime only. Patients who are not on an IMP/PSD will continue to have their insulin prescribed on a "Direction to Administer Form."
The plan improves patient care by providing flexibility in dose administration, improving glycaemic control and addressing patient safety issues e.g. hypo management.

Who will initiate the IMP/PSD

- The IMP should only be initiated by the Diabetes Specialist Nurse (DSN) following referral from the District Nurse (DN) or General Practitioner (GP).

Who should be on an IMP/PSD?

- Any patient who is District Nurse dependent and who has been assessed by the DSN as benefiting from the plan.

Exclusion Criteria

- Patients on a basal bolus insulin regime.

Documentation Required

- Either a once or twice daily IMP as appropriate. This should be signed by both the DSN and GP.
- Insulin Recording Chart - should be double sided

How to use IMP/PSD

- Check documentation is complete and signed by GP and DSN.
- Check documentation and patient match.
- Check insulin matches prescribed insulin. Nurses administering insulin should use an insulin syringe.
- Pen devices should be discontinued if patient unable to administer insulin independently and patient transferred to vial and syringe if available.
- If insulin only available via pen device, nurse should be competent in using the device
- NEVER withdraw insulin from pen device using a syringe.
- Check Batch Number, expiry date and record on the Insulin Recording Chart.
- Date of opening the vial should be recorded on the vial.
- Check blood glucose (BG) levels as per IMP document and review with previous documented BG levels on Insulin Recording Chart.
- Refer back to IMP - if no change is required in prescribed insulin dose, administer insulin
- If change is required - refer to IMP for instruction re dose adjustment.
- If insulin dose adjustment is required – document this information on Insulin Recording Chart within the Comments Box (using the words increased or decreased).
- Administer adjusted dose of insulin recording your actions in the Insulin Recording Chart.

If the dose has been adjusted – how to proceed.

- Now use the IMP based on the newly prescribed dose of insulin.

KETONE MANAGEMENT PLAN - Patient Specific Direction (PSD) Guidelines

This guideline is for patients with Diabetes who are presently on an IMP (Insulin Management Plan) and who may require additional support to manage their diabetes.
The plan is specific to the patient's needs and is providing additional management in relation to ketones aiming to prevent the need for hospital admission due to Diabetic Ketoacidosis (DKA).
The plan should only be implemented following discussion with the Consultant and District Nursing Team involved in the patient's care.

Who will initiate the plan?

- The ketone management plan should only be initiated by the Diabetes Specialist Nurse (DSN) following consultation with the patient's Consultant or GP.

Who should be on ketone management plan?

- Type 1 patients or Type 2 Pancreatic patients whom are already on an IMP who require additional support from District Nursing staff to try to prevent the development of DKA and the need for hospital admission. (This would be done with support from the DSN and agreement/ Signature of Consultant or GP).

Exclusion criteria

- Type 2 patients who does not have pancreatic complications.
- Type 1 patient not on an IMP

Documentation required

- Ketone management plan. This should be signed by the DSN and GP or Consultant
- IMP
- Insulin Recording Chart

Additional Insulin

- Novorapid: either vial or flexpen depending if patient on vial or pen device

Additional equipment

- Blood ketone meter (should be in patients house)
- Blood ketone strips
- Monitoring Diary in patient house.
- Red Pen

How to use the Ketone Management Plan/PSD

- DSN to discuss implementation of plan with District Nursing Staff and provide additional training as necessary
- Ensure all members are familiar and able to use the ketone meter
- Check documentation is complete and signed by DSN and GP or Consultant
- Check documentation and patient match
- Check insulin matches prescribed insulin

- If patient's insulin administered via vial or pen device Novorapid should be dispensed in same format
- Check blood ketone levels and follow instructions as per Ketone Management Plan
- If correction dose of Novorapid insulin is required the dose should be documented on the Insulin Recording Chart in **RED**
- Encourage fluids 100-150mls per hour
- Blood glucose levels and ketone levels should be rechecked in 2 hours time.
- If ketones remain above 1.5 mmol/l an additional dose of insulin as per Ketone Management Plan should be administered and the patient referred to A&E immediately.
- Insulin is viable for 28 days once opened and stored out with a fridge. Discard after this time has expired and note date on Insulin Recording Chart
- See correction doses for Novorapid below for exemplar:

CORRECTION DOSES: Use NOVORAPID INSULIN – available in pen or vial form

10% total daily dose=
1/10th of total daily dose(over the previous 24hours)
Total up all insulin administered and divide by 10 to achieve 10% correction dose
SO.....

- patient on 20 units of Lantus – correction dose is 2 units of Novorapid insulin.

- patient on 35 units of Lantus – correction dose is 4 units of Novorapid insulin.

- patient on Humulin M3, 24 units with breakfast and 16 units with evening meal equals:

24 units +16 units = 40 units – correction dose is 4 units of Novorapid insulin.

20% total daily dose= 1/5th of total daily dose (over the previous 24 hours Total up all insulin administered and divide by 5 to achieve 20% correction dose
So ..... - patient on 20 units of Lantus – correction dose is 4 units of Novorapid insulin

- patient on 35 units of Lantus – correction dose is 7 units of Novorapid insulin.

patient on Humulin M3, 24 units with breakfast and 16 units with evening meal equals :

24 units +16 units = 40 units – correction dose is 8 units of Novorapid insulin

References

NMC Code: Professional standards of practice and behaviour for nurses and midwives (2015)

NHSGG&C Prevention and Control of Infection Policy, Standard Operating Procedures to reduce sharps injuries.

Control of Infection Manual – Management of Occupational and Non-Occupational Exposures to Blood Born viruses including needlestick injuries and sexual exposure: Section 4:1.

National Patient Safety Agency (2010) Rapid Response Report: Safe Administration of Insulin.

NHSGG&C Prevention and Control of Infection Clinical Waste Policy.

NHSGG & C Professional Standards for Record Keeping Policy

Royal Pharmaceutical Society Professional Guidance on the Administration of Medicine in Healthcare Settings (Jan 2010) review date 2023

https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Professional%20standards/SSHM%20and%20Admin/Admin%20of%20Meds%20prof%20guidance.pdf?ver=2019-01-23-145026-567

Safe Use of Sharps in Healthcare Policy & Guidance for Managers and staff (2017)

Link to Partnerships Health & safety page

http://www.staffnet.ggc.scot.nhs.uk/Partnerships/MHP/MHP%20Corporate%20Information/Policies/MHS%20Policies/GGC%2006%20Moving%20and%20Handling%20Policy.pdf

Write, imprint or attach label

Surname ……..

Forenames ……

Address ……

……

GP Practice……

CHI No ……

Gender

DOB ……

*** Record date vial opened on insulin vial***

INSULIN RECORDING CHART

Date	Time	Insulin (administer by sc route)	Dose		Site	Blood Glucose Recording				Batch No: Exp Date:	Batch No: Discard Date:	Signature	Comments: Highlight changes in insulin dose
						AM	AM	PM	PM				
				Units									
				Units									
				Units									
				Units									
				Units									
				Units									
				Units									
				Units									
				Units									

INSULIN RECORDING CHART

Date	Time	Insulin (administer by sc route)	Dose		Site	Blood Glucose Recording				Batch No: Exp Date:	Batch No: Discard Date:	Signature	Comments: Highlight changes in insulin
						AM	AM	PM	PM				
				Units									
				Units									
				Units									
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				Units									
				Units									
				Units									
				Units									
				Units									

MANAGEMENT OF HYPOGLYCAEMIA (blood glucose less than 4 mmol/L)

MILD

Patient conscious, orientated & able to swallow.
May experience shakiness, dizziness, pallor or sweating

- Check Blood Glucose (BG)

ACTION

If BG < 4 mmol/L give fast acting glucose (approx 15-20 grams)
4-5 Glucotabs or
5-7 Dextrosol tablets
170 ml s of Lucozade or
100 - 150 ml s of Coke (not diet)
150-200mls pure fruit juice
DO NOT USE CHOCOLATE
↓
Wait 10-15 mins & recheck BG
If BG < 4 mmol/lLrepeat treatment up to 3 times
If still hypoglycaemic call for ambulance. If ineffective, consider 1mg Glucagon IM* (once only)
↓
If BG > 4 mmol/L
Give long acting carbohydrate to maintain blood glucose level e.g. Slice of bread or 2 plain biscuits or next meal

MODERATE

Patient is conscious & able to swallow but may be confused, disorientated or aggressive

- Check Blood Glucose

ACTION

If BG < 4 mmol/L and co-operative give fast acting glucose as for mild treatment
If not capable or co-operative but can swallow give
1.5-2 tubes of Glucogel -squeezed into mouth between teeth and gums
↓
Wait 10-15 mins & recheck BG
If BG < 4 mmol/L repeat treatment up to three times. If ineffective consider
1mg Glucagon IM* (once only)
If still hypoglycaemic call for ambulance
↓
If BG > 4 mmol/L
Give long acting carbohydrate eg Slice of bread or 2 plain biscuits or next meal.

SEVERE

Patient unconscious/fitting or very aggressive or nil by mouth

- Check Blood Glucose

ACTION

Check A B C
And summon assistance urgently
↓
Place patient in recovery position.
If BG < 4 mmol/L give 1mg Glucagon IM*
Wait 10-15 mins &recheck BG.
If still hypoglycaemic repeat treatment if able to.
↓
IF NO RESPONSE WITHIN 10 MINS must CALL 999
↓
If BG > 4mmol/l and patient is conscious, give fast acting glucose as for mild treatment and follow up with long acting carbohydrate eg 2 slices of bread or 4 plain biscuits or next meal.

***Glucagon May take up to 15 minutes to work and may be ineffective in undernourished patients, in severe liver disease and in repeated hypoglycaemia**
DO NOT USE in oral hypoglycaemic agent –induced hypoglycaemia.
**** If IM Glucagon has been used give 40mg carbohydrates. Refer to recommendations for Glucagon administration**

Patient Specific Direction	**Insulin Management Plan – Once Daily**	
Name:	**CHI No:**	**DOB:**
Address:	**Target blood glucose levels:**	**Frequency of monitoring:**
Type of diabetes:	**Insulin:**	
Allergies:	**Any other information:**	
Blood Glucose	**Action**	
… ..... mmol/l	No action required	
Less than …… mmol/l on …… consecutive readings pre- insulin	Reduce insulin by …… units	
Greater than …… mmol/l on …… consecutive readings pre-insulin	Increase insulin by …… units	
Greater than …… mmol/l **and unwell**	Check urine for ketones. If negative, continue with above advice. If small ketones increase by …… units. Discuss with DSN/GP Ensure adequate fluids and diet taken. **Moderate to large ketones – Increase insulin by …… units** **Contact DSN/GP immediately or if out of hours NHS 24 Tel No: 111** **Immediate medical intervention is required.** **Ensure patient is eating and drinking adequately.** **DO NOT WITHHOLD INSULIN – EVEN IF VOMITING.**	

- **Insulin doses should not be adjusted on a daily basis unless patient is unwell and administration is being supervised by Diabetes Nurse Specialist and, or, GP.**
- GP should be contacted, despite blood glucose levels, if patient is unwell, vomiting, has ketonuria or is unable to eat or drink.

- Diet should **NEVER** be withheld, even if blood glucose levels are high.

Triggers for review by DSN

- Repeated hypoglycaemia that is not being managed by the insulin management plan – e.g. More than 2 in one week
- Persistent hyperglycaemia not responding to insulin management plan after e.g. 4 changes
- Any changes in physical condition e.g. MI, surgery, terminal illness
- Any other concerns regarding diabetes

Name (print)	**Signature**	**Contact Tel No**	**Date**
GP:			
DSN:			
Start Date	**Insulin**	**Starting Dose in Units**	**DSN Signature**
Initial HbA1c:			
Review Date	**Action**		**DSN Signature**

Patient Specific Direction	**Insulin Management Plan – Twice Daily**	
Name:	**CHI No:**	**DOB:**
Address:	**Target blood glucose levels:**	**Frequency of monitoring:**
Type of diabetes:	**Insulin:**	
Allergies:	**Any other information:**	
Blood Glucose	**Action**	
… .....mmol/l	No action required	
Less than …… mmol/l on …… consecutive readings pre-breakfast	Reduce pre-evening meal insulin by ……units Ensure adequate fluids and diet taken	
Less than ……mmol/l on ……consecutive readings pre-evening meal	Reduce pre-breakfast insulin by …… units Ensure adequate fluids and diet taken	
Greater than ……mmol/l on …… consecutive readings pre- breakfast	Increase pre-evening meal insulin by …… units	
Greater than …… mmol/l on …… consecutive readings pre-evening meal	Increase pre-breakfast meal insulin by …… units	
Greater than …… mmol/l **and unwell**	Check urine for ketones. If negative continue with above advice. If small ketones increase by …… units. Discuss with DSN/GP Ensure adequate fluids and diet taken. **Moderate to large ketones – Increase insulin by …… units** **Contact DSN/GP immediately or if out of hours NHS 24 Tel No: 111** **Immediate medical intervention required.** **Ensure patient is eating and drinking adequately.** **DO NOT WITHHOLD INSULIN- EVEN IF VOMITING.**	

- **Insulin doses should not be adjusted on a daily basis unless patient is unwell and administration is being supervised by**

Diabetes Nurse Specialist and, or, GP.

- GP should be contacted, despite blood glucose levels, if patient is unwell, vomiting, has ketonuria or is unable to eat or drink.
- Diet should **NEVER** be withheld, even if blood glucose levels are high.

DIABETES SPECIALIST NURSE REVIEW		
Review Date	**Action**	**DSN Signature**

DIRECTION TO ADMINISTER

NHS Greater Glasgow and Clyde

Sheet No

O	Oral	**SL**	Sublingual	**PR**	Per Rectum		
IM	Intramuscular	**ID**	Intradermal	**PV**	Per vaginal		
IV	Intravenous	**INH**	Inhalation	**IT**	Intrathecal		
SC	Subcutaneous	**NEB**	Nebulised	**PG**	PEG	**T**	Topical
OP	Ophthalmic	**INS**	Instillation	***Insulin dose must be recorded in number of units**			

Write, imprint or attach label

Forenames

Gender

DOB

Address

Known Allergies

Suspected Adverse Reaction

Medicine	Adverse Effect
1.	
2.	

Medicines to be given regularly (Block Capitals)

Drug Code	Date Commenced	Approved name of medicine	Dose	Times of Administration										Other		Route (see key) / Site	Other instructions	Prescriber Signature	Discontinued	
				6am	8am	10 am	12 md	2pm	4pm	6pm	8pm	10 pm	12 pm						Date	Signature
A																				
B																				
C																				
D																				
E																				
F																				
G																				

KETONE MANAGEMENT PLAN - Patient Specific Direction (PSD) Guidelines

This guideline is for patients with type 1 diabetes who are presently on an IMP (Insulin Management Plan) and who may require additional support to manage their diabetes.
The plan is specific to the patient's needs and is providing additional management in relation to ketones aiming to prevent the need for hospital admission due to Diabetic Ketoacidosis (DKA).
The plan should only be implemented following discussion with the Consultant and District Nursing Team involved in the patient's care.

Who will initiate the plan?

- The ketone management plan should only be initiated by the Diabetes Specialist Nurse (DSN) following consultation with the patient's Consultant.

Who should be on ketone management plan?

- Type 1 patients or Type 2 Pancreatic patients whom are already on an IMP who require additional support from District Nursing staff to try to prevent the development of DKA and the need for hospital admission. (This would be done with support from the DSN and agreement/ Signature of Consultant or GP).

Exclusion criteria

- Type 2 patients who do not have pancreatic complications.
- Type 1 patient not on an IMP

Documentation required

- Ketone management plan. This should be signed by the DSN and GP or Consultant
- IMP
- Insulin Recording Chart

Additional Insulin

- Novorapid: either vial or flexpen depending if patient on vial or pen device

Additional equipment

- Blood ketone meter
- Blood ketone strips

How to use the Ketone Management Plan/PSD

- Discuss implementation of plan with District Nursing Staff and provide additional training as necessary
- Ensure all members are familiar and able to use the ketone meter
- Check documentation is complete and signed by DSN and GP or Consultant
- Check documentation and patient match
- Check insulin matches prescribed insulin
- If patient's insulin administered via vial or pen device Novorapid should be dispensed in same format
- Check blood ketone levels and follow instructions as per Ketone Management Plan
- If correction dose of Novorapid insulin is required the dose should be documented on the Insulin Recording Chart in
  RED
- Encourage fluids 100-150mls per hour
- Blood glucose levels and ketone levels should be rechecked in 2 hours time.
- If ketones remain above 1.5 mmol/l an additional dose of insulin as per Ketone Management Plan should be administered and the patient referred to A&E immediately.
- Insulin is viable for one month once opened and stored out with a fridge. Discard after this time has expired and note date on Insulin Recording Chart
- See correction doses for Novorapid below for exemplar:

CORRECTION DOSES: Use NOVORAPID INSULIN – available in pen or vial form

10% total daily dose=
1/10th of total daily dose(over the previous 24hours)
Total up all insulin administered and divide by 10 to achieve 10% correction dose
SO.....

- patient on 20 units of Lantus – correction dose is 2 units of Novorapid insulin.

- patient on 35 units of Lantus – correction dose is 4 units of Novorapid insulin.

- patient on Humulin M3, 24 units with breakfast and 16 units with evening meal equals:
24 units +16 units = 40 units – correction dose is 4 units of Novorapid insulin.

20% total daily dose= 1/5th of total daily dose (over the previous 24 hours Total up all insulin administered and divide by 5 to achieve 20% correction dose
So..... . - patient on 20 units of Lantus – correction dose is 4 units of Novorapid insulin

- patient on 35 units of Lantus – correction dose is 7 units of Novorapid insulin.

patient on Humulin M3, 24 units with breakfast and 16 units with evening meal equals :
24 units +16 units = 40 units – correction dose is 8 units of Novorapid insulin

Patient Specific	Blood KETONE Management Plan	
Name:	**CHI No:**	**DOB:**
Address:	**Frequency of blood ketone monitoring:** • Prior to insulin administration • When blood glucose levels are over 14.0 mmol/l • **2hrs after** bolus dose of **Novorapid** • If patient unwell, check ketones even if blood glucose normal level	
Type of diabetes:	**Any other information:** Please record all additional doses of insulin on recording sheet in **RED.**	

Blood Ketones	Action
Blood glucose greater than 14.0 mmol/l or patient unwell CHECK BLOOD KETONES **If patient** • Vomiting or unable to tolerate oral fluids, has abdominal pain or breathlessness contact GP or NHS 24 immediately. Patient needs referral to A&E immediately. **If none of these symptoms follow guidance opposite** • Encourage AT LEAST 100-150mls sugar free fluids hourly • Do not give any more that 10 units of Novorapid as a bolus • **DO NOT WITHHOLD INSULIN – EVEN IF PATIENT VOMITING** • NHS 24 (if out of hours)Tel No:111	• **Under 0.6mmol/L –** no action required • **0.7-1.5mmol/L** Continue usual insulin regime. Encourage fluids as opposite. **Recheck** blood glucose and blood ketone levels **after 2 hours**. If blood ketones are not falling contact GP/DSN/NHS24. • **1.6-3.0 mmol/L** **Give 10% of total daily dose/or ..... units of Novorapid** Encourage fluids as opposite. **Recheck** blood glucose and blood ketone levels **after 2 hours**. If blood ketones remain above 1.6 mmol/L. Contact GP/NHS 24. Patient needs referral to A&E immediately. • **3.1 mmol/L or above** **Give 20% of total daily dose/or ..... units of Novorapid** Contact GP/NHS 24. Patient needs referral to A&E immediately.

Name (print)	Signature	Contact Tel No	Date
GP/Consultant:			
DSN:			