Leicestershire Partnership NHS Trust

Safe Administration of Insulin to Adult Patients in a Hospital and Community Setting Policy

The purpose of this policy is to ensure safe practice in the administration of insulin by Registered Nurses, Medicines Administration Technicians, Assistant Practitioners, Nursing Associates and Health Care Support Workers.

Key Words:	Administration of Insulin	
Version:	16	
Adopted by:	Trust Policy Committee	
Date this version was adopted:	July 2023	
Name of Author:	David Leeson / Elaine Liquorish	
Name of responsible Committee:	Medicines Management Risk Committee	
Please state if there is reason for not publishing on website:	n/a	
Date issued for publication:	27 July 2023	
Review date:	March 2026	
Expiry date:	August 2026	
Target audience:	Staff authorised within Leicestershire Partnership Trust who administer insulin	
Type of Policy	Clinical √	Non-Clinical
Which Relevant CQC Fundamental Standards?	Regulations 9, 11, 12	

Contents

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Version Control and Summary of Changes

Version number	Date	Comments (description change and amendments)
V1	May 2011	Harmonisation of organisational policies
V2	August 2011	Reviewed in response to NPSA alert RRR013 '*Safer Administration of Insulin*' (NPSA 2010), NPSA alert PSA003 '*The adult patient's passport to safer use of* insulin' (NPSA 2011)
V3	July 2012	Amended following feedback from QAC including inclusion of Consent, addition of IPC policies and guidelines
V4	08/04/2013	Amended following feedback and comments from Infection Prevention and Control team in light of the EU Directive on Sharps
V5	13/09/2013	Amended following review to replace the use of blood glucose readable strips with Blood glucose monitoring machines. Blood glucose monitoring guideline also included and sections on management of hypoglycaemia/hyperglycaemia
V6	28/10/2013	To include a section for Assistant Practitioners as following training and assessment of competence these Band 4 staff can administer insulin to non-complex patients.
V7	30/10/2013	Updated policies and references
V8	18/11/13	Introduced Hypoglycaemia treatment algorithms for Inpatient and community settings
V9	24/02/14	Amended following comments from the Medication Risk Reduction Group regarding training, Assistant Practitioners and audit and monitoring section
V10	09/06/2014	Following presentation at the policy group it has been formatted in line with the policy toolkit and the training section changed to reflect the training template statements from the toolkit.
V11	27/11/2015	Updated the treatment of hypoglycaemia algorithm for in-patients (page 23)and contents of the Hypobox (page 12)
V12	31/07/2017	Updated the treatment of hypoglycaemia algorithm for in-patients (page 23)and contents of the Hypobox (page 12) to reflect the change from using Lucozade to Glucojuice berry burst drinks in line with UHL policy
V13	21/07/2017	Policy and references updated
V14	To replace V13 Dec 2020	Inclusion of Nursing Associates. Inclusion of Standard Operating Procedure for band 3 HCSW Community Health Services. Updated reference list. Updated CQC fundamental standards. Inclusion of Data Protection analysis. Inclusion of latest clinical information.
V15	May 2022	Removal of Insulin passport information (agreed Sept 2021 Updating of Section 12.1 & Appendix 7 treatment of Hypoglycaemia Algorithm in-patients – quantity of rapid acting carbohydrate aligned with BNF recommendations.
V16	July 2023	Inclusion of management and escalation of hyperglycaemia to include DKA and HHS Updated information of 500 strength insulin

		Inclusion of NEWS 2 and escalation Revised text regarding internal quality control of meters Revised dual use meter supplier and consumables Inclusion of hyperglycaemic pathways Removal of biscuits from hypoglycaemia box on wards Updated Hypoglycaemia pathway Revised roles and responsibilities Updated reference list

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Equality Statement

Leicestershire Partnership NHS Trust (LPT) aims to design and implement policy documents that meet the diverse needs of our service, population, and workforce, ensuring that none are placed at a disadvantage over others.

It takes into account the provisions of the Equality Act 2010 and promotes equal opportunities for all.

This document has been assessed to ensure that no one receives less favourable treatment on the protected characteristics of their age, disability, sex (gender), gender reassignment, sexual orientation, marriage and civil partnership, race, religion or belief, pregnancy, and maternity.

In carrying out its functions, LPT must have due regard to the different needs of different protected equality groups in their area.

This applies to all the activities for which LPT is responsible, including policy development and review.

Due Regard

LPT must have **due regard** to the aims of eliminating discrimination and promoting equality when policies are being developed. Information about due regard can be found on the Equality page on e-source and/or by contacting the LPT Equalities Team.

The Due regard assessment template is Appendix 4 of this document.

Definitions that apply to this Policy

LPT	Leicestershire Partnership Trust
UHL	University Hospitals of Leicestershire
Equality groups	People exhibiting one or more of the protected characteristics.
Due regard	Having due regard for advancing equality involves: • Removing or minimising disadvantages suffered by people due to their protected characteristics. • Taking steps to meet the needs of people from protected groups where these are different from the needs of other people. • Encouraging people from protected groups to participate in public life or in other activities where their participation is disproportionately low.

1.0 Purpose of the Policy

1.1 The aim of this policy is to ensure safe practice in the administration of insulin by Registered Nurses and Nursing Associates, Medicines Administration Technicians, Assistant Practitioners and Band 3 Healthcare Support Workers within the in-patient and community setting.

2.0 Summary and Key Points

2.1 This policy is applicable to all Registered Nurses including Nursing Associates, Medicines Administration Technicians, Assistant Practitioners and Band 3 Healthcare Support Workers within the in-patient and community setting employed by the organisation and refers to the administration of insulin to adult patients aged 18 and over.

2.2 The policy should be applied in practice in conjunction with the following LPT guidelines and polices:

- Anaphylaxis and Drug Allergy Policy (2021)
- Consent to Examination or Treatment Policy (2023)
- Delegation Policy (2021)
- Infection Prevention and Control Overarching Policy (2020)
- Leicestershire Medicines Code (2022)
- Incident Reporting and Management (2022)
- Management of Sharps and Exposure to Blood borne Viruses (2022)
- Medication Error Policy (2021)
- Electronic records keeping policy including Record Keeping and Management (2022)
- Registered Nursing Associate Scope of Practice Policy (2020)

3.0 Introduction

3.1 This policy relates to the administration of insulin and has been prepared in response to the NPSA alerts RRR013 ‘Safer Administration of Insulin’ (NPSA 2010), NPSA alert PSA003 ‘The adult patient’s passport to safer use of insulin’ (NPSA 2011) and ‘Risk of severe harm and death due to withdrawing insulin from pen devices’ (NPSA 2016) together with NHS Improvement Never Events (2018), and has considered locally reported incidents and changes to practice.

3.2 Insulin is a naturally secreted hormone which the body needs for correct function and plays a key role in the regulation of protein, fat, and carbohydrate metabolism. It facilitates glucose circulating in blood to be absorbed by cells. Injecting insulin is an essential part of the daily regimen for many people with diabetes. In the UK, diabetes affects approximately 4.8 million people

3.3.1 There are over 30 different types of insulin, these fall into four main types which are categorised by their speed of action:

- Rapid acting
- Short acting
- Intermediate acting
- Long acting

3.3.2 In addition there is mixed insulin which is a mixture of short and long-acting insulins

3.4 Deaths and severe harm patient safety incidents have resulted from administration errors with insulin products. The administration of insulin is safe providing health care professionals who undertake this are competent and competent to undertake this. However, there is a potential for serious harm if it is not administered and handled properly. Common causes of errors with insulin are inaccurate dosing and administration, leading to too much circulating glucose (hyperglycaemia) or too little circulating glucose (hypoglycaemia). Commonly higher than required doses of insulin are administered in error, which result in hypoglycaemia. This can happen suddenly and if left untreated, can cause confusion, clumsiness, or fainting. Severe hypoglycaemia can lead to seizures, coma, and death (NPSA 2010).

4.0 Duties within the Organisation

4.1 The Trust Board has a legal responsibility for Trust policies and for ensuring that they are carried out effectively.

4.2 Trust Board Sub-committees have the responsibility for ratifying policies and protocols.

4.3 Directorate Directors and Heads of Service are responsible for ensuring that there are clear policies and protocols that give authority for individuals to perform the tasks and that this is reflected in their job descriptions.

4.4 <u>Prescribers (including Non-Medical prescribers)</u>

- To clinically assess patients as required and manage the patient's condition.
- To correctly prescribe medication for the patient ensuring that the appropriate authorisation/drug chart is completed in accordance with the guidance issued by the NPSA (2010) in accordance with the Leicestershire Medicines Code (LMSG 2022)

4.5 Services Managers and Matrons

- Service Managers and Matrons should ensure:
  - The Safe Administration of Insulin Policy is adhered to in the clinical setting and that there is a clear process for dissemination.
  - Staff are released to meet training needs.
  - Line manager(s) are clear in their roles and responsibilities in implementing the Safe Administration of Insulin Policy.
  - To act in accordance with organisational policy on the actions required of reported incidents.

4.6 Line Managers

- Line Managers should ensure:
  - Staff attend/complete mandatory training updates, and records of attendance are kept.
  - Staff are released to meet training needs.
  - That all patient documentation is completed correctly.
  - That staff are competent in the administration of insulin.
  - To ensure that staff work in line with the Safe Administration of Insulin Policy.
  - To act in accordance with organisational policy on the reporting of incidents.
  - To ensure that the appropriate resources are made available to staff to enable them to work to this policy.

4.7 Registered Nurses who undertake as part of their role the administration of insulin.

- The Registered Nurse should ensure.
  - They follow the Nursing and Midwifery Council (Oct 2018) The Code: Professional Standards of Practice and Behaviour for Nurses, Midwives and Nursing Associates.
  - They complete a full holistic assessment identifying the specific needs of the patient and complete person-centred care plans in collaboration with the patient. The care plans should be reviewed as the needs of the patient dictate.
  - The appropriate authorisation/drug chart has been completed in accordance with the guidance issued by the NPSA (2010) and in accordance with the Leicestershire Medicines Code (2022)
  - Complete medicines management training every two years.
  - Will successfully complete the Six Steps to Insulin Safety training prior to administrating insulin. Available at www.diabetesonthenet.com
  - Complete CHS diabetes competency framework.
  - Will adhere to the policy and ensure that the correct documentation is completed including within the Electronic Patient Record (EPR)

4.8 Assistant Practitioners

- If the qualified Assistant Practitioner is working in an area where they are permitted to administer insulin, they should ensure they:

  - Complete medicines management training every two years.
  - Complete CHS diabetes competency framework.
  - Successfully complete the Six Steps to Insulin Safety training prior to administrating insulin. Available at www.diabetesonthenet.com
  - Have been assessed as competent to administer medications and can administer insulin injections to patients, unsupervised as delegated by the Registered Nurse.
  - Will adhere to the policy and ensure that the correct documentation is completed including within the Electronic Patient Record (EPR)

4.9 Medicines Administration Technicians

- The Medicines Administration Technician should ensure they

  - Complete medicines management training every two years
  - Successfully complete the Six Steps to Insulin Safety training prior to administrating insulin. Available at www.diabetesonthenet.com
  - Successfully complete the LPT in house workbook and drugs assessment.
  - Will adhere to the policy and ensure that the correct documentation is completed including within the Electronic Patient Record (EPR)

4.10 Band 3 Health Care Support Worker

- If the Band 3 Health Care Support Worker (HCSW) is working in an area where they are permitted to administer insulin, they should ensure they:

  - Complete medicines management training every two years
  - Attend the CHS one day Health Care Support Worker in house training regarding diabetes and insulin administration.
  - Successfully complete the Six Steps to Insulin Safety training prior to administrating insulin. Available at www.diabetesonthenet.com
  - Complete CHS diabetes competency framework.
  - Have been assessed as competent to administer U100 insulin injections to stable diabetic patients, unsupervised as delegated by the Registered Nurse in line with the agreed Standard Operating Procedure 2019. (Appendix 11). NOTE THAT BAND 3 HCSWS CAN ADMINISTER U100 RAPID ACTING INSULIN ONLY WHEN IT FORMS PART OF A REGULAR, PRESCRIBED REGIMEN THAT KEEPS A PATIENT STABLE, AND NEVER AS PART OF PRN OR SLIDING SCALE AUTHORISATIONS.
  - Will adhere to the policy and ensure that the correct documentation is completed including within the Electronic Patient Record (EPR)

4.11 Nursing Associate (Trainee and Registered)

- Trainee Nursing Associates can administer U100 insulin injections to those patients deemed to have stable/simple diabetes. They can do so

unsupervised whilst working to a suitable care plan. They must however have, in a previous role as a band 3 HCSW, completed the steps in section 4.10 above.

- Trainee Nursing Associates can, under the direct supervision of a Registered Nurse, administer insulin injections to those patients deemed to have unstable/complex diabetes whilst working to a suitable care plan.

- Registered Nursing Associates should ensure they:

    - They follow the Nursing and Midwifery Council (Oct 2018) The Code: Professional Standards of Practice and Behaviour for Nurses, Midwives and Nursing Associates.
    - Complete medicines management training every two years.
    - Successfully complete the Six Steps to Insulin Safety training prior to administrating insulin. Available at www.diabetesonthenet.com
    - Complete the LPT in house Administration of Medicines workbook for Nursing Associates, a period of supervised practice and final practical assessment.
    - Have completed all the above the Nursing Associate can administer insulin injections as delegated by the Registered Nurse.
    - NOTE Nursing Associates working on hospital wards must have a second checker.
    - Adhere to the policy and ensure that the correct documentation is completed including within the Electronic Patient Record (EPR)

5.0 Consent

5.1 Clinical staff must ensure that consent has been sought and obtained before any care, intervention or treatment described in this policy is delivered. LPT Consent to Examination or Treatment Policy (2023). Consent can be given orally and/ or in writing. Someone could also give non-verbal consent if they understand the treatment or care about to take place.
Consent must be voluntary and informed, and the person consenting must have the capacity to make the decision.

5.2 In the event that the patient's capacity to consent is in doubt, clinical staff must ensure that a formal mental capacity assessment is completed and recorded and then a best interest decision reached. Someone with an impairment of or a disturbance in the functioning of the mind or brain is thought to lack the mental capacity to give informed consent if they cannot do one of the following:

- Understand information about the decision
- Remember that information
- Use the information to make the decision
- Communicate the decision

6.0 Training needs

6.1 There is a need for training identified in this policy. In accordance with the classification of training outlined in the Trust Learning and Development Strategy this training has been identified as role essential if you administer insulin.

6.2 The course directory found on uLearn will identify who the training applies to, delivery method, the update frequency, learning outcomes and a list of available dates to access the training.

6.3 A record of the event will be recorded on uLearn.

6.4 The governance group responsible for monitoring training compliance is the Learning and Organisational Development Group. This feeds into directorial workforce groups.

6.5 Staff who administer insulin must have:

- Completed the 'Medicines Management' training' within the preceding twenty-four months with a record of attendance being held on the organisations uLearn system.

- Complete mandatory training for Infection Prevention and Control which includes the management of sharps.

- In accordance with the requirements of the NPSA (2010) all staff inclusive of bank staff who are required to administer insulin must successfully complete the online learning package The Six Steps to Insulin Safety available at www.diabetesonthenet.com.

- Once successfully completed, a copy of the completion certificate should be forwarded to the individuals line manager and uploaded onto the individuals training record held on uLearn. This must be completed as an update every 2 years.

- Staff new to the skill will be required to complete a drug assessment assessed using the Leicester Clinical (procedure) Assessment Tool, (LCAT). Staff employed from another trust must provide evidence of a completed training and assessment programme and completed competencies or undergo an LCAT assessment.

- Staff who are unable to pass their competency should be managed in line with the organisations Supporting Performance Policy and Procedure (2019)

7.0 Capillary Blood Glucose Monitoring

7.1 Monitoring of capillary blood glucose is recognised as playing an important role in the effective management of people with diabetes when used in the correct manner.

7.2 It is advocated NICE (NG17, 2016) and NICE (NG28, 2019) that people living with diabetes need to:

- Monitor the effectiveness of diabetes therapy by capillary blood glucose monitoring
- Monitor effectiveness of lifestyle interventions
- Detect poor glycaemic control
- Detection of hypoglycaemia
- Monitor glycaemic control during times of illness

7.3 Blood glucose levels are to be monitored in accordance with the patient's usual self-monitoring regime and current medical management needs. It should be noted that for some people with type 1 diabetes they may be choosing to monitor their blood glucose using a flash glucose monitor such as the Freestyle Libre.

7.4 Capillary blood glucose readings that are persistently outside of a patients set targets should be reported to the prescriber and the insulin regime reviewed.

8.0 Capillary Blood Ketone Monitoring

8.1 Monitoring of capillary blood ketones is recognised as playing an important role in the effective management of people with diabetes when used in the correct manner.

8.2 Raised capillary blood ketone readings are a sign of escalating hyperglycaemia that may lead to Diabetic Ketoacidosis (DKA). Within LPT ketones levels must be checked once a patient's capillary blood glucose breaches 18mmol/l. The hyperglycaemic pathway should be followed and appropriate planning and escalation completed. See appendix 12 and 13.

9.0 Quality Assurance regarding the use of Blood Glucose / Ketone Meters

9.1 The need for quality assurance and training in the use of blood glucose meters was identified in a Department of Health hazard notice (DOH, HN Hazard (87-13). This notice states that the treatment of patients can be adversely affected by the use of blood glucose / ketone meters by staff not trained in the correct use of the meter and without quality control procedures. It is the responsibility of each healthcare professional who is allocated a meter to ensure that Internal Quality Control testing is carried out weekly. Local arrangements must be in place for weekly testing of ward based meters and those used by community bank and agency staff.

9.2 Internal Quality Control (IQC) using glucose and ketone control solutions. (LPT, SOP 2023)

9.2.1 IQC for glucose and ketone levels must be carried out weekly in all settings. Both glucose and ketone accuracy must be checked using both normal and high reading quality control solutions. IQC should also be performed if:

- You suspect the meter or strips are not working properly.
- The meter has been dropped.
- The meter is damaged.
- The results of an actual capillary blood test seem improbable.
- You want to check the performance of the meter or strips when you first get them or at any time you want to check their performance before an actual capillary blood test.

9.2.2 Results from IQC should be recorded in the meter logbook supplied by the supplier of the meters. This will be kept for 7 years. A central register of IQC testing will be kept locally by administrative staff on each ward / community hub to aid internal audit.

9.3 Provision of Meters

9.3.1 Meters will be purchased and issued to clinicians and wards by LPT via a suitable supplier. This is currently the GlucoMen areo GK manufactured by A.Menarini.

9.3.2 When taking a capillary blood glucose or blood ketone sample from a patient, staff should use a meter issued by LPT. However when teaching a patient to be independent in their own management of their diabetes, it is important to teach them using the meter issued to the patient and ensure they understand how to, and can quality check, their own device. This must be part of the teaching package.

9.4 Provision of test sticks

9.4.1 All consumables are orderable via pharmacy within LPT.

- Glucose test sticks - Flip top vial of 50 sticks.
- Ketone test sticks – Individual foil wrapped sticks in packs of 10 sticks.
- QC ranges and lot numbers printed on stick foil or vial
- Working temperature/humidity 14-40 degrees C and relative humidity 10-90%
- Store 2-30 degrees C
- Measuring range 0.6 – 33.3 mmol/L

9.5 Provision of lancets

9.5.1 All staff **must use** a single use retractable safety lancet device which meet the EU Directive for the prevention of Sharp's injuries (2010). Community nursing staff are expected to carry single use retractable safety lancets at all times when undertaking patient care. All retractable safety lancets must be disposed of in

a sharps container. **Patients own multi use lancet devices are not to be used due to the increased risk to staff of needle stick injuries**

9.6 Storage of Glucose / ketone meter, strips and quality control solutions

9.6.1 The meter should be stored in a cool, dry place below 30 degrees centigrade, but it should not be refrigerated. The meter should be kept away from direct sunlight and heat in a dust free environment. It is essential to be cautious if carrying the meter in your vehicle as it can be prone to extremes of temperature.

9.6.2 When using the glucose test strip vial and control solution it is essential to close the vial immediately after use to avoid contamination and damage.

9.6.3 **Test strips** should be stored in their original vial or in the single foil wrappers only. Do not use the test strips for more than 12 months after first opening the test strip vial. Write the discard date (opening date plus 12 months) on the label. Any unused test strips in the vial must be disposed of after the discard date has passed.

9.6.4 **Quality Test Solutions.** Do not use the solutions 90 days after being opened. Write the discard date (opening date plus 90 days) on the label. Any open but unused solution must be disposed of after the discard date has passed.

9.7 Cleaning and decontamination of blood glucose / ketone meters

9.7.1 Blood glucose monitoring equipment should be cleaned after each use if the equipment becomes contaminated with bodily fluids or blood please clean and decontaminate in line with the Infection & Prevention control Policy for Cleaning and Decontamination.

10.0 Procedure for taking a capillary blood glucose / ketone reading

10.1 The correct collection of capillary blood glucose / ketone samples is important to:

- Generate accurate results
- Prevent infection
- Prevent injury in cases of long-term monitoring

10.2 The procedure for the collection of capillary blood glucose / ketone samples should be adhered to at all times. (Appendix 6)

11.0 Frequency of Capillary Blood Glucose Monitoring

11.1 Self Blood Glucose Monitoring (SBGM) is recommended in people on insulin therapy. Staff should support the patient to do this independently wherever possible. The frequency of capillary blood glucose monitoring should be agreed on an individual basis after discussion with the patient. The frequency of monitoring must be detailed within the individuals care plan and the need for sampling reassessed prior to the administration of insulin.

11.1.2 It is however expected that a capillary blood glucose monitoring should take place in the following circumstances.

- If hypoglycaemia is suspected
- If hyperglycaemia is suspected
- If the patient is found unwell or confused

11.1.3 Increased testing may be required during illness, when starting treatment with oral or intravenous corticosteroids or when there is a risk of hypoglycaemia or hyperglycaemia.

12.0 Hypoglycaemia

12.1 Hypoglycaemia is the medical term for low blood glucose and is determined by a near patient capillary blood glucose measurement of less than 4.0mmol/L. Some but not all patients will experience symptoms such as;

- Sweating
- Anxiety
- Paleness
- Tingling lips
- Tiredness
- Palpitations
- Shaking
- Feeling hungry
- Confusion
- Dizziness
- Drowsiness
- Speech difficulty
- Lack of co-ordination
- Coma

12.2 Patients who are at particularly high risk include those who also have one or more of the following:

- Poor appetite or erratic eating pattern
- Weight loss
- Renal deterioration
- Liver impairment/carcinoma
- Dementia
- The older person/ person living with frailty

13.0 Treatment of Hypoglycaemia

13.1 A person experiencing hypoglycaemia requires 15 – 20 g of quick acting carbohydrate to return their blood glucose to the normal range e.g., 6- 7 glucose tablets (Dextro-Energy®), 200mls fruit juice or Glucose liquid drink 60mls. If necessary, repeat treatment after 10-15 minutes, up to a maximum of 3 treatments. Once patient recovers, a snack providing a long-acting carbohydrate such as biscuits, bread, milk, or a meal with carbohydrate, should be given to maintain blood glucose within the normal range. **See**

Hypoglycaemia management algorithms – in-patients (Appendix 7) community patients (Appendix 8) for treatment of hypoglycaemia. Healthcare professionals should consider the cause of hypoglycaemia to prevent the risk of it happening again. The person living with diabetes may need reviewing to alter their insulin or medication and a review of their lifestyle behaviours.

13.2 Hypoglycaemic treatment in the home should be available for the patient and if appropriate they should be aware of what the signs and symptoms and treatments are.

14.0 Yellow Hypo boxes

14.1 A Yellow Hypo box contains all the equipment to treat hypoglycaemia. The boxes are only available within in-patient areas and should be kept in a prominent place on the ward and it is the responsibility of the Ward to ensure that the box is replaced after use.

14.2 Yellow Hypo box list of contents:

Drug	Amount
Laminated copy of box content	**1x leaflet**
Laminated copy of Hypoglycaemia algorithm	**1x leaflet**
Glucose liquid	**1x 60ml**
Dextrose Tablets	**2x 47g**
Glucose 40% oral gel	**3x 25g**
Glucagon 1mg	**1x Injection**
Glucose 20% Intravenous Infusion	**1x 500ml bag**

15.0 Hyperglycaemia – See also Hyperosmolar Hyperglycaemic State and Diabetic Ketoacidosis (sections 16 and 17)

15.1 Hyperglycaemia is a state where the level of sugar in your blood is too high (NHS, 2023). It is vital to be aware of this as deterioration of the patients condition may occur and require acting on. (See appendices 12 & 13). Therefore reference to the patients target Capillary Blood Glucose must be made. Hyperglycaemia can occur in patients for many reasons for example:

- They have missed a dose(s) of insulin
- They have eaten more carbohydrate than the body or insulin or both can process
- They are stressed
- They are unwell due to an infection

15.1.2 Signs and symptoms:

- Type 2 Diabetes - Blood glucose readings above 17 mmol/Ls or above or 11mmols/Ls during an illness (Trend, 2020)
- Type 1 Diabetes – Blood glucose readings above 11 mmol/Ls
- Thirst

- Passing urine more frequently
- Loss of appetite/ weight loss
- Tiredness
- Increased risk of infections
- Blurred vision
- Genital itching due to thrush

16.0 Hyperosmolar Hyperglycaemic State (HHS)

Suspect a diagnosis of Hyperosmolar Hyperglycaemic State (HHS) if a person is unwell with severe hyperglycaemia (blood glucose level typically above 30 mmol/L) for several days and displays the following clinical symptoms:

- No significant signs of ketosis
- No significant ketones in capillary blood or urine on testing.
- Disorientation, confusion, and/or drowsiness.
- Polyuria and polydipsia.
- Nausea.
- Severe dehydration and hypovolaemia.

16.1 Precipitating Factors to HHS include

- Infection.
- Inadequate insulin or non-adherence with insulin treatment.
- New onset of diabetes mellitus or other physiological stress (such as trauma or surgery).
- Other medical conditions (such as hypothyroidism or pancreatitis).
- Drugs (such as corticosteroids, diuretics, atypical antipsychotics, and sympathomimetic drugs such as salbutamol).

17.0 Diabetic Ketoacidosis

Suspect a diagnosis of Diabetic Ketoacidosis (DKA) in a person with known diabetes or significant hyperglycaemia (blood glucose level greater than 11 mmol/L) *and* the following:

- Polydipsia and polyuria.
- Weight loss.
- Abdominal pain, nausea and/or vomiting.
- Shortness of breath.
- Lethargy, drowsiness, and/or confusion.
- Fruity smell of acetone on the breath.
- Tachypnoea, acidotic breathing (deep sighing 'Kussmaul respiration').
- Tachycardia, dehydration (may present with reduced skin turgor, sunken eyes, prolonged capillary refill time) or shock (tachycardia, hypotension, drowsiness, reduced urine output).
- Blood or urinary ketones.

17.1 Precipitating Factors to DKA include

- Infection.
- Inadequate insulin or non-adherence with insulin treatment.
- New onset of diabetes mellitus or other physiological stress (such as trauma or surgery).
- Other medical conditions (such as hypothyroidism or pancreatitis).
- Drugs (such as corticosteroids, diuretics, atypical antipsychotics, and sympathomimetic drugs such as salbutamol).

17.2 Important notes on ketones

- **Note:** ketones are high if *urinary* ketones are greater than 2+, or *capillary blood* ketones are above 3 mmol/L.
- **Note:** urinary ketones must be read 15 seconds after the stick is dipped.
- **Consider the possibility of DKA in all people with type 2 diabetes who are unwell, even with normal blood glucose levels.**
- Patients may develop DKA with normal blood glucose levels, as may people using SGLT-2 inhibitors, and people with a history of alcohol excess and/or chronic liver disease
- Blood ketone levels less than 3 mmol/L do not always exclude DKA.

If the patient has type 1 diabetes with a blood glucose over 18 mmols/L and/or any of the following symptoms, test for blood ketones.

- Nausea and/or vomiting
- Abdominal pain
- Drowsiness
- Confusion
- Laboured breathing

18.0 Escalation for patients found to have Hyperglycaemia including DKA and HHS.

18.1 Patients must have a target range of capillary blood glucose clearly set in line with their frailty score which is identified on the insulin authorisation form within the community setting.

18.2 When a patient is found to be running capillary blood glucose readings higher than those set within their target or of concern the nurse/clinician should assess the patient and escalate according to the clinical findings of the patient at the time. If CBG is breaches 18 mmols/l the appropriate hyperglycaemic pathway (appendix 12 & 13) will be followed. Any deviation from the pathway based on clinical judgement must be clearly documented.

18.3 The hyperglycaemic pathway is designed to detect underlying issues that may be causing hyperglycaemia, such as infection/sepsis. The use of physiological observations and the use of NEWS2 (National Early Warning Score 2) are therefore critical to maintain patient safety. (appendix 14 & 15)

18.4 If ketones are present in the blood follow the hyperglycaemic pathway and escalate accordingly.

THESE SYMPTOMS MUST BE TREATED AS AN EMERGENCY AS THEY MAY BE SIGNS OF DIABETIC KETOACIDOSIS

18.5 Contact the General Practitioner, Doctor or Advanced Nurse Practitioner if;

- A pattern of raised blood glucose results becomes apparent
- The raised blood glucose levels are persistent
- The patient's condition has deteriorated

19.0 Key tips to make the use of insulin safer.

19.1 Insulin always has to be injected, there are currently three common devices used:

- Insulin syringes
- Insulin pen devices
- Insulin pumps

19.1.2 NPSA (2011) guidance clearly states that where a patient has been assessed as motivated and safe to give their own insulin and is willing to assume responsibility and empowered, then self-administration of insulin is seen as a proactive way of minimising error. Staff should consider the full range of devices available that may support and promote self-management of their condition. Staff within both hospital and community settings should therefore only administer insulin when the patient is unable to self-administer safely and/or when this poses no risk to themselves or others.

All alternative strategies and resources should be exhausted prior to community nursing staff taking on the long-term responsibility of regular administration of insulin to an individual patient.

20.0 Storage of Rapid Acting Insulin in the patients home:

- Rapid Acting Insulin must be separated from other insulins within the patients own home if nurses are involved in the administration of said insulin. The rapid Acting Insulin must therefore be stored within the designated blue box provided by LPT which is clearly labelled **Rapid Acting Insulin Only**. The pen of insulin currently being used must be returned to the box for storage and **not** kept out of the fridge. The reason for this is to mitigate against the inadvertent administration of the wrong insulin. Where it is necessary to deviate from this system, a risk assessment for the circumstances surrounding the individual patient should be conducted and the outcome and system to be used clearly documented in the care plan

21.0 Patient information leaflet

21.1 In accordance with the recommendations of NPSA/2011, by June 2012, all patients aged 18 and over receiving care should be directed to a patient information booklet detailing known error-prone situations and actions that may minimise harm.

21.2 Patient information leaflets improve patient safety by empowering patients as they take an active role in their treatment with insulin. “Keeping Safe With Insulin Therapy” can be accessed and downloaded from https://www.diabetes.org.uk

22.0 Insulin Prescriptions and Authorisations

22.1 In accordance with national guidance all prescriptions and authorisations should be written whereby the amount required is followed by the word Units written in full i.e., 10 Units with a space between the number and word. Unit should be spelt with a capital U to avoid confusion and to reduce the risk of a drug error occurring (NPSA 2010).

23.0 Different Insulin Formulation and Concentration

- 100 units/ml Insulin
  - 100 units/ml insulin is the preparation most commonly used.
- 200 units/ml Insulin
  - There are two insulin preparations that deliver 200units/ml insulin in the UK. Insulin Degludec (Tresiba) and Humalog ® 200 units/ml KwikPen ® (Insulin Lispro).
  - Beware the packaging for the 100/ml and 200/ml is similar
- 300 units/ml Insulin
  - Toujeo® (300Units/ml insulin glargine injection) Solostar®
  - Each 1ml contains 300 units insulin glargine
- 500 units/ml Insulin
  - This medication is not licensed by the medication regulatory body for use in the UK and is imported from the USA. It is used when an individual needs a lot of insulin, as it allows the dose to be given in a smaller volume. It must be prescribed and administered using a Humulin R u500 KwikPen ™. (See appendix 10) (HSIB 2022)
  - **Warning:** it is 5 times more concentrated than 100 units/ml insulin

24.0 Advance Preparation of Insulin Syringes for Adult Patients to Administer at Home (Pre-drawing / Pre-mixing / Pre-dialling of insulin)

24.1 The practice of pre-mixing and or preloading insulin into a syringe or pre-dialling an insulin pen for use by the patient at a later date is poor practice and is unsupported by evidence and has been linked to insulin errors. As a result, the Trust has taken the decision that to ensure patient safety this is **NOT** part of our practice.

24.2 Any patient currently in receipt of pre-drawn up insulin care packages must be visited by a Senior Nurse and Diabetic Nurse Specialist who together with the named nurse and the patient explore and instigate the best option for promoting independence in administering insulin. This must be accompanied by a personalised care plan that reflects this.

24.3 Any patient who moves onto a caseload from another area who is in receipt of pre-drawn up insulin care packages must be visited by a Senior Nurse and Diabetic Nurse Specialist who together with the named nurse and the patient will explore and instigate the best option for promoting independence in administering insulin. Under no circumstances must pre-mixing / pre-drawing / or pre-dialling continue.

25.0 The Insulin Administration Process… (TREND, 2018)

25.1 Injection Site Selection and Rotation of Injection Sites

25.1.2 Prior to starting the procedure, wash your hands using liquid soap and water. Injections should be given into a clean site in accordance with organisational infection prevention and control policies. The site should be cleansed with soap and water when found to be unclean.

25.1.3 The site should be inspected and palpated prior to injection. Avoid using a site showing signs of lipohypertrophy (a build-up of subcutaneous fat tissue at a site where insulin has been injected continuously), inflammation, oedema or infection until the problem has been resolved.

25.1.4 Consideration should be made to the selection of the site to be injected as body sites have varying insulin absorption rates. Patient choice should also be taken into account.

25.1.5 The abdomen is the preferred site for the injection of soluble insulin (as it absorbed faster in this area).

25.1.6 The thighs and buttocks are the preferred sites for Neutral Protamine Hagedorn (NPH) insulin where absorption is slowest.

25.1.7 When pre-mixed insulin is being injected, it is suggested that the abdomen is used in the morning, and the thigh or buttock in the evening. (TREND 2018)

25.1.8 Injections should be administered on a rotation scheme from the onset of injection therapy (FIT 2016, TREND 2018).

25.1.9 One scheme with proven effectiveness dividing the injection site into quadrants (or halves when using the thighs or buttocks); using one quadrant per week and moving always in the same direction, either clockwise or anti-clockwise as indicated below (FIT 2016, TREND 2018).

25.1.10 Injections within any quadrant or half should be spaced at least 1cm from each other in order to avoid repeat tissue trauma (FIT 2016).

25.1.11 Staff must ensure that the rotation scheme and the site used for injecting the insulin each time is documented in the patient record.

26.0 Choice of Needle Length and Injection Technique

26.1 A new safety insulin syringe or retractable safety pen needle should be used for each injection.

26.2 4mm pen needles are recommended for all adults regardless of age, gender or BMI. If inserted at an angle of 90 degrees, it is long enough to penetrate the skin and enter the subcutaneous tissue with little risk of intramuscular injection.

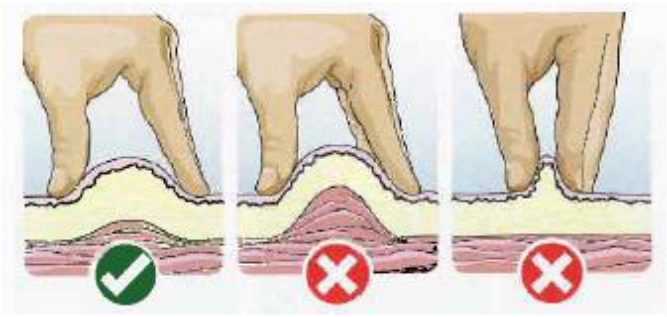
26.3 4mm is the needle of choice for obese patients but a 5mm needle may be used.

- For an extremely thin adult (BMI<19) make a lifted skin fold as indicated below if appropriate exhibiting caution to avoid a needle stick injury and taking care to ensure that the skin is not squeezed so tightly that it causes skin blanching or pain.

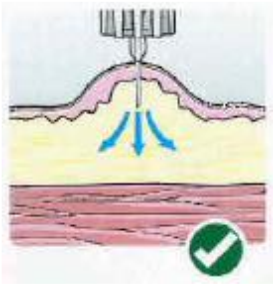
- Others may be injected using a 4mm pen needle without a lifted skin fold
- Individuals using >8mm needles should ensure they are using a lifted skin fold to avoid IM injections (FIT 2016).

- When a syringe needle is used in adults the injection should always be administered into a lifted skin fold.(FIT 2016)

- Use of a syringe needle in extra thin adults (BMI<19) is not recommended, even using a lifted skin fold because of the excessively high risk of intramuscular injection(FIT 2016)



- Insert needle into skin at 90-degree angle in a smooth movement as indicated below. Inject the insulin slowly ensuring that either the plunger (syringe) or button (pen) has been fully depressed.



- For a pen device: Leave the pen in the skin for at least 10 seconds after the thumb button is fully depressed before withdrawing the needle in order to deliver the full dose and prevent the leakage of medication. Counting past ten may be necessary for higher doses (FIT 2016).

- For a syringe needle: It is not necessary to hold under the skin for a count of ten after the plunger has been depressed. (FIT 2016).

- Withdraw needle from skin.

- Release lifted skin fold.

- Dispose of used needle in accordance with the organisations waste policy and Sharps policy (FIT 2016t). **Needles must never be resheathed**.

- Wash hands with liquid soap and water

27.0 Important Information Regarding the Use of Pen Devices

27.1 If staff are required to administer insulin using an insulin pen device, they must ensure that they know how to operate the device. (NPSA 2010).

27.2 If staff are required to administer insulin using a pen device a single use retractable safety pen needle is to be prescribed and used. Examples include BD Auto Shield Duo and the GlucoRX safety Pen needle.

27.3 Community nursing staff are expected to carry single use retractable safety pen needles.

27.4 Where a retractable safety pen needle is incompatible with the pen device, the staff member must contact the prescriber to discuss and identify an alternative option.

27.5 Pen devices should be primed by dialling in 2 units of insulin and performing an air shot (observing at least a drop at the needle tip) according to the manufacturer's instructions before each injection. Once flow is verified, the desired dose should be dialled, and the insulin administered (FIT 2016).

27.6 Pen devices and cartridges are for single person use only and must never be shared due to the risk of cross contamination in accordance with policy.

Insulin should NEVER be drawn from pen cartridges to be used in a standard insulin syringe. The practice has been associated with inadvertent overdose of insulin. (NPSA 2016)

28.0 Important Information Regarding the use of Insulin Syringes

28.1 Only insulin syringes must be used when administering insulin. (NPSA, 2010)

28.2 If staff are required to administer insulin using an insulin syringe a single use BD Safety Glide™ Insulin Syringe is to be used to reduce the risk of needle stick injury. Please follow the manufacturer's accompanying instructions when using this device.

28.3 The following versions of the syringe are available to order from NHS supplies:

Product Description	Cat Nu	Length	Volume (ML)	(G)	Box Size	Case Size	NHS Cat' Number
BD Safety Glide™ + 0.5mm Insulin Syringe (Blister Pack)	305932	12.7mm	0.5ml	29 G	100	400	FWD057
BD Safety Glide™ + 0.5mm Insulin Syringe (Blister Pack)	305934	8mm	0.5ml	30 G	100	400	FWD085
BD Safety Glide™ + 0.3mm Insulin Syringe (Blister Pack)	305937	8mm	0.3ml	31 G	100	400	FWD087

28.4 When drawing up insulin, the air equivalent to the dose should be drawn up first and injected into the vial to facilitate easier withdrawal (FIT 2016).

28.5 If air bubbles are seen in the syringe, hold the syringe with the needle uppermost, tap the barrel to bring them to the top and then remove the bubbles by pushing the plunger to expel the air (FIT 2016).

29.0 Insulin storage and suspension

29.1 Insulin in current use can be stored at room temperature (for a maximum of 28 days after initial opening within the expiry date). The date of opening must

be written on the pen/vial.

29.2 Insulin must not be stored in areas of direct sunlight or extreme temperature. Within the patient's own home unopened insulin should be stored in area of the refrigerator where freezing is unlikely to occur (FIT 2016).

29.3 Within the hospital, insulin is to be stored in accordance with organisational policy (Leicestershire Medicines Code 2022).

29.4 Cloudy insulin must be gently rolled between the palms ten times and inverted ten times (not shaken) until the crystals go back into suspension and the solution becomes a consistent milky white colour prior to administration (FIT 2016).

30.0 Insulin pumps

30.1 An insulin pump is a small programmable device that holds an insulin cartridge/reservoir and delivers a continuous flow of insulin to the body through a thin plastic tube inserted in the body.

30.2 A pump is programmed to deliver insulin over 24 hours. Extra insulin is then given by the patient at the touch of a button to cover mealtimes. Most infusion sets are worn in the abdominal area. Patients generally refill their insulin reservoir and change their infusion set every 2-3 days.

31.0 Sharps Disposal

31.1 A sharps container must always be available at the point of care to ensure immediate, safe and correct disposal of used sharps. Community staff are required to adhere to the Management of Sharps and Exposure to Blood Borne Viruses Policy (LPT, 2019) in relation to the use of and safe transportation in the community of the sharps containers.

32.0 Sharps Injury

32.1 In the event of a sharps injury the flowchart (Appendix 11) must be followed, and the incident reported immediately to the staff's manager and occupational health and report the incident and complete an Electronic Incident Report Form (eirf).

33.0 Drug Errors

33.1 This policy should be read in conjunction with the LPT Medication Error Policy (2021). In the event of a drug error, it is essential to inform the line manager and complete an Electronic Incident Report Form (eirf) as per organisational policy.

34.0 Monitoring Compliance and Effectiveness

34.1 Duties outlined in this Policy will be evidenced through monitoring of the other minimum requirements

34.2 Where monitoring identifies any shortfall in compliance the group responsible for the Policy (as identified on the policy cover) shall be responsible for developing and monitoring any action plans to ensure future compliance

Ref	Minimum Requirements	Evidence for Self-assessment	Process for Monitoring	Responsible Individual / Group	Frequency of monitoring
Page 9	Incidents involving the administration of insulin will be reviewed	Paragraph 3.1	Incident data in regard of insulin incidents is analysed from Ulysses reporting.	Medication Risk Reduction Group	Bi-monthly
Page 25,26,37	Safer sharps incidents involving insulin administration are monitored	Paragraphs 25,27.2 and appx 6	Incident data reports	IPC groups and trust IPC Committee	Bi-monthly

35.0 Standards/Performance Indicators

TARGET/STANDARDS	KEY PERFORMANCE INDICATOR
CQC Regulation 9 – Person Centred Care	Evidenced by care plans that include the patient's own words and target outcomes. Care plans and outcomes that demonstrate the partnership between the health care professional and the patient.
CQC Regulation 11 – Dignity and Respect	Evidenced by the inclusion of a due regard analysis (appendix 4). When carrying out care privacy and dignity is maintained at all times as far as is practicable. The patients preferred name and title is made clear in documentation and used during care provision.
CQC Regulation 12 – Safe Care and Treatment	Evidenced by ensuring clinicians have undergone appropriate training and education to carry out the care outlined in this policy.

36.0 References and Bibliography

The Policy was drafted with reference to the following:

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Care Quality Commission (2020) Diabetes and Insulin Use. Available at www.cqc.org.uk/guidance-providers/adult-social-care/diabetes-insulin-use Accessed on 11 May 2023

Department of Health: Hazard Notice: Blood Glucose Measurements. Reliability of Results produced in Extra Laboratory Areas HN (Hazard) (87) 13.

Diabetes UK (2020) Home blood glucose testing. www.diabetes.org.uk/guide-to-diabetes/managing-your-diabetes/testing Accessed on 11 May 2023

EU Directive (2010) Prevention of Sharps Injuries in the Healthcare Sector

Healthcare Safety Investigation Branch (2022) Administering High Strength Insulin From a Pen Device in Hospital. Available at www.hsib.org.uk/investigations-and-reports/administering-high-strength-insulin-from-a-pen-device-in-hospital/administering-high-strength-insulin-from-a-pen-device-in-hospital/ Accessed 11 May 2023.

Leicestershire Medicines Code (2022) Available at https://www.areaprescribingcommitteeleicesterleicestershirerutland.nhs.uk/guidelines/secondary-care/medicines-code/ Accessed 11 May 2023

Leicestershire Partnership NHS Trust (2022) Standard Operating Procedure for Healthcare Support Workers (band3) to administer insulin in a community setting.

Leicestershire Partnership NHS Trust (2021) Anaphylaxis and Drug Allergy Policy

Leicestershire Partnership NHS Trust (2023) Consent to Examination or Treatment Policy

Leicestershire Partnership NHS Trust (2022) Incident Reporting and Management Policy

Leicestershire Partnership NHS Trust (2021) Medication Error Policy

Leicestershire Partnership NHS Trust (2020) Registered Nursing Associate Scope of Practice Policy.

Leicestershire Partnership NHS Trust (2022) Supporting Performance Policy and Procedure.

Leicestershire Partnership NHS Trust (2022) The Management of Sharps and Exposure to Blood Born Viruses

Leicestershire Partnership NHS Trust (2023) Standard Operating Procedure for A. Menarini, GlucoMen areo GK Meters. Community nursing, LPT wards, hospitals and departments.

National Patient Safety Agency (NPSA) (2011) Patient Safety Alert NPSA/2011/PSA003 The adult patient's passport to safer use of insulin. London: NPSA

National Patient Safety Agency (NPSA) (2010) Rapid Response Report NPSA/2010/RRR013: Safer administration of insulin. London: NPSA

National Patient Safety Agency (NPSA) (2016) 'Risk of severe harm and death due to withdrawing insulin from pen devices' London: NPSA

NHS Improvement (2018) Never Events List. London: NHS Improvement.

NHS (2023) Definition of Hyperglycaemia. NHS. Available at https://www.nhs.uk/conditions/high-blood-sugar-hyperglycaemia/ Accessed 23 May 2023

NICE (2016) NG17, updated 2022, Type 1 diabetes in adults: diagnosis and management.

NICE (2017) updated 2019 Safer Insulin Prescribing KTT20. Available at www.nice.org.uk/advice/ktt20 Accessed on 11 May 2023

NICE (2019) NG28, updated 2022, Type 2 diabetes in adults: management guidance.

Nursing and Midwifery Council (Oct 2018) The Code. Professional Standards of Practice and Behaviour for Nurses, Midwives and Nursing Associates. Nursing and Midwifery Council, London.

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The Forum for Injection Technique (FIT) (2016), 4th Edition. The UK Injection and Infusion Technique Recommendations. Available at www.fit4diabetes.com Accessed on 11 May 2023

The Six Steps to Insulin Safety. Available at www.diabetesonthenet.com Accessed on 09 July 2020

TREND UK (2017) Keeping Safe With Insulin Therapy. Available at www.diabetes.org.uk Accessed on 11 May 2023

TREND (2018) Injection Technique Matters: Best Practice Guideline to support Correct Injection Technique in Diabetes Care. https://trenddiabetes.online/injection-technique-matters/ Accessed on 11 May 2023

TREND (2020) Type 1 Diabetes: What to do when you are ill. Available at https://trenddiabetes.online/wpcontent/uploads/2020/03/A5_T1Illness_TREND_FINAL.pdf Accessed on 11 May 2023

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TREND (2020) Hypoglyaemia in adults in the community. Recognition, Management and Prevention. Available at https://trenddiabetes.online/wp-content/uploads/2020/04/HCP_Hypo_TREND_2020_FINAL.pdf Accessed on 11 May 2023

Appendix 1

Training Needs

Training topic:	The Six Steps to Insulin Safety
Type of training: (see study leave policy)	☐ Mandatory (must be on mandatory training register) ☑ Role specific ☐ Personal development
Division(s) to which the training is applicable:	☑ Directorate of Mental Health ☑ Community Health Services ☐ Enabling Services ☑ Families Young People Children, Learning Difficulties and Autism Directorate. ☐ Hosted Services
Staff groups who require the training:	*Please specify…* *All staff authorised to administer insulin outlined in section 4.4*
Regularity of Update requirement:	Two yearly
Who is responsible for delivery of this training?	E-learning - www.diabetesonthenet.com.
Have resources been identified?	Yes
Has a training plan been agreed?	N/A
Where will completion of this training be recorded?	☐ uLearn ☑Other (please specify)
How is this training going to be monitored?	By line managers

Appendix 2

The NHS Constitution

The NHS will provide a universal service for all based on clinical need, not ability to pay. The NHS will provide a comprehensive range of services

Shape its services around the needs and preferences of individual patients, their families and their carers	☑
Respond to different needs of different sectors of the population	☑
Work continuously to improve quality services and to minimise errors	☑
Support and value its staff	☑
Work together with others to ensure a seamless service for patients	☑
Help keep people healthy and work to reduce health inequalities	☑
Respect the confidentiality of individual patients and provide open access to information about services, treatment and performance	☑

Appendix 3

Key individuals involved in developing the document

Name	Designation
David Leeson	Clinical Educator CHS
Elaine Liquorish	Clinical Education Lead CHS
Previous Version authored by	
Pat Upsall LPT Mark Millar LPT Emma Wallis LPT June James UHL	

This version circulated to the following individuals for comment as stakeholders

Name	Designation
Amanda Parke	Nursing Associate CHS
Angela Richardson	Advanced Nurse Practitioner CHS Hospitals
Anthony Oxley	Head of Pharmacy LPT
Clare Pope	LD Modern Matron, Agnes Unit and Short Breaks
Claire Reedy	Nursing Associate CHS
Donna Fraser	Matron Community Nurses CHS
Fiona McGuigan	Matron Community Nurses CHS
Ged Swinton	Senior Resus Officer LPT
Jackie Moore	Physical Health Lead AMH
Joanne Charles	Lead Pharmacist CHS
Leon Ratcliffe	Head of Medical Services CHS
Tracy Ward	Head of Patient Safety CHS
Tracy Yole	Deputy Head of Nursing & Quality CHS
Viveen Ashman	Deputy Head of Nursing & Quality CHS
Circulated to members of the Medicines Risk Reduction Group	
Circulated to members of the Medicines Management Group	
Trust Policy Group	

Due Regard Screening Template **Appendix 4**

Section 1	
Name of activity/proposal	Policy review
Date Screening commenced	May 2023
Directorate / Service carrying out the assessment	CHS community and LPT Hospitals and wards.
Name and role of person undertaking this Due Regard (Equality Analysis)	David Leeson Clinical Educator
Give an overview of the aims, objectives and purpose of the proposal:	
AIMS: To update and review the Insulin Administration policy and complete a proportionate equality analysis	
OBJECTIVES: Due regard and equality analysis	

Section 2	
Protected Characteristic	**If the proposal/s have a positive or negative impact please give brief details**
Age	No impact
Disability	No impact
Gender reassignment	No impact
Marriage & Civil Partnership	No impact
Pregnancy & Maternity	No impact
Race	No impact
Religion and Belief	No impact
Sex	No impact
Sexual Orientation	No impact
Other equality groups?	None identified

Section 3			
Does this activity propose major changes in terms of scale or significance for LPT? For example, is there a clear indication that, although the proposal is minor it is likely to have a major affect for people from an equality group/s? Please <u>tick</u> appropriate box below.			
Yes		No	
High risk: Complete a full EIA starting click here to proceed to Part B		Low risk: Go to Section 4.	√

Section 4			
If this proposal is low risk please give evidence or justification for how you reached this decision:			
The policy does not put any person at risk of unfair treatment because of the characteristics reviewed. The review notes that cultural considerations, food and dietary requirements may indirectly influence, however there is no direct impact on the procedure of administration of insulin.			
Signed by reviewer/assessor	David Leeson	**Date**	21.09.2022
Sign off that this proposal is low risk and does not require a full Equality Analysis			
Head of Service Signed	David Leeson	**Date**	23.7.23

DATA PRIVACY IMPACT ASSESSMENT SCREENING Appendix 5

Data Privacy impact assessment (DPIAs) are a tool which can help organisations identify the most effective way to comply with their data protection obligations and meet Individual's expectations of privacy.
The following screening questions will help the Trust determine if there are any privacy issues associated with the implementation of the Policy. Answering 'yes' to any of these questions is an indication that a DPIA may be a useful exercise. An explanation for the answers will assist with the determination as to whether a full DPIA is required which will require senior management support, at this stage the Head of Data Privacy must be involved.

Name of Document:	Safe Administration of Insulin to Adult Patients in a Hospital and Community Setting Policy	
Completed by:	David Leeson	
Job title	Clinical Educator	21st Sept 2022

Screening Questions	**Yes / No**	**Explanatory Note**
1. Will the process described in the document involve the collection of new information about individuals? This is information in excess of what is required to carry out the process described within the document.	No	
2. Will the process described in the document compel individuals to provide information about them? This is information in excess of what is required to carry out the process described within the document.	No	
3. Will information about individuals be disclosed to organisations or people who have not previously had routine access to the information as part of the process described in this document?	No	Information may be shared with the patients consent between healthcare professionals this is documented in systmone
4. Are you using information about individuals for a purpose it is not currently used for, or in a way it is not currently used?	No	
5. Does the process outlined in this document involve the use of new technology which might be perceived as being privacy intrusive? For example, the use of biometrics.	No	
6. Will the process outlined in this document result in decisions being made or action taken against individuals in ways which can have a significant impact on them?	No	
7. As part of the process outlined in this document, is the information about individuals of a kind particularly likely to raise privacy concerns or expectations? For examples, health records, criminal records or other information that people would consider to be particularly private.	No	
8. Will the process require you to contact individuals in ways which they may find intrusive?	No	

If the answer to any of these questions is 'Yes' please contact the Data Privacy Team via Lpt-dataprivacy@leicspart.secure.nhs.uk
In this case, ratification of a procedural document will not take place until review by the Head of Data Privacy.

Data Privacy approval name:	David Leeson
Date of approval	20th July 2023

Acknowledgement: This is based on the work of Princess Alexandra Hospital NHS Trust

Appendix 6

PROCEDURE FOR TAKING A CAPILLARY BLOOD GLUCOSE / KETONE READING

Equipment

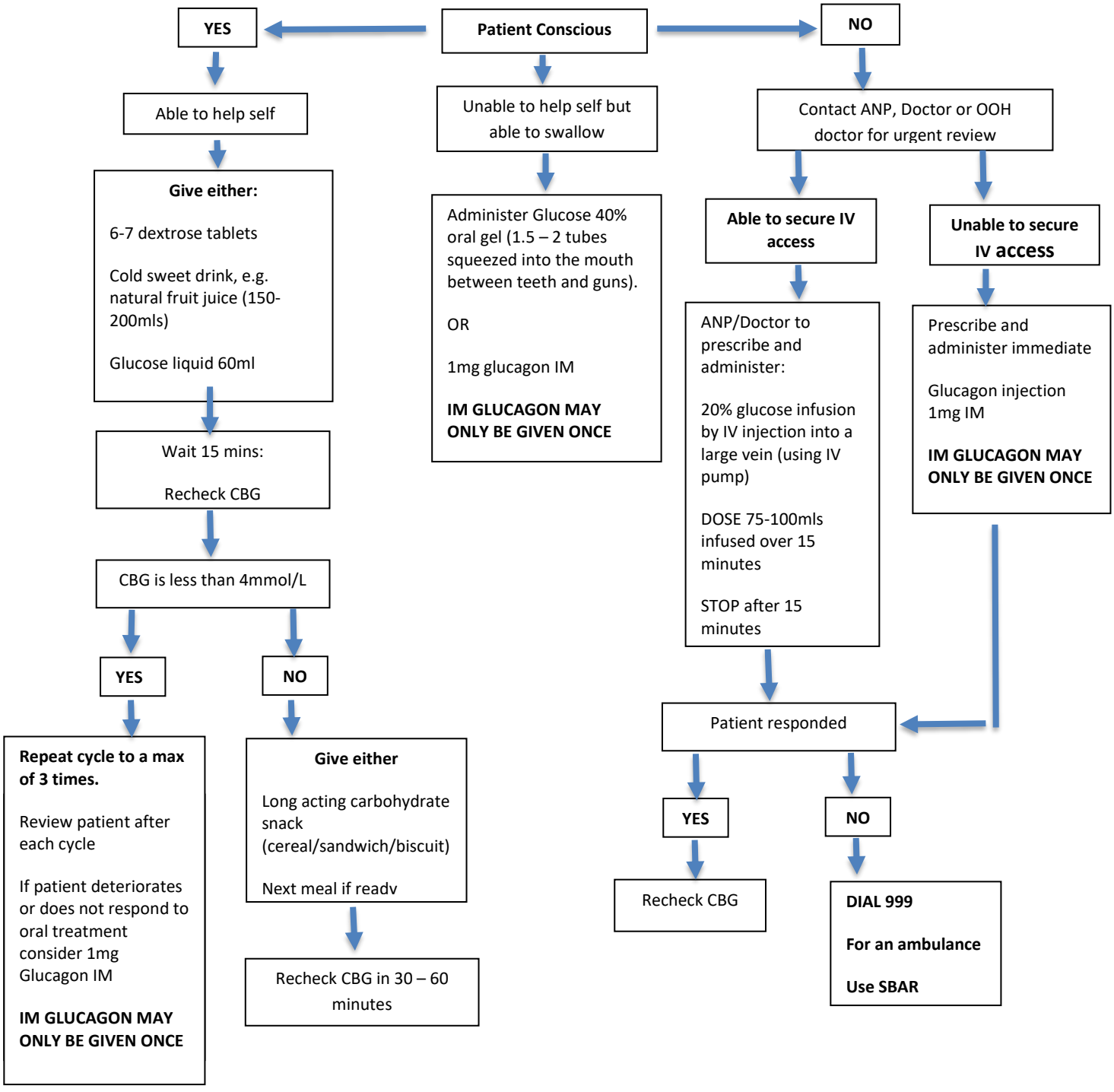
- Hand hygiene facilities
- Blood glucose/ketone meter issued via LPT
- Test strips
- Single use retractable safety lancet
- Sharps container
- Cotton wool/ gauze swabs
- Gloves and apron
- Patient record

Procedure	**Rationale**
Identify patient, obtain consent and cooperation.	To ensure correct identity, gain informed consent and understanding.
Wash and dry your hands, apply gloves and apron	To maintain hand hygiene and prevent cross infection
Ensure that patient has washed in warm water, rinsed and dried their hands	Warming fingers can increase blood flow and many household products can affect blood glucose readings
Remove testing strip from the pot and replace lid immediately	To prevent deterioration of remaining strips
Insert strip into meter and ensure meter code	To ensure compatibility of strips and meter
Use a single use retractable safety lancing device and puncture finger on the side of the fingertip (outer aspect)	Less painful and prevents damage to nerve endings in fingertips
Gently squeeze or massage fingertip to get a round drop of blood. If the blood smears do not use this sample. Dry the area and gently squeeze another drop of blood, if still not effective, puncture a new site with a new lancet	To ensure correct sample size obtained
Apply sample as per manufacturer's instructions	To ensure accuracy of reading
Press cotton wool or gauze to puncture site	To stop blood flow from finger
Read result and take action if outside target range	To ensure prompt treatment of hypo and hyperglycaemia
Record results in patient records and SystmOne	Good record keeping and to ensure an audit trail

TREATMENT OF HYPOGLYCAEMIA ALGORITHM IN-PATIENTS Appendix 7

Blood glucose is less than 4mmol/L with or without symptoms

Sweating	Pale	Vague/Confused
Dizziness	Lack of Co-ordination	Tiredness
Trembling	Palpitations	Convulsions
Feeling of hunger	Tingling of lips	Coma
Anxiety/irritability	Difficulty with speech	



Appendix 8

Treating Hypoglycaemia in the community

Blood glucose less than 4mmol/l with or without these symptoms: Sweatiness, trembling, feeling hungry, dizziness, anxiety/irritability, pale, lack of coordination, palpitations, tingling lips, problems concentrating, vague, confused, tired, problems speaking, convulsions, coma.

BOX 1

Is the individual conscious and able to swallow?

YES →

BOX 2

Give 15 – 20g quick acting carbohydrate e.g.

- 5 Jelly Babies
- 5 – 7 Glucose tablets
- 200ml of natural juice (small carton)

- 60 ml Glucojuice or if Glucojuice is not available then
- 1.5 – 2 Glucose gel tubes in between the teeth and gums

→

BOX 3

If after 10-15 mins the blood glucose level is still less than 4 mmol/l, repeat the treatment.

- Repeat treatments up to 3 times every 15mins
- If the blood glucose remains less than 4mmol/l after 3 treatments seek medical advice.
- Once the blood glucose is above 4mmol/l, give a starch snack like a banana or glass of milk or 2 biscuits unless a meal will be eaten in the next 1-2 hours

OR

BOX 4

Is the individual conscious BUT not able to swallow ie has an enteral feeding tube in place.

YES →

BOX 5

People on enteral feeds:

If conscious and feeding tube is in place:

- You should stop the feed.
- Flush the tube with water
- Insert 60mls of Glucojuice or 50-70mls of Fortijuice or Ensure Plus
- Avoid use of Glucogel

→

BOX 6

Flush tube with 30ml water

- Wait 10-15mins and re-check blood glucose level
- Repeat this procedure every 10-15mins and up to 3 times until the blood glucose is above 4mmol/l then resume feed.
- If hypoglycaemia occurs between feeds, treat as above and once blood glucose is above 4mmol/l connect the feed and give enough to deliver 20g of carbohydrate (see the feed

OR

Is the individual unconscious

- If they are unconscious and not breathing call 999 for assistance. Administer CPR.
- If breathing put the person in the recovery position and maintain an open airway – DO NOT PUT GLUCOSE IN THE MOUTH.
- Give 1mg Glucagon via IM injection **if available** and **you are trained to do so.** Dial 999 for paramedic assistance.
- If Glucagon is not available or is ineffective dial 999 and call for paramedic assistance
- DO NOT LEAVE THE PERSON UNATTENDED.

→

Once fully conscious (usually after about 15 mins)

IF ABLE TO SWALLOW FOLLOW BOX 2 and 3

IF UNABLE TO SWALLOW AND FEEDING TUBE IN PLACE FOLLOW BOXES 5 and 6

- Continue to monitor as there is an increased risk of recurrent hypoglycaemia in those receiving Glucagon
- Glucagon can take up to 15mins to work and may be ineffective in malnourished people, in severe liver disease and those with repeated hypoglycaemia.

Always review medication following an episode of hypoglycaemia.

Appendix 9

How to administer a Glucagon injection:

You should not administer glucagon unless you are competent to do so

• Wash your hands and check the expiry date on the glucagon kit. Open the box.

• Flip off the seal covering the top of the vial containing glucagon powder.

• Remove the cover from the needle of the syringe containing water.

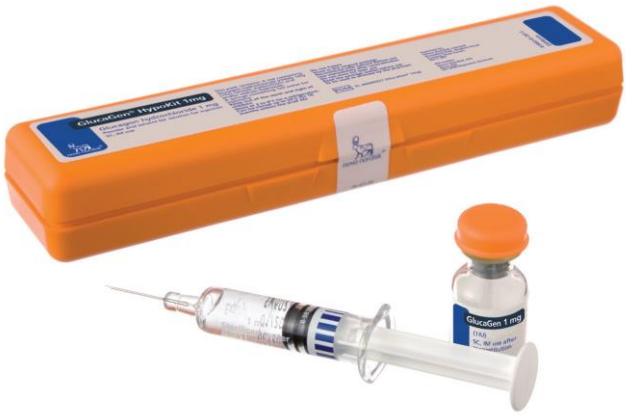
• Insert the needle into the rubber stopper of the vial. Inject the water into the vial by depressing the plunger of the syringe.

• Remove the syringe and dissolve the powder in the water by gently shaking the vial. The solution should be clear with no residual particles of powder in the vial.

• Insert the needle back into the vial through the rubber stopper. Turn the vial upside down (so the fluid fills the neck of the vial). Pull down the plunger slowly to withdraw the fluid into the syringe.

• Remove the needle from the vial. Hold the syringe with the needle pointing upwards. Tap lightly to move any air bubbles to the top. Carefully push the plunger up until the air bubbles have been dispelled.

• Inject into muscle in the top of the arm or the outer upper quadrant of the buttock or thigh.



Appendix 10

U500 Insulin

HUMULIN® R U-500 KwikPen® insulin human injection

(500 units/mL, 3 mL single-patient-use pen)

Important Information – please read

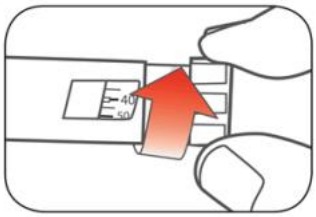
HUMULIN R U-500 is a concentrated insulin.

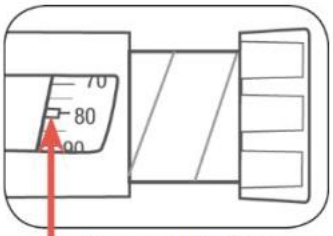
DO NOT transfer HUMULIN R U-500 insulin from the Pen into a syringe. A severe overdose can happen, causing severe hypoglycaemia, which may endanger life.

The HUMULIN® R U-500 KwikPen® (Pen) works differently from other pens. It dials 5 insulin units with each click. Do not count the clicks of the dose knob when selecting your dose. This may result in either an underdose or overdose of insulin.

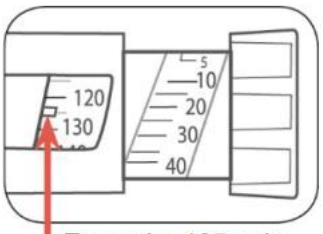
Step 8:

- Turn the Dose Knob to select the number of units you need to inject. The Dose Indicator should line up with your dose.
  - The Dose Knob clicks as you turn it. Each click of the Dose Knob dials **5 insulin units** at a time.
  - **Do not dial your dose by counting the clicks. You may dial the wrong dose. This may lead to you getting too much insulin or not enough insulin.**
  - The dose can be corrected by turning the Dose Knob in either direction until the correct dose lines up with the Dose Indicator.
  - The **even** numbers (for example, 80) are printed on the dial.
  - The **odd** numbers (for example, 125) are shown as lines between the even numbers.
- **Always check the number in the Dose Window to make sure you have dialed the correct dose.**





Example: 80 units shown in Dose Window

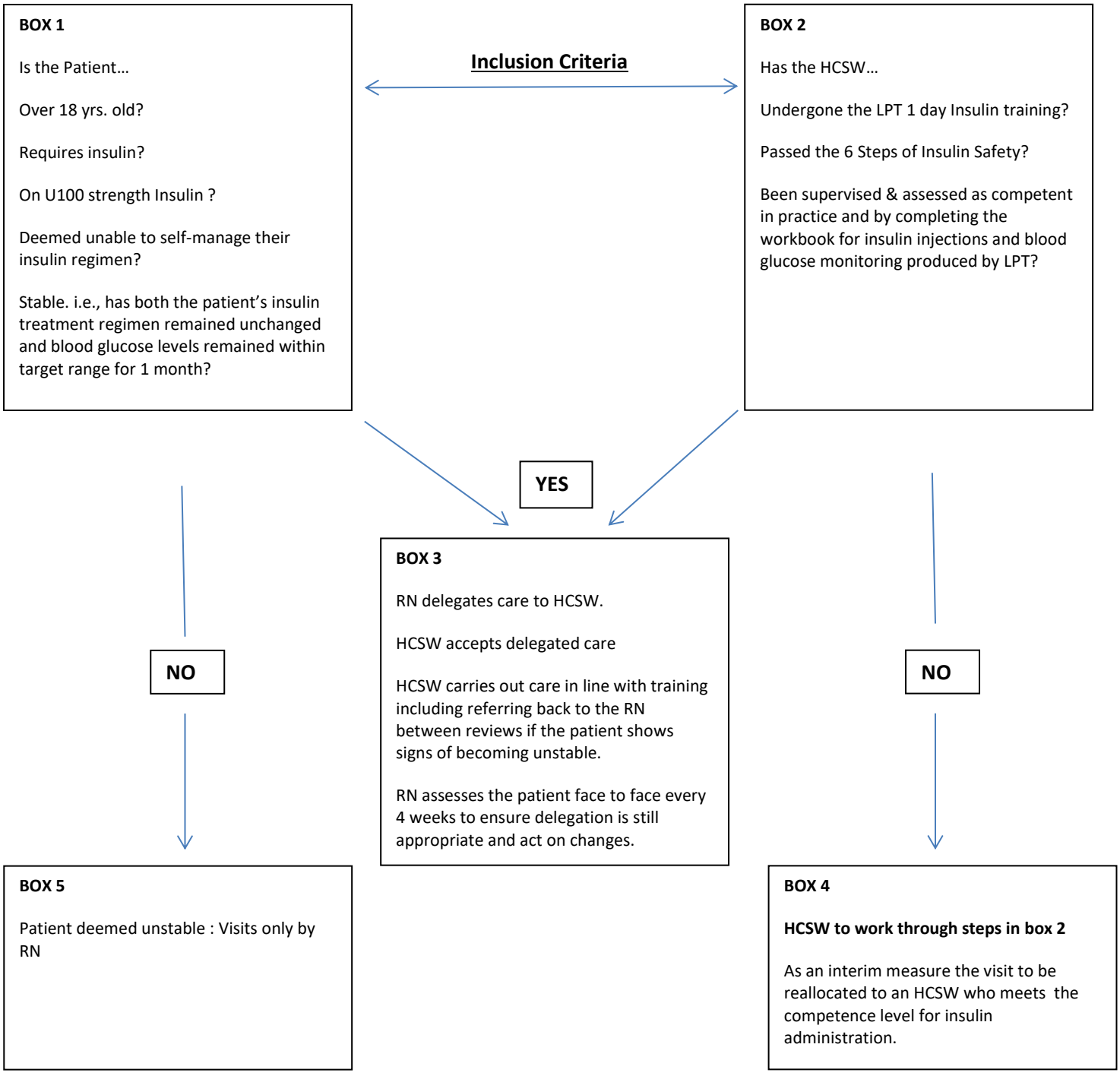


Example: 125 units shown in Dose Window

Appendix 11

Standard Operating Procedure Flowchart

Healthcare Support Workers (band 3) Community to give Insulin Injections. Nov 2022 V5



LLR management of hyperglycaemia in people with type 1 and type 2 diabetes on insulin in the community and care homes

Hyperglycaemia: Pre meal capillary blood glucose (CBG) > 18.0 mmol/L

For patients under the care of the community DSN team, with personalised care plans please continue to follow these or contact the DSN team for advice.

Complete set of observations & NEWS2 score*

Check blood or urinary ketone level

If blood ketone ≥ 3.0 mmol/L or urine ≥ +++ and unwell, admission to hospital advised

Patient unwell and/or triggering on NEWS2 and/ or blood ketone > 1.5 mmol/L or urinary ≥ ++

- Escalate & create a plan of care in line with the NEWS2 guidelines
- Give extra rapid acting insulin **in addition** to usual diabetes treatment, as per insulin authorisation chart*
- Encourage oral non-sugary fluids at least 100ml/hr
- **STOP** Metformin & SGLT-2 inhibitors (Dapagliflozin/ Canagliflozin/Empagliflozin) if risk of dehydration/ vomiting/diarrhoea
- Recheck NEWS2 & CBG level at **4 hours**.

If ≤ 18.0 mmol/L

No additional rapid acting insulin needed

If ≥ 18.1 mmol/L give another dose of rapid acting insulin as per insulin authorisation chart*

Re-check ketone level

GP to review & optimise diabetes treatment

Patient still unwell after 48 hours

Care plan suggests admission

CBG remain ≥ 18.0 mmol/L for more than 24hours despite above action

Admission to hospital

Care plan suggests not for admission

CBG remain ≥ 18.0 mmol/L for more than 24hours despite above action

GP to further review & optimise diabetes treatment

Patient well and/or not triggering on NEWS2 and/or blood ketone < 1.5 mmol/L or urinary ketones ≤ +

- Assess **pre meal** CBG profile
- Give rapid acting insulin in addition to usual diabetes treatment, as per insulin authorisation chart*
- Encourage oral non-sugary fluids
- Re-check NEWS2 & CBG level at **4 hours**.

If ≤ 18.0 mmol/L

No additional rapid acting insulin needed

If ≥ 18.1 mmol/L contact GP to review & optimise diabetes treatment

Re-check ketone level

*Extra rapid acting insulin should be avoided after 17:30 hours due to the risk of overnight hypoglycaemia. After this time refer to out of hours via DHU or contact 111 for advice.

If a decision is made not to administer rapid acting insulin the reasons should be clearly documented & care plan put in place to monitor the patient

Patient well after 48 hours

Restart Meformin & SGLT-2 inhibitors if eating and drinking well

Blood ketone	Urine ketone	Interpretation
Less than 0.6 mmol/L	Negative	Normal reading
0.6 to 1.5 mmol/L	Trace or +	More ketones than normal. Follow well patient pathway
1.6 to 2.9 mmol/L	++	High risk of diabetic ketoacidosis. Encourage oral fluids, give additional rapid acting insulin. Follow unwell patient pathway.
3.0 mmol/L or above	+++/++++	Likely diabetic ketoacidosis. Admission to hospital advised.

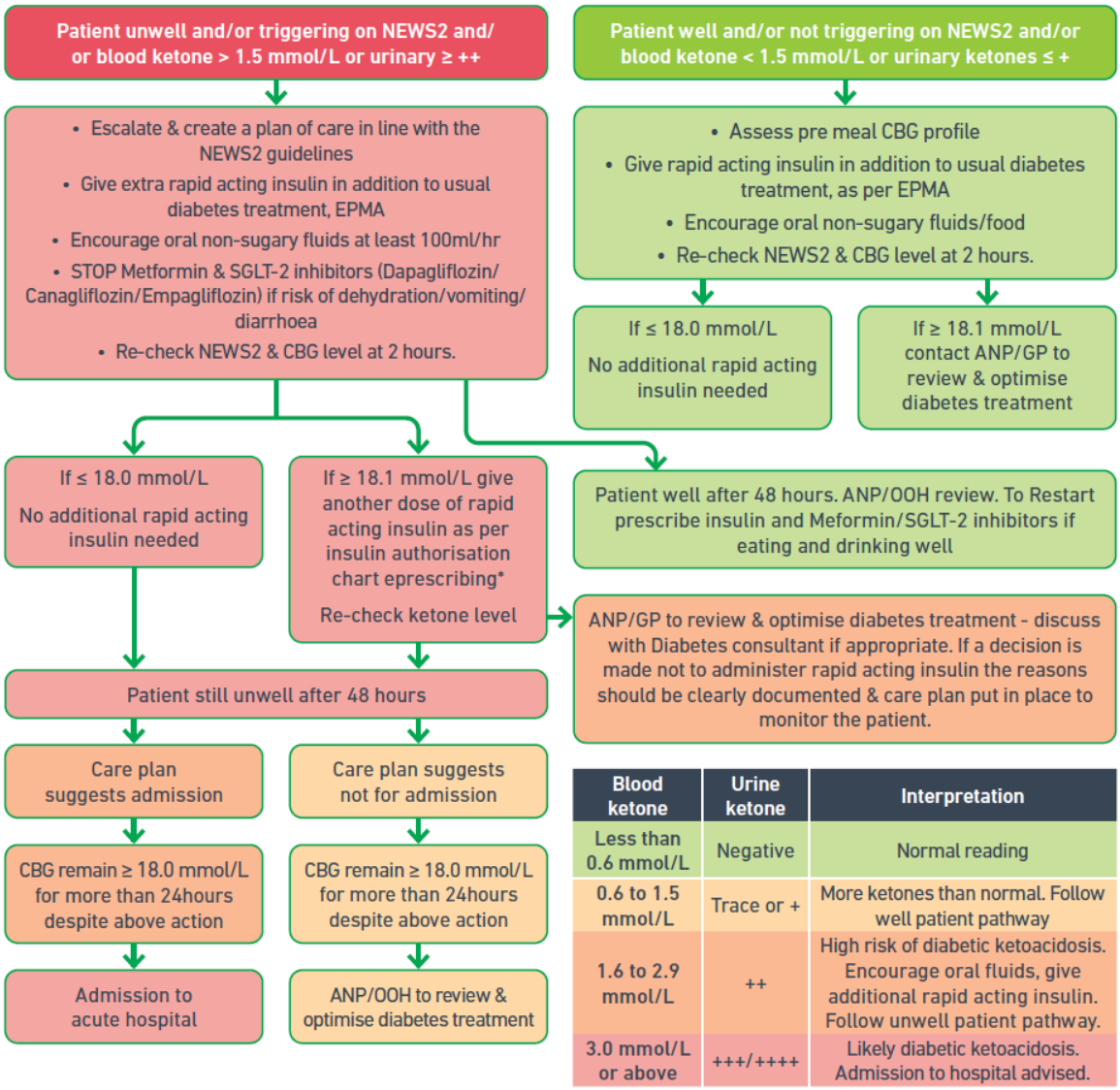
*NEWS2 guidelines may not be used in residential care homes.

www.leicesterdiabetescentre.org.uk | @LDC_Tweets | leicesterdiabetescentre

Leicester Diabetes Centre

NHS
Leicestershire Partnership
NHS Trust

Nursing staff -LLR management of hyperglycaemia > 18.0 mmol/L in people with type 1 and type 2 diabetes on insulin in the community hospitals



Blood ketone	Urine ketone	Interpretation
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3.0 mmol/L or above	+++/++++	Likely diabetic ketoacidosis. Admission to hospital advised.

www.leicesterdiabetescentre.org.uk | @LDC_Tweets | leicesterdiabetescentre

NEWS key 0 1 2 3	FULL NAME	NHS No:
	DATE OF BIRTH	DATE OF ADMISSION TO CASELOAD

	DATE / TIME			DATE / TIME
A+B Respirations Breaths/min	≥25	3		≥25
	21–24	2		21–24
	18–20			18–20
	15–17			15–17
	12–14			12–14
	9–11	1		9–11
	≤8	3		≤8
A+B SpO_2 Scale 1 Oxygen saturation (%)	≥96			≥96
	94–95	1		94–95
	92–93	2		92–93
	≤91	3		≤91
SpO_2 Scale 2† Oxygen saturation (%) Use Scale 2 if target range is 88–92%, eg in hypercapnic respiratory failure †ONLY use Scale 2 under the direction of a qualified clinician	≥97 on O_2	3		≥97 on O_2
	95–96 on O_2	2		95–96 on O_2
	93–94 on O_2	1		93–94 on O_2
	≥93 on air			≥93 on air
	88–92			88–92
	86–87	1		86–87
	84–85	2		84–85
	≤83%	3		≤83%
Air or oxygen?	A=Air			A=Air
	O_2 L/min	2		O_2 L/min
	Device			Device
C Blood pressure mmHg Score uses systolic BP only	≥220	3		≥220
	201–219			201–219
	181–200			181–200
	161–180			161–180
	141–160			141–160
	121–140			121–140
	111–120			111–120
	101–110	1		101–110
	91–100	2		91–100
	81–90	3		81–90
	71–80			71–80
	61–70			61–70
	51–60			51–60
	≤50			≤50
C Pulse Beats/min	≥131	3		≥131
	121–130	2		121–130
	111–120			111–120
	101–110	1		101–110
	91–100			91–100
	81–90			81–90
	71–80			71–80
	61–70			61–70
	51–60			51–60
	41–50	1		41–50
	31–40	3		31–40
	≤30			≤30
D Consciousness Score for NEW onset of confusion (no score if chronic)	Alert	3		Alert
	Confusion			Confusion
	V			V
	P			P
	U			U
E Temperature °C	≥39.1°	2		≥39.1°
	38.1–39.0°	1		38.1–39.0°
	37.1–38.0°			37.1–38.0°
	36.1–37.0°			36.1–37.0°
	35.1–36.0°	1		35.1–36.0°
	≤35.0°	3		≤35.0°
NEWS TOTAL				**TOTAL**
Monitoring frequency				Monitoring
Escalation of care Y/N				Escalation
Initials				Initials

Appendix 15

NEWS 2 ESCALATION (COMMUNITY)

NEWS 2 Score	Frequency of Monitoring	Clinical Response
0	Frequency of NEWS2 monitoring to be determined on an individualised basis	• No action required during this visit • For future visits where vital signs are required always calculate a NEWS2 score
1-4	Patient needs to have a specific personalised management plan drawn up which includes • baseline NEWS2 score • acceptable parameters for each vital sign • set frequency of monitoring	**If NEWS2 is outside of patients acceptable parameters:** • Discuss with coordinator on duty (B6/7) to decide if escalation to GP/ANP/OOH is required • Repeat observations and review by RN within 4 hours if it is decided that the patient does not require further escalation. • If review required after 1800 hours discuss with coordinator on duty to decide upon referral to OOH/GP/ evening service or give Safety Netting advice
URGENT RESPONSE THRESHOLD Total score **5** or more **OR** **3** in one parameter **SEPSIS FLAG SIGNS** **S**lurred speech **E**xtreme shivering / muscle pain **P**assing no urine in 12 hours **S**evere breathlessness **I** feel like I might die **S**kin mottled / discoloured	Repeat observations every 15 mins until emergency services arrive Check Respect form and DNAR status	**If NEWS2 is outside of patients acceptable parameters:** • **Call ambulance (999)** • Stay with patient until emergency services arrive • Complete Sepsis flowchart **If the ceiling of care is to remain at home**: • Inform the coordinator on duty (B6/7) If a reversible condition is identified consider urgent 999 transfer to hospital • Inform GP/OOH & arrange urgent review by GP/ANP/OOH to update management plan

Appendix 16

Management of exposure to potential and actual blood borne virus infections in health care

Accidental Exposure

Significant Exposure

YES

NO

Incidents considered significant.

Percutaneous/mucous membrane exposure i.e., blood or blood stained body fluids.

- **Needlestick injury**
- **Bone fragment penetration**
- **Human bite contaminated with source blood**
- **Exposure of broken skin abrasions, cuts, lacerations, eczema.**
- **Splash exposure to mucous membrane e.g., the mouth or eye**

- **Wash exposed area**
- **Encourage bleeding from the wound under running water if appropriate (do not suck)**
- **Irrigate mucous membrane of the eye with appropriate sterile solution/wash the mouth with water**
- **Inform Manager and report to Occupational Health (OH) ASAP (who will follow up all significant exposures)**

Take blood from the injured/affected person for serum save in case of future need for testing

If possible and the source is known, obtain serum and permission to test for HIV, Hepatitis B and C.

Wash area thoroughly with water

- **Blood in contact with intact skin**
- **Bites/Scratches where no exchange of blood**
- **Exposure of worker to other body fluids not contaminated with blood i.e.**
  - **Urine**
  - **Faeces**
  - **Saliva**
  - **Vomit**

Counsel and reassure recipient. No action required.

Exposure to stale/dried blood or body fluids e.g. needle found in a rubbish bag or other unknown source. Proceed as above and report to OH for appropriate follow up (if unvaccinated— accelerated Hepatitis B Vaccine (Doses 0, 1, 2

Source known or high suspicion of being:

- **HIV +ve**
- **Hep B +ve**
- **Hep C +ve**

NO

If no previous history of Hepatitis B Vaccination, good practice would suggest accelerated course of Hepatitis B Vaccine (Doses 0, 1, 2 months & 12 Months)

YES

HIV

Post exposure prophylaxis (PEP) will be considered. OH will refer onto GUM if required.

If Out of hours, contact on call duty Genito-urinary Medicine Registrar via the LRI switchboard.

OH will undertake follow up blood test 3 months after completing PEP.

Hepatitis B

Injured/affected person not previously vaccinated against Hepatitis B. This will be dealt with by OH:

- **Start an accelerated course of vaccine (0, 1, 2months & 12 Months) and give a dose of Hepatitis B immunoglobulin.**

Responders to Hepatitis B vaccine:

- **Give a booster dose of vaccine**

Known non-responders to Hepatitis B vaccine:

- **Should receive a dose of Hepatitis B immunoglobulin. Please discuss with OH, the local Health Protection Unit or local microbiologist.**

Hepatitis C

There is no vaccine available; however, early treatment is effective.

To ascertain if someone has been infected with Hepatitis C virus, bloods are normally taken at 6, 12 & 24 weeks, OH will follow up.

An incident report must be completed for all both incidents irrespective of the exposure risk

Public Health England 0334 225 4524

East Midlands Team: (Option 1)

University Hospitals of Leicester

Switchboard: 0300 303 1573