

Policy for the Safe Use of Insulin

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1.0	January 2019	Grace Njoku Georgina Amparado Molina Chantal Riviere	Approved	
2.0	February 2021	Caroline Ogunsola, Charity Okoli & Vikramsingh Totaram		Minor amendment made to incorporate Mental Health settings usage and reflect a Trust wide policy. The Insulin passport added as appendix 7. Information on Infection Control in view of Covid-19 pandemic added appendix 8. Hyperlinked some policies such as the "Self Administration of Medicines policy", to ensure staff read this before delegation of administration to patient. References to the document updated

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Virtual consultation of staff of inpatient units such as East Ham Care Centre and Archers Unit in Bedfordshire also took place.

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1.0. Executive Summary

The policy provides guidance to all clinical staff on the safe prescribing, dispensing, administration and monitoring of insulin to adults in ELFT. It aligns with the National Patient Safety Agency (NPSA) Rapid Response Reports and Patient safety alerts; National Institute of Health and Care Excellence (NICE) NG17- Type 1 Diabetes in adults: Diagnosis and Management; the Royal College of Nursing Guidance on the Advanced Preparation of Insulin syringes 12/2018 and the NHS England 2015-16 Never Event list: Overdose of Insulin due to abbreviations or incorrect device.

Key points are:

- Insulin must only be given via an insulin syringe or pen device.
- Insulin should only be prescribed as “Units”, abbreviations such as “U” or “IU” are not acceptable.
- Health Care Practitioners should ensure the correct insulin pen with safety retractable needle or an insulin syringe with retractable needle is used when administering insulin.
- Health Care Practitioners must check that the monitoring requirements are being followed according to the patient’s care plan.
- Blood glucose should always be checked before giving insulin.
- Where assessed as safe, patients should be encouraged to self-administer their insulin. The multidisciplinary and community teams should use their clinical and professional judgment to assess the suitability of self-administration on an individual patient basis and this may include a mental capacity assessment where required.
- Health Care Practitioners administering insulin should have completed training on the safe use of insulin and should maintain their knowledge and skills to enable them to administer medication effectively and safely.
- Only Health Care Practitioners that have successfully completed specific training and been assessed as competent can administer insulin with the exception of registered nurses and doctors.
- On inpatient unit’s medicines reconciliation should be conducted on admission or transfer to verify that the correct insulin product and dose is prescribed. Where available the patient-held record i.e. ‘Insulin Passport/Card’ should be checked as part of this process.
- Whenever insulin is prescribed for inpatients, quick acting oral glucose e.g. GlucoGel®, DextroGel® should always be prescribed on the “when required” side (PRN) of the chart, with appropriate advice of when to use it.

- Patients using insulin pumps must be under the care of a trained specialist team and may only continue using a pump device if all necessary equipment is available and the patient is able to manage the pump therapy. If it is not suitable to continue with the pump an alternative method for insulin administration should be agreed with the patient

2.0. Definitions/Explanation of Terms

Insulin Passport/Card: A patient held information record book detailing the insulin prescribed for the patient use. Electronic copy of the insulin passport is available on the Trust intranet, click [here to access](#). Insulin passport also accessible from appendix 7.

Hypoglycaemia: is defined as blood glucose less than 4mmol/L with or without symptoms, however the absolute blood glucose level at which signs and symptoms begin to occur can vary. Impaired awareness of hypoglycaemia can occur when the ability to recognise usual symptoms is lost, or when the symptoms are blunted or no longer present. An increase in the frequency of hypoglycaemic episodes may reduce the warning symptoms experienced by the patient. Impaired awareness of symptoms below 3 mmol/litre is associated with a significantly increased risk of severe hypoglycaemia.

Hyperglycaemia: is defined as high blood glucose levels outside recommended levels. Unless otherwise stated in patient's care plan, hyperglycaemia is regarded as blood glucose levels above 7mmol/l before a meal and above 8.5mmol/l two hours after a meal.

Diabetic Keto Acidosis (DKA): Consistently high blood glucose levels can lead to a condition called diabetic ketoacidosis (DKA). This happens when a severe lack of insulin means the body cannot use glucose for energy, and the body starts to break down other body tissue as an alternative energy source. Ketones are the by-product of this process. Ketones are poisonous chemicals which build up and, if left unchecked, will cause the body to become acidic – hence the name 'acidosis'. DKA is a life-threatening emergency.

Hyperosmolar Hyperglycaemic State (HHS) – severe dehydration caused by the body trying to get rid of excess sugar; this tends to affect people with type 2 diabetes

Never Events: Are serious incidents that have the potential to cause serious patient harm or death defined as 'wholly preventable, where guidance or safety recommendations that provide strong systemic protective barriers are available at national level, and should have been implemented by all healthcare providers.

3.0. Introduction

Potentially fatal outcomes can occur if incorrect types, doses, or devices of insulin are used or doses omitted.

The National Patient Safety Agency (NPSA) has produced a Rapid Response Report NPSA/2010/ RRR Report (NPSA/2010/RRR013) and a Patient Safety Alert (NPSA/2011/PSA003) to address the safety issues associated with insulin treatment.

In the UK the number of people with diabetes who are on insulin is growing There are a growing number of people who, for reasons of poor dexterity, vision, mental capacity or lack of carer support, are unable to administer their own insulin and/or undertake their blood glucose monitoring who come under the care of Community Health Services.

4.0. Purpose

This policy aims to:

- Support safe and consistent insulin practice in East London Foundation Trust (ELFT) Community Health Services.
- It incorporates recommendations outlined by the NPSA, ELFT Medicines Policy and the ELFT Protocol for the Safe Use of Insulin.
- It provides guidance to all clinical staff on the safe prescribing, dispensing, administration and monitoring of insulin in adults under the care of ELFT to ensure that the right patient receives the right insulin, at the right dose and at the right time.
- It defines responsibilities of Health Care Practitioners involved in the care of patients on insulin.

5.0. Scope

The scope of this policy covers

- The management of Type 2 diabetes in adults in inpatient and community settings.
- It applies to all health care practitioners (HCPs) involved in the prescribing, dispensing, administration and monitoring of Insulin to adults in ELFT.
- It excludes insulin pump therapy.

- Glucagon-like peptide-1 (GLP-1) receptor agonists e.g. exenatide, liraglutide, lixisenatide and dulaglutide, are also given by subcutaneous injection for the treatment of type 2 diabetes mellitus. Although processes to ensure safe administration are similar to insulin, this policy does not cover the use of these medicines.
- HbA1c/IFCC (Glycated haemoglobin) is a common test which indicates blood glucose levels for the previous two to three months. Blood glucose monitoring using HbA1c/IFCC levels are not discussed in this policy. Practitioners should refer to national (NICE guidelines) and local guidelines on the management of diabetes for information. Individualised HbA1c/IFCC targets are agreed with a patient based on their needs and circumstances. A clinician with experience in managing patients with diabetes should be contacted for advice if a patient's HbA1c/IFCC level is outside the patient's agreed target.

6.0. Responsibilities

6.1. Prescribers

- On admission or transfer, prescriber to confirm the insulin product and dose through medicines reconciliation before prescribing.
- Check if the patient has an Insulin passport/card. If available, it should be used as part of the medicines reconciliation procedure.
- Where appropriate complete or update the Insulin Passport / Card.
- Check monitoring requirements required, clearly document instructions for monitoring in the patient's notes and where applicable on the medicines chart /home notes/ care plan.
- Write prescriptions legibly and clearly using brand names for insulin as well as for insulin pen devices.
- Write all doses in "Units". Abbreviations such "U" or "IU" are not acceptable.
- State any changes made to the insulin prescription during inpatient stay clearly on the discharge notification form/ letter.
- Prescribe quick acting oral glucose e.g. GlucoGel®, DextroGel® and glucagon injection on the "when required" side (PRN) with appropriate advice of when to use it whenever insulin is prescribed

6.2. Registered Nurse and other Trained Health Care Practitioners

- Check insulin name and dose on prescription or Medicines Administration Record chart is legible and ensure dose has been written in Units. Abbreviations such “U” or “IU” are not acceptable and should be referred back to the prescriber/transcriber.
- Clarify any queries on the insulin prescription before administration.
- Ensure administration is in accordance with the prescription and make an accurate record of administration.
- Check monitoring requirements/ instructions and carry out monitoring (i.e. blood glucose monitoring) in accordance with the care plan.
- Ensure that a retractable needle is used with the appropriate prefilled pen or insulin syringe.
- Be aware of the signs of hypo/hyper glycaemia and know what actions to take if patients exhibit these signs and symptoms. Must know when to use quick acting oral glucose e.g. GlucoGel®, DextroGel® and Glucagon injection ® for hypoglycaemia.

6.3. All Clinical Staff

- All clinical staff qualified to prescribe / dispense/ administer medicines should operate within this policy.
- Clinical staff should familiarise themselves with this policy and should be suitably trained and competent to carry out their professional duties.
- All ELFT staff involved in the prescribing, dispensing or administration of insulin should complete the e-learning programme available on OLM (Oracle Learning Management)
- It is the responsibility of all staff involved in any aspect of this policy to inform their manager of any variation in practice or inability to follow the processes defined.

6.4. Diabetes Specialist Nurses

- Provide Specialist advice, guidance and support in assessing and reviewing patients
- Support Nursing staff in the safe use of insulin including provision of education and training

7.0. Initiation of Treatment

- Insulin should only be initiated by a Diabetes Specialist Service/ a GP/ Practice nurse (who is an insulin initiator) or at an acute Trust.
- Following initiation, only prescribe insulin in the context of a written protocol and/ treatment plan including guidance on monitoring.
- The treatment plan must be documented clearly in the patient's electronic record and state the type and dose of insulin; device, timing of administration and monitoring requirements.
- Patients / Carers should be fully informed and receive verbal and up -to-date written information about their therapy which should include the Insulin Passport/Card and patient information booklet/ leaflet. Electronic copy of the insulin passport is available on the Trust intranet, click [here to access](#). Insulin passport also accessible from appendix 7.
- Obtain confirmation of the patients understanding and consent. If the patient lacks capacity to consent, then a decision should be made in line with the Mental Capacity Act (2010).

8.0. Continuation of Treatment on Inpatient Units

- Non specialist doctors/ non-medical prescribers who prescribe on-going insulin should have access to Trust policies including guidance on monitoring and the treatment of hyper/hypo glycaemia.
- Where patients are admitted taking insulin, the preparation, dose, frequency, monitoring and administration requirements must be clarified by checking at least two reliable and current sources as per the ELFT Medicines Reconciliation Policy. Every effort should be made to check the patient' s treatment plan from the GP or initiating service as well as the patient held record: 'Insulin Passport/Card' if available.
- If the patient is seen "out-of-hours", and it is not possible to access the GP or summary care records then at least two other sources should be used to verify the insulin prescription e.g. patient's own drugs (PODs), patient/carer, and community pharmacy. The insulin details should be clarified as soon as possible to avoid missed doses.
- Prescribers should prescribe quick acting oral glucose e.g. GlucoGel®, DextroGel® as well as Glucagon®, with appropriate advice of when to use it, for all in patients requiring insulin therapy.

9.0. Safe Prescribing and Transcribing of Insulin

- The insulin type, device, dose and frequency must be clearly written.
- The term 'Units' should be used in all contexts when prescribing insulin.
- Abbreviations such as 'U' or 'IU' should never be used.
- The device required to administer the insulin preparation, i.e. pen device or insulin syringe when administered from a vial, should be stated on the prescription or Medicines Administration Record Chart.
- Should the preparation of insulin change or be discontinued by the manufacturer, the prescriber should seek advice from the specialist service or a pharmacist to confirm a suitable alternative preparation and dose.
- If a patient is prescribed insulin more than once a day, then all of the doses of insulin should be prescribed on the same chart.
- If the insulin dose changes then the whole insulin prescription should be crossed off and rewritten.
- The prescriber is responsible for clinically reviewing the patient's insulin requirements and prescription.
- For inpatients requiring a subcutaneous insulin sliding scale regimen the whole regimen must be prescribed on their drug chart where it is clearly visible. A note of the requirement for a sliding scale must be made in the patient's clinical record (electronic or paper).
- Transcribing of insulin should be in line with the ELFT Transcribing procedure. All of the best practice prescribing recommendations above will apply when insulin is transcribed.

10.0. Administration of Insulin

1. Insulin is a "high risk" Medicine and should be administered **according to the patient's care plan.**
2. Insulin is a Critical Medicine and administration must not be delayed. A supply of insulin must be sourced as soon as possible to avoid missed doses and to ensure the dose is administered at the prescribed time.
3. Use necessary Personal Protective Equipment e.g. gloves for blood glucose checks and administration. In view of Covid-19 see Appendix 8 for more information.
4. Check the blood glucose levels, record results and act on them guided by the patient's target level and care plan.
5. Check with the patient, when the last dose of insulin was administered.
6. Check with patient if insulin needs to be administered at a specific time e.g.

- bedtime, meal time.
7. Ensure the insulin has been written correctly.
 8. Ensure the dose, and insulin types are correct for the patient.
 9. Ensure, where possible, that the insulin dose is checked with a second registered nurse immediately prior to administration.
 10. Check the correct insulin is available
 11. Check that the dose is legible and ensure dose has been written in units. Abbreviations such as “U or IU” are not acceptable and should be referred back to the prescriber as the dose must be clarified and re written.
 12. Check expiry date and/or use by date.
 13. Record /label start date of insulin vial/pens.
 14. Discard after 4weeks of usage and use a new pen/vial from the refrigerator.
 15. Patient’s own insulin should only be used if it can be verified the insulin has been stored correctly.
 16. Prior to use, check characteristics of insulin i.e. if fast acting or long acting analogues; they should be clear prior to use. For Premixed insulin/ intermediate acting insulin gently shake / rotate 10 - 20 times to obtain a uniform cloudy characteristic. If lumps / clumps are present, then do not use. This applies to both insulin pens and vials.
 17. For drawing up insulin from a vial, use an insulin syringe with 6mm retractable needle and for an insulin pen device use a 5mm retractable pen needle.
 18. Use a sharps bin to dispose of used needles, lancets or sharps on administration.
 19. Used needles must not be bent or broken before disposal, never try to recap a needle.
 20. **Refer to Appendix 3, 4 and 5 for how to Inject Insulin**

11.0. Self-Administration of Insulin

1. Where assessed as safe, patients should be encouraged to self -administer their insulin. The multidisciplinary teams should use their clinical and professional judgment to assess the suitability of self-administration on an individual patient basis and this may include a mental capacity assessment where required.
2. If the patient is new to the team/has transferred wards, and is able to self -administer their insulin, they should be assessed to ensure the use of correct technique and that they are not injecting in to areas of lipohypertrophy (lumpy injection sites) as this can affect insulin absorption.

3. Refer to the ELFT Self Administration of Medicines (SAM) Policy for further details on self-administration. [Click here to access the SAM policy.](#)

12.0. Advanced Preparation of Insulin for Later Administration in Highly Exceptional Circumstances

The act of pre-loading an insulin syringe is considered a form of secondary dispensing which is not covered by the terms of the Medicines Act (1968). In essence, the act of pre-loading an insulin syringe creates an unlicensed product.

There are other risks associated with the practice such as the lapse of time between preparation of the syringe and its administration by an individual with diabetes

The Royal College of Nursing 2018 document Advance Preparation of Insulin Syringes for Patients to Administer at Home therefore recommends the following:

- Ensuring that there is an organisation-wide policy in place covering the use of pre-loaded insulin syringes;
- Patients must be assessed and have full capacity for this practice to be considered and patient capacity must be routinely and frequently re-assessed as per local policy
- A senior diabetes specialist nurse (SDSN) must be involved in the initial patient assessment; this risk assessment should be updated on a regular basis (as per local policy).
- Comprehensive training on pre-drawn insulin for self-administration must have been undertaken.
- A patient care plan must be in place.
- A quality assurance plan must be in place (as per local policy) which is overseen by the local SDSN.
- The patient's GP is aware, understands and is in agreement that prescribing pre-loaded insulin syringes has associated medical-legal issues, and that there is a policy in place to support this process

The practice of preparing Insulin for administration in advance must therefore only **be carried out as a last resort, where all other alternatives have failed or are impracticable**, and in accordance with locally agreed procedures which meets the standards set out in the RCN document Advanced Preparation of Insulin Syringes for Adult Patients to Administer at Home - RCN guidance for nurses.

13.0. Monitoring Blood Glucose Levels

1. All capillary blood glucose monitoring systems must meet the International Organisation for Standardisation (ISO) standards.
2. Frequency of testing should be decided on an Individual patient basis and recorded in the care plan.
3. Staff must check that the monitoring requirements are being followed; this includes completing a blood glucose monitoring chart.
4. Staff must be familiar with the risk factors for hypo/hyperglycaemia and the potential causes.
5. Staff must have an awareness of the symptoms of hypo/hyper glycaemia and how to manage this complication and if further action or review/advice required by specialist service (see Appendices 2 and 3).
6. Prescribers and Diabetes Specialist Nurses are responsible for clinically reviewing patients and adjusting the dose of insulin according to the patient's blood glucose level.
7. For Frail Elderly, the pre meal glucose target is usually 6-8mmol/L unless otherwise stated in patient's treatment plan.
 - If above 6mmol/L and patient does not have symptoms of hypoglycaemia proceed to administer insulin.
 - If below 6mmol/L and the patient has a symptom of hypoglycaemia, treat hypoglycaemia before giving insulin.
 - If below 6mmol/L and no symptoms - re-check blood glucose levels (BGL) immediately. If still below 6mmol/L treat for hypoglycaemia.
 - If above patient's target blood glucose level or above 15mmol/L (if target is not stated or known) for 3 consecutive readings, contact the Diabetes Specialist Team, duty doctor or GP.
 - If patient has Type 1 diabetes mellitus and develops ketones, record vital signs and contact the doctor or GP immediately. Ketoacidosis is life threatening and immediate treatment is required.
8. **Refer to the Standard Operating Procedure for Capillary Blood Glucose Monitoring for further details.**

14.0. Storage of insulin

1. Unopened vials /Cartridges /prefilled pens should be stored in a fridge at 2 - 8° C, to ensure potency and maintenance of physical characteristics. If insulin products are unopened and kept at these temperatures, efficacy is maintained until the expiry date.
2. Insulin in use can be stored at room temperature (below 25° C) for up to 28 days. When the insulin is used for the first time, ensure a label is used to note the date and time of opening. Keep it under room temperature before administration.
3. Ensure Insulin is discarded if it has been out of the fridge for 28 days or more.
4. Do not place insulin in or close to the freezer compartment as it should not be frozen.
5. Do not expose vials, cartridges or pre filled pens to sunlight or high temperatures above 30° C.
6. Do not use insulin if it has expired
7. For storage of insulin prepared in advance refer to local SOPs for additional details on storage requirements.

15.0. Insulin Administration Devices

1. There are over thirty types of insulin and many different devices for insulin administration including:
 - Insulin Syringes
 - Insulin Pens
 - Prefilled pens which are disposed when empty
 - Pens where insulin is given via a cartridge, the pen is reusable and not discarded
2. If insulin is administered by ELFT staff from a pen, then 5mm retractable pen needles must be used to prevent needle stick injury
3. Where retractable pen needles are not available, the prescriber should be contacted to prescribe them or prescribe the insulin as a vial. An insulin syringe and retractable needle will then be used to administer from the vial.
4. Pen needles are a single use item and must be removed from the pen device after each injection and disposed of in a sharps bin. NB. Only 5mm (or 4mm in patient self-administering) pen needles should be used to prevent the risk of intramuscular injections.
5. **On no occasion should ELFT staff use an insulin syringe and needle to extract insulin from pen devices or refill cartridges.** Insulin syringes have graduations only suitable for calculating doses of standard 100units/mL. If

insulin extracted from a pen or cartridge of a higher strength, and that is not considered in determining the volume required, it can lead to a significant and potentially fatal overdose. Additionally, this can damage the device's mechanism and is not covered by the manufacturer's warranty.

6. If syringes are to be used by nurses to administer insulin from a vial, a retractable safety needle must be used. The preferred needle size for an insulin syringe is 6 mm. Insulin syringes are available in the following sizes:
 - 1ml = 100 unit maximum capacity (2 unit divisions)
 - 0.5 ml = 50 unit maximum capacity (1 unit divisions)
7. The smallest syringe that's big enough to hold the largest dose should be chosen. The smaller the syringe, the easier it is to read the markings and draw up an accurate insulin dose.
8. Insulin pumps are used for patients with Type 1 diabetes mellitus. Patients admitted to an ELFT bedded unit with an insulin pump must be assessed as capable of using the pump and are expected to have a supply of all necessary equipment (including a change of infusion set). If a patient does not have the required equipment or is not fully able to use the pump, specialist advice must be sought from the patient's diabetes specialist team.

16.0. Timing of Insulin Doses

Healthcare professionals should discuss with the patient when they need to take their insulin. With insulin, timing it is essential to ensure peak effectiveness.

Rapid acting analogues are injected just before, with or soon after food and have a peak action at 0–1 hour. They tend to last 4–5 hours and only last long enough for the meal at which they are taken. They are clear in appearance. No need to shake pre use. Examples: Novo Rapid ®, Humalog ®, Apidra ®

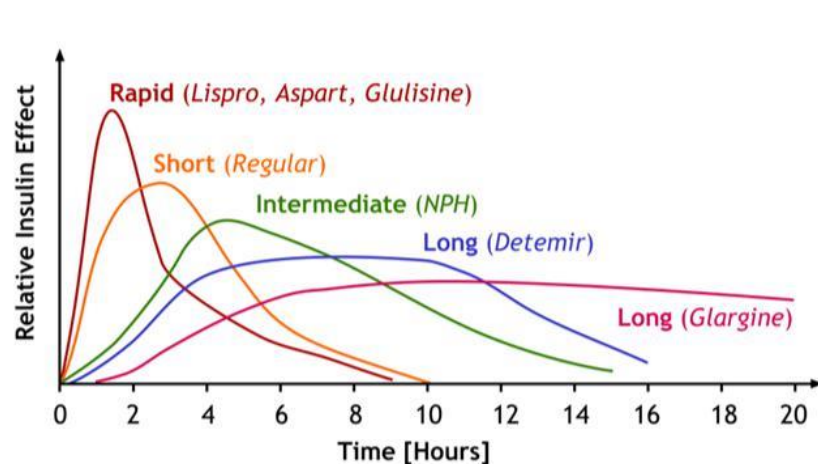
Long-acting insulins are often used with rapid or short acting insulins but can also be used alone. Should be given at the same time each day. Do not need shaking prior to use. Starts working within 1 hour and duration of 18 - 24 hours. Examples are Levemir ®, Lantus ®, Abasaglar®

Ultra-long acting insulin is often used with short acting insulin but can also be used alone. Should be given same time every day. They are clear insulins and do not need to be rotated prior to administration e.g. Toujeo®.

Short acting insulins should normally be taken before meals. They are also known as 'regular' or 'neutral' insulin. E.g. Human: Humulin S ®, Insuman Rapid ®; Porcine: Hypurin Porcine Neutra ®; Actrapid ® (Actrapid can last up to 8hours increasing risk of hypoglycaemia).

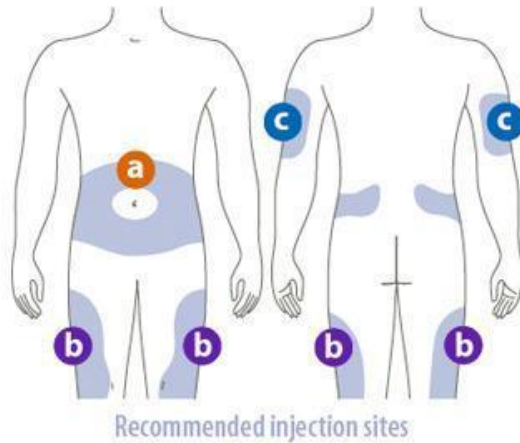
Intermediate acting insulins should be injected at the same time each day. It can be administered before meals (ensure that patient have meals after insulin injection). Intermediate-acting insulins are often taken alongside short-acting insulin, but can be given alone. They **MUST** be rotated gently 10 - 20 times prior to use. Examples: Human: Insulatard ®; Humulin I ®; Insuman Basal ®; Porcine: Hypurin Porcine Isophane ®.

Mixed Insulins: Biphasic ® (premixed insulin) should be tailored to the individual, taking into account lifestyle, preferences and personal patterns of glycaemic control. This type of insulin is available in many different types e.g.



17.0. Injecting Insulin

1. Insulin is given subcutaneously into the tissue of the abdomen, buttocks, upper outer thigh or the upper arms. Insulin is absorbed fastest from the abdomen and slowest from the thighs.
2. If using a 4 or 5 mm insulin pen needle, inject at a 90-degree angle. If the patient is underweight, then use a gentle pinch up of the skin and subcutaneous tissue to ensure a subcutaneous injection.
3. Injection sites should be rotated on a daily basis. This prevents the development of lipohypertrophy which can cause erratic insulin absorption.



4. Refer to Appendix 5 – Good Injection technique

18.0. Safe Disposal of Sharps

1. All sharps (pen needles / syringes) must be disposed of in sharps bins in accordance with the Waste Management Policy.
2. If patients have been using a pen device already and are able to continue with self-administration this should continue, where possible, with supervision from staff. A patient may use an insulin pen and a non-retractable pen needle with staff supervision. This will involve the patient using the outer plastic cap to re-sheath the needle after use and using it to unscrew the needle from the pen. This is then disposed of in the sharps bin directly. Under no circumstances must the inner needle sheath be used to remove the needle as this involves re-sheathing the needle and carries a significant risk of needle stick injury.
3. Any needle stick injury sustained must be made to bleed and rinsed vigorously under running water. The ELFT Pathway for Management of Sharps Injuries should be followed. Occupational Health should always be informed following a sharps injury.
4. Nurses who fail to use safety devices are putting themselves unnecessarily at risk of needle stick injury.

19.0. Patient-Held Record (Insulin Passport/Card)

On admission, the insulin patient-held record should be reviewed as part of the medicines reconciliation procedure to confirm the correct insulin product and dose. For Insulin Passports (see appendix 7), special consideration should be given to the date of the last entry. Other current sources including the GP records should also be used to verify the insulin product and dose. Any changes made to the insulin prescription whilst in hospital should be updated in the patient -held record accordingly. These changes should also be

documented in the clinical notes and communicated to the GP on discharge. The patient - held record should be checked prior to discharge to ensure it is accurate.

If the patient has a patient-held record but has left it at home, then they should be asked to take it to their next appointment with the GP and/ or diabetic clinic so it can be updated accordingly. Changes in the insulin prescription should be clearly documented on the discharge notification form with instructions that the patient held record should be updated.

If the patient does not have a patient-held record they should be offered a patient information booklet/ leaflet, informed about the patient held record and advised to see their GP/ diabetic clinic following discharge. If the patient/ Carer requests a patient-held record, they should be advised of the risks associated with multiple patient-held records in use at one time and should be advised to discard any other patient-held records that may be at home if one is issued.

All healthcare professionals should cross reference with patient's insulin record when prescribing, dispensing or administering insulin.

20.0. Discharge from Inpatients Units

1. For inpatients approaching discharge the prescriber and pharmacist should ensure appropriate arrangements are in place post discharge for follow-up such as with the specialist hospital or GP. These arrangements should be documented clearly in the clinical record and on the discharge notification form.
2. Information on discharge should include:
 - The date at which current medication should be reviewed.
 - Details of where further supplies of insulin will be prescribed and supplied from.
 - The amount to be provided and the preparation.
 - Any changes made in the insulin prescription.
 - If the insulin patient information care plan has been supplied as this would also require a review.
3. If the patient requires District Nurses to administer insulin post discharge, a referral MUST be made ideally 24 hours prior to discharge, including information on the name, dose and timing of administration of insulin.

21.0. Training

1. All staff that prescribe, dispense and administer insulin must complete the Safe Use of Insulin E-Learning which is available on the Oracle Learning Management (OLM).
2. Staff must be competent in using insulin pen devices and insulin safety needles.
3. In addition, District Nurses and other trained HCPs who administer insulin should contact their Community Diabetes Team for information on local training provided.
4. Further E-learning is also available as follows:
 - Diabetes in healthcare - a free RCN-accredited introductory course for healthcare professionals who are not specialists in diabetes but want to know more about the condition. www.diabetesinhealthcare.co.uk/
 - The six steps to insulin safety - a free essential module for all those prescribing, managing or administering insulin, with the overall aim of reducing insulin errors in clinical practice available from www.cpd.diabetesonthenet.com/
 - The FIT forum for injection technique www.fit4diabetes.com/united-kingdom/fit-recommendations/

22.0. Monitoring Compliance and Effectiveness

1. Line Managers should monitor completion of insulin e -learning and maintenance of competence through the clinical supervision process.
2. All medication incidents involving the prescribing, dispensing or administration of insulin preparations should be reported on DATIX. These should be reviewed by the Governance and Risk Management Team and recurrent themes identified and shared with Directorates and Trust wide as a way of learning from incidents.

23.0. References

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Appendix 1- Management of Hypoglycaemia

Definition: Hypoglycaemia is defined as blood glucose less than 4mmol/L. Patients can be hypoglycaemic but be unaware of it, especially if having recurrent hypoglycaemia or if blood glucose is too tightly controlled (i.e. Blood Glucose Levels are between 4-5mmol/L). If patient's blood glucose levels have been running high, it is important to consider that bringing them back into range too quickly can cause symptoms of hypoglycaemia, even with blood sugars of 5-6 mmol/L.

Recommended Blood Glucose (BGL) levels: Unless otherwise stated (check with Specialist or Diabetes Specialist Nurse for alternate targets):

- 4 - 7 mmol/L (before food)
- < 10 mmol/L (2 hours after food)

Causes Include:

- Side effect of medication e.g. sulphonylureas
- missing or delaying a meal or snack
- not having enough carbohydrate at the last meal
- doing a lot of exercise without having extra carbohydrate or without reducing the insulin dose (if you take insulin)
- taking more insulin (or certain diabetes medication) than you needed
- Drinking alcohol on an empty stomach.

Symptoms:

Classic symptoms: are sweating, shaking, anxiety, slurred speech, change in behaviour - irritable /aggressiveness, going pale, tingling sensation around the mouth, trembling and shaking, and unconsciousness. Some patients may have other individual symptoms.

NB: Hypoglycaemia should be considered if behavioural changes are observed in mental health patients with diabetes.

Treatment: Give 15 – 20g of fast acting carbohydrate such as:

- 60mls Gluco juice
- 200ml (a small carton) of smooth orange juice or other pure fruit juice
- 5 or 6 dextrose tablets
- 5 large jelly babies
- 7 large jelly beans

- Two tubes of 40% glucose gel inserted slowly into the buccal cavity if the person is unable or unwilling to take other oral treatments - This treatment cannot be given if the person is unable to swallow

If the person does not feel better (or if the blood glucose level is still less than 4 mmol/l) after 15 minutes, repeat one of these treatments to a maximum of three treatments. If after three treatments the blood glucose is still low, seek urgent medical advice.

When the individual feels better and if they are not due to eat a meal (which should contain carbohydrate), they should eat a small starchy snack such as a banana, a slice of bread or 2 plain biscuits, and be monitored afterwards.

Severe hypoglycaemia (requiring 3rd party assistance)-The unconscious person

- Call 999 and seek urgent medical assistance
- If breathing the individual should be placed in the recovery position (on their side with their head tilted back)
- Check if the individual is breathing if not commence cardio pulmonary resuscitation
- Glucose treatment should not be put in their mouth
- Glucagon can be injected if someone is present who is trained to do so
- Once the individual is conscious and able to eat give 20g of quick acting carbohydrate as above followed by a 20g starch carbohydrate snack

Patients on Humulin M3 or night Isophane insulin – Humulin I or Insulatard should have a bed time snack (If BGL levels are less than 10mmol before bed).

The patient may have a high BGL several hours later do not give extra insulin to counteract this; the BGL will come down with the next normal dose of medication (if not seek advice).

NB, Glucagon – will not be effective in patients with liver disease, glucocorticoid deficiency or who have been malnourished or starved.

If having more than 2 hypoglycaemic episodes in a week without explanation (e.g. missed meals) inform Diabetes Nurse Specialist / ward doctor / GP and ask to review patient as insulin may require 10 – 20% insulin reduction.

Algorithm for the Management of Hypoglycaemia in the Community Setting

Hypoglycaemia

Definition: Capillary blood glucose <4mmol/litre

Early Symptoms: Sweating, Palpitations, Shaking, Hunger, Irritable

Late Symptoms: Confusion, Drowsiness, Odd Behaviour, Speech

Difficulty, Lack of Co-Ordination, Coma

Mild – Person is able to self-treat

Take 15 – 20g fast acting Carbohydrates such as

- 60ml Gluco juice
- 200ml of pure smooth orange juice (small carton)
- 5 dextrose tablets
- 6 dextrose tablets
- 50-70ml Fortijuice

Re-test blood glucose after 10 mins

If still <4mmol/litre repeat fast-acting carbohydrate
Repeat cycle to a maximum of 3 times.

If patient deteriorates or does not respond to oral treatment

Dial 999

Once capillary blood glucose level is >4mmol/litre follow-up with 20g complex carbohydrate, e.g.

- 2 to 4 biscuits
- 1-2 slices of bread

Or a meal containing carbohydrate if due

Severe – Person cannot self-treat

Person is Conscious and able to swallow

Treat as for Mild or:

1 to 2 tubes of GlucoGel® or DextroGel®

Stay with the person until fully recovered

Person is Unconscious or unable to swallow

If unconscious and not breathing call 999. Administer CPR

If breathing put individual in recovery position and maintain airway. Do not put glucose in the mouth.

Give 1mg glucagon intramuscularly if available and trained.

If glucagon is not available or is ineffective, call 999

Note: glucagon may not be effective in people with malnutrition, alcohol induced hypoglycaemia, chronic hypoglycaemia or adrenal insufficiency.

Take measures to avoid further hypoglycaemia:

- ✓ Identify the cause (e.g. decreased appetite, impaired renal function, alcohol)
- ✓ Check injection sites and consider lipohypertrophy as a cause.
- ✓ If no identifiable cause, discuss with GP, Nurse Practitioner or Diabetes Specialist Team.
- ✓ Review timings and dose(s) of medications with GP, Nurse Practitioner or Diabetes Specialist Team.
- ✓ Blood glucose levels should be carefully monitored after insulin treatment is changed or stopped.
- ✓ Inform Senior Clinician

Document actions taken to treat hypoglycaemia and to avoid further episodes of hypoglycaemia.

Patients 'nil by mouth' or 'enteral feeding' should be treated as 'severe – cannot self-treat' Do not OMIT subsequent doses of insulin. Continue regular capillary blood glucose monitoring.
Give Hypoglycaemic Education and Refer to Diabetic Specialist Team for Review of Insulin.

Appendix 2: Management of Hyperglycaemia

Hyperglycaemia is defined as high blood glucose levels outside recommended levels. Unless otherwise stated in patient's care plan, hyperglycaemia is regarded as blood glucose levels above 7mmol/l before a meal and above 8.5mmol/L two hours after a meal.

Although blood sugar levels exceeding 7mmol/L for extended periods of time can start to cause damage to internal organs, symptoms may not develop until blood glucose levels exceed 11mmol/L.

Patients are at risk of diabetic ketoacidosis if blood glucose levels stay high especially patient with type 1 diabetes. Diabetic ketoacidosis is a medical emergency and it requires urgent treatment in hospital.

Hyperosmolar, hyperglycaemic state (HHS) can occur in people with Type 2 diabetes who may be experiencing very high blood glucose levels (often over 40mmol/l). It can develop over a course of weeks through a combination of illness, dehydration and being unable to take usual diabetes medication due to the effect of the illness. It is a potentially life threatening emergency requiring hospital treatment. Ketones are usually not present.

Symptoms of Hyperglycaemia and possible diabetic ketoacidosis:

- Early stages include thirst, polyuria, vomiting, abdominal pain and tiredness.
- Advanced symptoms Include confusion, drowsiness, and ketones in urine/blood, hyperventilation and tachycardia.

Treatment:

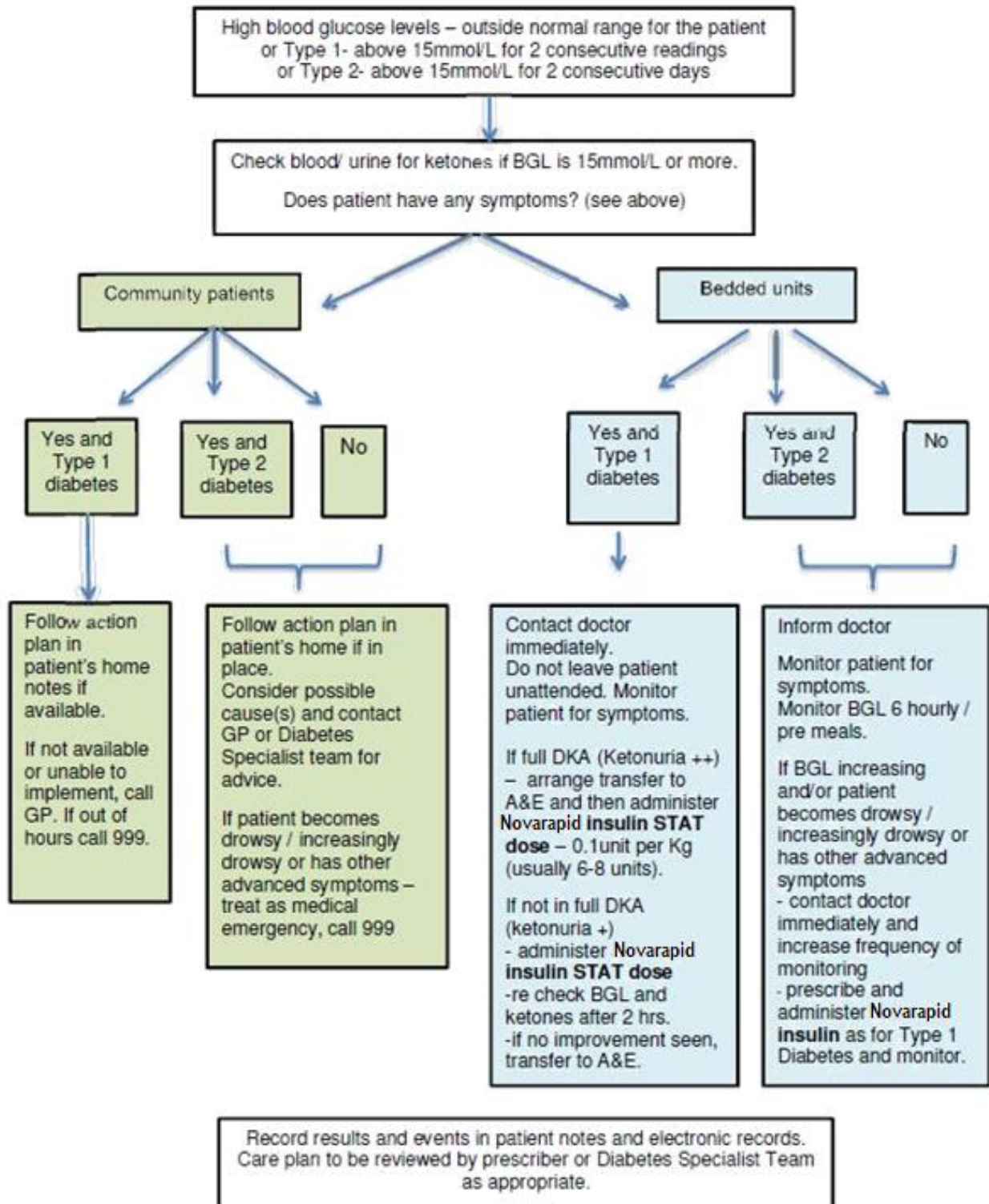
Treatment will depend on the cause of the hyperglycaemia. Possible causes include missing a dose of medication, stress, infection, consumption of more carbohydrate than usual or over treating hypoglycaemia.

If levels are high for just one reading, no treatment is required. However, consider possible causes and make necessary adjustments where possible. Continue to monitor levels.

If levels are high, follow flow diagram below.

- Type 1 diabetes patients for two consecutive readings
- Type 2 diabetes patients for two consecutive days

Flow diagram for the management of hyperglycaemia



Appendix 3: Injecting Insulin with a Syringe

It is important to know how to draw up and inject insulin safely. By learning to use the correct injection technique, insulin can be given accurately and with a minimum of discomfort and inconvenience to the patient. These are guidelines on how to inject insulin with a syringe. Please ensure you follow the principles of ANTT (Aseptic Non Touch Technique as per Trust Policy) and good hand hygiene (Infection Prevention and Control Goods Practice Policy). Please note a syringe should be used only once and disposed of safely



Always check the label on the insulin vial to confirm the correct insulin as prescribed, the expiry date and for any special instructions. Wear gloves and using a large alcohol wipe (2% chlorhexidine & 70% alcohol) to wipe the insulin vials as per ANTT.

If the insulin is cloudy, roll the vial gently between your hands several times in order to mix it completely



Remove the white cap covering the plunger. Carefully remove the orange needle cap. Pull back the plunger to measure an amount of air equivalent to the amount of insulin required



With the vial standing upright, insert the needle through the centre of the rubber cap of the insulin vial and push the plunger down. This expels the air into the vial, making it easier to draw out the insulin.



Turn the vial upside down. Make sure the point of the needle inside the vial is well beneath the surface of the insulin. Pull back the plunger gently until you have measured slightly more than your correct dose of insulin.



If any air bubbles are in your syringe, remove them. Flick or tap the syringe at the bubbles with your finger. When the air bubbles go to the top, push the plunger back to the desired dose expelling the bubbles into the vial.

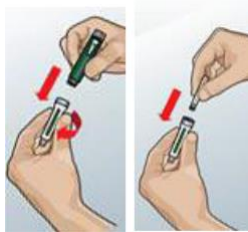


Remove the needle from the vial and perform the injection as prescribed. A sharps bin must be taken with you to the point of patient's care (As per Infection Prevention and control Good Practices Policy). The sharp must be disposed of immediately after use.

Appendix 4: Injecting Insulin with a Pen

These are general guidelines common to most insulin pen devices. It is important to read the manufactures instructions. Pens are designed for patient use. The prescriber must be mindful of the potential risk for a needle stick injury. If the patient is unable to use a pen device, the prescriber should explore the option of prescribing insulin that is available in a VIAL (which can be administered by the nurse using an insulin syringe).

If the prescribed insulin is not available in a vial do not draw up insulin from a penfill cartridges, please refer to appendix – administration of insulin via a pen device



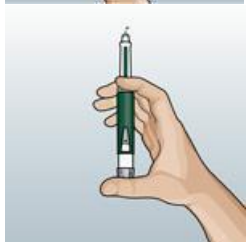
Pull the cap off the pen and remove the cartridge holder from the pen body. Put an insulin cartridge into the holder. Reattach the holder to the pen body.



Preparing prefilled pens and cartridge pens for administration of insulin



If the insulin is cloudy, gently tip the pen 10 times and roll it between the palms of your hands 10 times to mix it.



Screw on a new needle before each injection. Remove the outer cap of the needle, then the inner cap.



Before each injection, check the pen is working by priming the pen. Set the dial to 2 units. With the pen pointing upwards slowly press the button. A tiny bead of insulin should appear at the needle tip, if not, repeat this step until you see a tiny bead of insulin at the needle tip.



Check the dial is a zero and dial up the dose as prescribed
Please check prescription for:

- name of insulin
- dosage in units
- time of administration
- subcutaneous administration

With the pen prepared for the injection, push the needle all the way into the skin and inject the insulin by depressing the plunger. Hold down the button for at least 10 seconds after the dial has returned to zero to assist absorption. Withdraw the needle slowly.

Appendix 5: Good Injection Technique

A good insulin injection technique can contribute to maintaining good glycaemic control.

a) Injecting Correctly

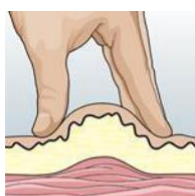
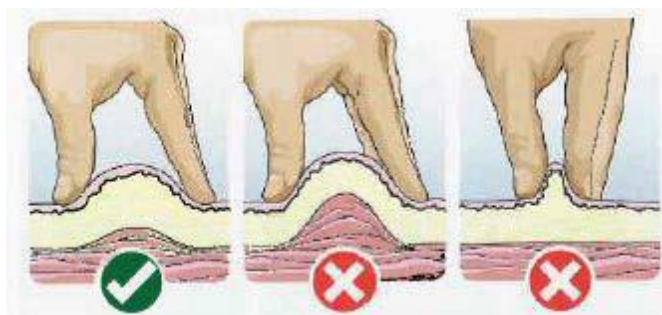
Insulin needs to be absorbed steadily to work properly and this is why insulin is injected into subcutaneous tissue. Injecting into subcutaneous tissue ensures that the insulin is released smoothly and this helps to regulate glycaemic control.

If the needle goes deeper, the injection may go into the muscle tissue. Muscle tissue absorbs insulin more rapidly than subcutaneous tissue, and this could contribute to hypoglycaemia. For most people, using a short (e.g. 5mm to 8mm) needle is ideal to make sure the end of the needle is in the subcutaneous layer and doesn't go deeper reaching into the muscle layer.

Remember: when injecting, to leave the needle in the subcutaneous tissue for at least 10 seconds (after you have pressing the plunger) to make sure that all of the insulin is injected properly.

b) Lift a fold of skin (A gentle pinch)

Make a lifted skin fold as indicated below if appropriate (lifted skin folds will only be required if a patient has extremely slim limbs or abdomen) 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.



In a suitable injection site area take a fold of skin between the thumb, index and middle finger. Only lift the skin - not the muscle below it.



With the pen (or syringe) correctly prepared for the injection, push the needle fully into the skin at the peak of the fold. Administer insulin in a quick smooth movement through the skin. The injection should be administered slowly ensuring that either the plunger (syringe) or button (pen) has been fully depressed. Leave the needle in the skin for at least 10 seconds after the thumb button plunger is fully depressed.

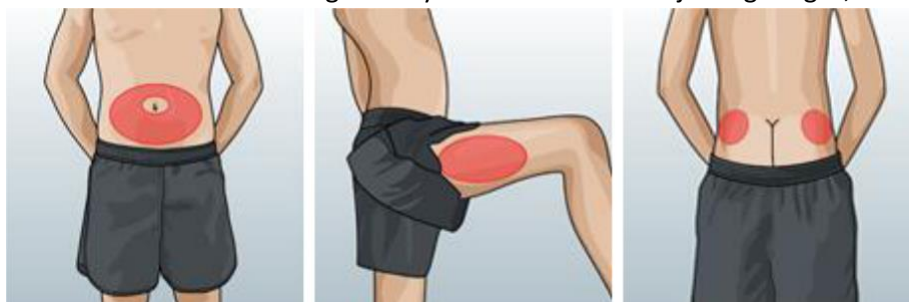


Withdraw needle from skin. Release lifted skin fold.

Ensure safe needle disposal to avoid cross infection/needle stick injury (see local infection control guidelines). A sharps bin must be taken to the point of patient care.

c) Rotation.

There are three areas that generally could be used for injecting: thighs, abdomen and buttocks.



Note: Injecting into the arms should be avoided unless advised by the diabetes team (there is an increased risk of hypoglycaemia when injecting into the arms as these injections might become intra- muscular rather than subcutaneous).

The main reason for rotating between and within sites is to make sure injections are not repeatedly given into the same site area each time. The reasons are:

- The speed of insulin absorption varies from site to site. It is important to develop a pattern where injection sites are rotated. Rotating injection sites can help control blood glucose levels.
- If insulin injections are given regularly into the same site, the tissue beneath may harden or become lumpy - a condition known as lipohypertrophy (or lipo's as they are often called).

Absorption Rates

- The thigh and buttocks are the preferred injection sites for administration of long acting basal analogues and medium and long acting insulins as absorption is slowest from these sites.
- The abdomen is the preferred site for rapid acting analogues and short acting neutral insulin since absorption is fastest there.
- Massaging the site before or after injection may speed up absorption and is not generally recommended.
- All insulin should be injected subcutaneously except short acting neutral insulin (Actrapid and Humulin S) in a rate controlled device for sliding scale purposes only.

Premixed Insulin

- Premixed insulins (human or analogue) injections should be rotated around abdominal injection sites (as illustrated above) or thigh (upper -outer) site areas.

Basal bolus insulin regime

- Rapid or short acting insulins should be administered into the abdominal injection site
- Intermediate/Long acting insulin should be injected the thigh (upper -outer) or buttocks

Appendix 6: Alternative Devices for administering Insulin

Alternative devices to administer Insulin

Injecting insulin with a syringe or insulin pen device are the most popular methods of insulin delivery. However, other options also exist:

Insulin Pump

Insulin pumps is a small programmable device that holds an insulin cartridge/reservoir and delivers a continuous flow of rapid insulin, as well as larger bolus doses that are released by the operator pressing a button at mealtimes.

- The patient should only use an insulin pump if trained by a skilled health care professional who has received training and is competent in the use of continuous subcutaneous insulin infusion.
- An insulin pump should be worn at all times.
- If there is any failure in the pump occurs immediate medical advice should be sought to avoid diabetic ketoacidosis does not develop and so an alternative route to insulin administration is prescribed i.e.: basal bolus regime.



Appendix 8: Covid Guidance for people working in and visiting other people's homes.

You must wear appropriate PPE when attending to patients at home. Patients will need reassurance that appropriate measures are in place to keep them safe from Covid-19 when healthcare professionals visit them to administer care.

As in all situations during the pandemic, guidance on [infection control](#) should be followed, including handwashing or use of hand sanitiser.

- Wash your hands thoroughly with soap and water for 20 seconds or use hand sanitiser before putting a face mask on and after removing it
- Ensure face masks covers nose as well as mouth
- Change your face mask if it becomes damp and before seeing a different patient.
- Practice social distancing wherever possible
- Careful appointment planning to minimise waiting times when attending might be very useful.

Home-visiting clinicians should ensure that 'home visit' bags contain necessary additional PPE and clinical waste bags. Equipment's used should be appropriately decontaminated when returning back to site

Assessing Patient Risks

	YES	NO
1. Do you or any member of your household/ family have a confirmed diagnosis of COVID-19?		
2. Are you or any member of your household/family waiting for a COVID-19 test result?		
3. Have you travelled internationally in the last 10 days? If yes, confirm where and if this is a country that has been agreed as safe for travel by the government.		
4. Have you had contact with someone with a confirmed diagnosis of COVID-19, or been in isolation with a suspected case in the last 10 days?		
5. Do you have any of the following symptoms? <ul style="list-style-type: none"> • high temperature or fever • new, continuous cough • a loss or alteration to taste or smell If yes, provide advice on who to contact (GP/NHS111) or, if admission required.		

We care

We respect

We are inclusive

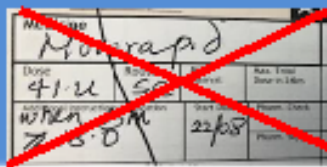


East London
NHS Foundation Trust

Safety with Insulin

Prescribing & Transcribing

Do not abbreviate the word "units" to 'U' or I.U'



Right Patient? Right dose?

Speak with the patient!

THE 25-50 RULE

If a short acting insulin dose is above 25 or an intermediate/mixed dose is above 50, **double check** the **dose!!!**

Insulin Device

Be aware of the Insulin Delivery Device



Storage



Unopened – Store in fridge



In use – Store at room temperature

Check **EXPIRIES** and label items

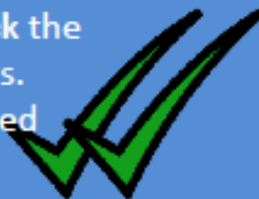


A cold injection will hurt!



Check the Strength

Do not assume, **Check** the strength of all Insulins. There are concentrated strengths available!



NEVER...

NEVER EXTRACT INSULIN FROM A CARTRIDGE OR PRE-FILLED PEN USING A SYRINGE

Beware of SALADS

'SOUND-A-LIKE-LOOK-A-LIKE-DRUGS



Prescribe by **BRAND** to avoid confusion – make sure you have the right one!

Cross-reference the insulin chart with the medication administration record.

AVOID missed doses.

SYMPTOMS OF HYPOGLYCAEMIA

Sweating, tremor, tiredness, dizziness, drowsiness, confusion

FURTHER TRAINING:
'Safe Use of Insulin' e-learning module available via OLM