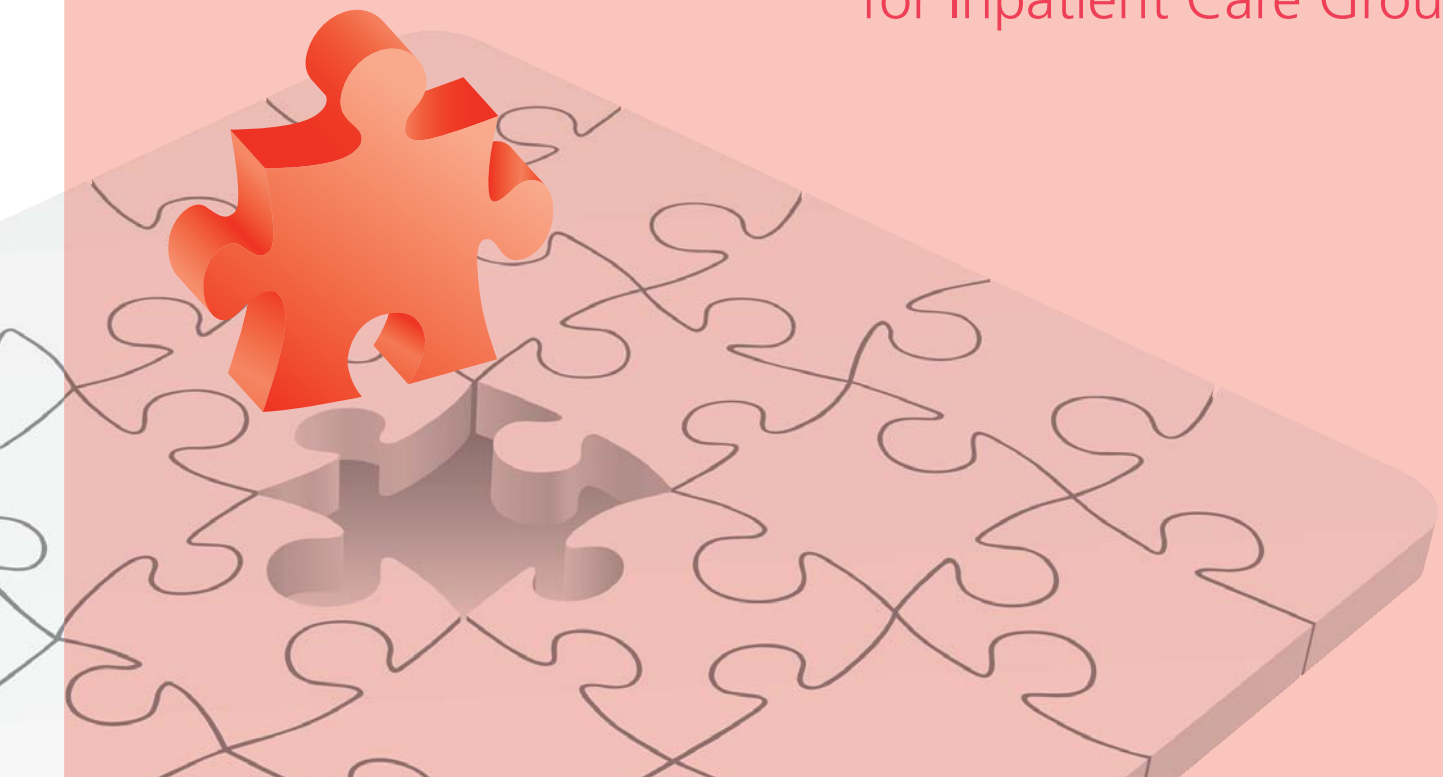
NHS

Diabetes

Self-management of diabetes in hospital

Joint British Diabetes Societies for Inpatient Care Group



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Association of British Clinical Diabetologists

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Supporting, Improving, Caring

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Contents

Foreword

These guidelines have been commissioned by the Joint British Diabetes Societies for Inpatient Care Group in collaboration with NHS Diabetes.

The aim of the document is to improve the safety of the in hospital management of diabetes. Diabetes care is very individualised, especially if that person is using insulin. It follows that the person with the greatest expertise in managing diabetes is commonly the individual themselves. Allowing patients to self manage their diabetes in hospital should significantly improve patient safety. The correct support structures need to be provided to ensure that this is properly monitored but this must be done without creating unnecessary bureaucracy.

Target audience

These guidelines emphasise that, at all stages of care in hospital the patient should remain in charge of their diabetes care unless there is a specific reason not to. It is hoped that they will be of use to all healthcare professionals who are involved in the delivery of diabetes care in hospital. The target audience specifically includes:

- Ward nursing staff
- Ward pharmacists
- The inpatient diabetes specialist team
- Most importantly those involved in the writing and implementation of local diabetes care policies.

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The guiding principle of this document is that people with diabetes manage their condition on a day-to-day basis when out of hospital, and should continue to self-manage during a hospital admission unless there is a specific reason why they cannot. The choice to continue to self-manage during admission, if well enough to do so, should be that of the patient. This document details how this decision can be integrated with the rest of hospital care to provide safe and effective management of diabetes in hospital. If ward staff are uncomfortable with the patient's decision to self-manage, expert advice should be sought from the hospital diabetes team.

Definitions

Self-management of diabetes is the process of deciding on and administering an insulin dose in response to self-measured capillary glucose values.

Self-administration is the taking of medication (injected or oral) as prescribed by a doctor.

1. Main recommendations

1. Trusts should provide written information to explain the responsibilities of self-management to both patients and hospital staff.
2. The responsible nurse and the patient should agree, on admission, the circumstances in which the patient should self-manage. An agreement form should be signed by both the patient and a registered nurse.
3. For elective surgical admissions, a care plan should be agreed at the pre-operative assessment clinic to establish whether the patient wishes to self-manage and the circumstances in which this may not be possible.
4. During the admission, the clinical circumstances should be assessed regularly to ensure that the patient's ability to self-manage has not been compromised by their clinical condition.
5. The diabetes specialist team should be involved if there is disagreement about the patient's ability to self-manage or if there are difficulties with diabetes control. Diabetes specialist nurse staffing levels should be sufficient to support this role.
6. Patients should be able to self-monitor their blood glucose but should make the results available to hospital staff.
7. The insulin dose administered by the patient should be recorded on the prescription chart.
8. The hospital should ensure that the timing and content of meals are suitable for the patient with diabetes.
9. Facilities should be available for the safe storage of insulin in the ward environment.

2. Introduction

This guideline has been produced by the Joint British Diabetes Societies for Inpatient Care Group in collaboration with NHS Diabetes, and has been informed by user focus groups from Diabetes UK. The aims of the guideline are to improve inpatient experience and safety for people with diabetes. It is primarily aimed at healthcare professionals working in hospitals, although some aspects are relevant to staff involved in pre-admission preparation. The guideline is designed to enable adaptation to local circumstances where required.

Background

All children, young people and adults admitted to hospital, for whatever reason, will receive effective care of their diabetes. Wherever possible, they will continue to be involved in decisions concerning the management of their diabetes

Diabetes National Service Framework[1]

Historically, people with diabetes have often been prevented from managing their own diabetes while in hospital. This has exposed them to mismanagement of their diabetes as a result of:

- errors in the administration of insulin[2]
- errors of diabetes management
- inappropriate content and timing of meals
- mistreatment of hypoglycaemia
- misuse of variable-rate intravenous insulin infusions.

At best, these errors lead to patient dissatisfaction, disempowerment and prolonged length of stay; at worst, patients may suffer serious harm or even death.[3,4] In 2010 the National Diabetes Inpatient Audit (NaDIA) reported that people with diabetes experienced substantially longer hospital stays, poor glucose control, frequent medication errors and insufficient contact with the diabetes specialist team.[5] All these factors contribute to the increased cost of caring for inpatients with diabetes.

A number of organisations have issued guidance to address the problems associated with diabetes care in hospital.

- The National Institute for Health and Clinical Excellence (NICE) quality standard for inpatient care[6] requires that "People with diabetes admitted to hospital are cared for by appropriately trained staff, provided with access to a specialist diabetes team, and given the choice of self-monitoring and managing their own insulin."
- The NHS Institute for Innovation and Improvement ThinkGlucose campaign developed a toolkit to improve quality of care of patients in hospital, including a 'decision tree' for patient self-management.[7]
- The National Patient Safety Agency (NPSA) issued guidance to reduce the number of errors involving insulin.[2]
    - Insulin alert calling for staff training in use of insulin.
    - Insulin passport to provide accurate information about insulin prescriptions.[8]
    - People with diabetes to be allowed to self-manage their diabetes during hospital admission wherever possible.
- NHS Diabetes introduced the e-learning modules 'Safe Use of Insulin'[9] and 'Safe Use of Intravenous Insulin'[10] for staff training.
- The Department of Health included insulin maladministration in the 'never event' list.[11]

The task facing diabetes specialist teams is to integrate the policies listed above with local guidelines. Although this guideline focuses on self-management of insulin therapy, it also provides guidance on other aspects of diabetes self-management.

Rationale for self-management

Insulin therapy remains a common cause of untoward incidents in hospitals. Problem areas highlighted by the NaDIA[5] include:

- prescription and administration of insulin
- timing of insulin administration in relation to meals
- lack of knowledge among medical and nursing staff managing patients with diabetes
- lack of access to specialist advice about diabetes management.

Many insulin-treated patients will have greater knowledge and experience of insulin adjustment than the medical and nursing staff responsible for their care.[12] They will routinely monitor their capillary glucose and adjust the insulin dose depending on the result. This process is referred to as self-management of diabetes and is distinct from self-administration of insulin (defined as self-injection of insulin in response to medical advice). Self-management of diabetes by patients who are willing and able is an important part of the strategy to improve the safety of insulin use in hospital.[2]

Hospitals should have a policy for diabetes self-management. This should be clear and patient-centred, but flexible enough to deal with changing clinical situations. Written information explaining staff responsibilities in the process of agreeing self-management should be provided for medical and nursing staff.

The key principle is that patients should be primarily responsible for making the decision about whether they should self-manage their diabetes.

3. The role of the diabetes specialist team

- All hospitals should provide a diabetes specialist team to support inpatients with diabetes and the staff caring for them.
- Input from the diabetes specialist team is essential to ensure patients with diabetes are managed safely and effectively during their hospital stay.[3]
- The availability of diabetes specialist input varies from hospital to hospital and the role of the inpatient diabetes team will vary depending on the size of the team.
- ThinkGlucose provides guidance for referring patients to the diabetes specialist team.[7]
- Diabetes self-management needs to be specifically discussed. The diabetes specialist team should be involved in:
    - Developing and implementing local self-management policies.
    - Providing staff education in the use of self-management policies to ensure staff understand when patients are safe to self-manage diabetes.
    - Pre-planning for elective inpatients to ensure safe self-management.
    - Providing support where difficulties arise in deciding whether patients are able to self-manage; specific individual patient education may be required.
    - Investigating untoward incidents that arise as a result of self-management.
    - Auditing the self-management process.

Patients and ward staff may disagree about the level of self-management. The diabetes specialist team should be available to support the decision.

4. Self-management of diabetes with insulin

Objectives

The objectives of self-management are to:

- Allow patients who are able and willing to continue to self-administer and/or adjust insulin doses while in hospital.
- Improve patient safety and reduce insulin errors for inpatients with diabetes.
- Optimise the timing of insulin in relation to meals.
- Reduce the length of stay and re-admission rates by avoiding treatment errors.
- Identify and rectify gaps in patient knowledge, thereby increasing independence and decision-making on discharge.
- Identify patients with difficulties in administration of insulin (e.g. poor eyesight or dexterity).

Criteria for self-management

Patients who managed their diabetes prior to admission must be assumed competent to continue to self-manage during the admission unless the clinical situation prevents this. The role of the registered nurse (or doctor) is to discuss the patient's wishes and agree and document the circumstances in which self-management will not be possible (e.g. following anaesthesia).

The clinical situation may change during the admission and the patient may become temporarily or permanently unable to self-manage. Clear guidance should be provided to allow for changes in responsibility for diabetes management depending on the clinical circumstances. The guidance needs to be individualised; the diabetes specialist team may help with this.

Exclusion criteria

- Patients who prefer their diabetes to be managed by the healthcare team during their admission.
- Patients at risk of self-harm.
- Patients deemed unable to participate due to lack of capacity as defined under the Mental Capacity Act (2005).[13]
- Patients admitted as a result of poor glycaemic control (until assessed by the diabetes specialist team).
- Patients who will not be self-medicating on discharge.

Temporary exclusion criteria

- Patients whose clinical condition deteriorates (e.g. the patient becomes confused, more unwell or more dependent).
- Following anaesthesia, or if patient-controlled analgesia is in progress.

Caution criteria

- History of drug abuse.
- Psychiatric illness, severe depression, suicidal tendencies.
- Physical disabilities that prevent self-administration.
- Patients receiving treatment that might impact on diabetes control outside of the experience of that individual (e.g. steroid treatment).

Note: It is important not to exclude patients who are confused if they are expected to manage their own medicines when they go home. It may be possible to establish a safe routine before they are discharged.

Staff responsibilities

- Clinical staff are responsible to the patient for providing safe and effective care.
- The role of ward staff (nursing and medical) is to assess the clinical condition of the patient to determine whether this may impair the patient's ability to self-manage.
- Whenever possible, the patient should be involved in decisions and, as with all other aspects of their care, should be allowed to make the final decision about self-management.
- If there is doubt about the patient's ability to self-manage, the diabetes specialist team should be involved.
- Written agreement from the patient is required prior to self-administration of medicines in hospital (see Appendix 1).[14]

See Appendix 4 for nursing and midwifery guidelines for self-administration of medicines.

Nursing staff

Nursing staff are responsible for the following areas.

Assessment on admission

- Discussing, negotiating and agreeing the option to self-manage with the patient, bearing in mind that the patient will normally have more knowledge and experience of managing their diabetes than the ward nurse.
- Providing a patient information leaflet to support the discussion (see Appendix 2).
- Completing an 'agreement to self-manage' form with the patient to document the decision (see Appendix 1).
- Explaining the patient's responsibilities when self-managing insulin (e.g. disposal of sharps, and safe and secure storage of insulin).
- Ensuring that blood glucose results and insulin doses are documented.
- Ensuring safe and secure storage of the insulin with access for the individual patient.
- Communicating the self-management decision at nursing hand-over, especially if the patient is transferred between wards.
- Identifying gaps in patient education and involving the diabetes specialist team.

Re-assessment

Patients must be re-assessed by the responsible registered nurse:

- If their condition deteriorates (e.g. they become confused, more unwell or increasingly dependent).
- Following anaesthesia or or if patient controlled analgesia is in progress.
- If their condition improves (they may regain the ability to self-manage).
- If an insulin-related self-management incident occurs (e.g. the patient inappropriately misses a dose).

Medical staff

Medical staff must:

- Be aware that a patient is self-managing diabetes.
- Respect the patient's view when discussing diabetes management.
- Inform the nursing staff and the patient if they amend the medicine chart.

Pharmacy staff

Pharmacy staff should:

- Supply each patient with his or her own insulin or an equivalent (ensuring that the appropriate injection device is supplied).
- Respond promptly to the request to supply medication to ensure patients do not miss doses.

Planning elective admissions

People with diabetes should be involved in the planning of diabetes management at all stages of an elective admission, from pre-admission to post-discharge.[15]

The following should be agreed in advance.

- Whether the patient wishes to self-manage during the admission.
- The circumstances when self-management may not be possible (anaesthesia, patient-controlled analgesia).
- The process for agreement to self-manage (patient information leaflet, agreement to self-manage form).
- The detailed self-management plan (blood glucose monitoring, recording of insulin doses).
- The need to involve the diabetes specialist team in advance (e.g. insulin pump therapy).
- Guidelines for involving the diabetes specialist team.

The outcomes of self-management of diabetes in elective patients should be audited and should include patient satisfaction questionnaires.

Patient education

- Patients must be given the patient information leaflet (see Appendix 2) in an appropriate language before starting self-management. It is good practice to ask the patient what they understand after reading the leaflet.
- If diabetes educational needs are identified, the patient should be referred to the diabetes specialist team.
- Patients who are not self-administering insulin should be given education on the dose, timing and injection technique every time insulin is administered. Information should be provided on the action of insulin, the patient's role in the administration process and the potential to take greater control over the administration of their insulin during their hospital stay.
- Patients not currently self-managing but expected to be independent at discharge should be referred to the diabetes specialist team well in advance of discharge and provided with written information including details of glucose-testing equipment, a glucose diary, contacts' details and follow-up arrangements.
- All patients taking insulin should be provided with an information leaflet advising on the safe use of insulin and an insulin passport documenting the name of the insulin they are taking and the type of administration device, in line with NPSA guidance.[2]

Dispensing and storage of insulin

Use of patient's own medications

Patient's own insulin can be used for self-administration provided the following criteria are met.

- The patient has consented to use his/her own medications while in hospital.
- The expiry date has not passed.
- Insulin vials/cartridges/disposable pens have been open for less than 4 weeks.
- Insulin pens/devices have a patient identification (ID) label.

Storage

- The patient should be provided with a secure cabinet for storage of insulin and is responsible for ensuring the key is kept secure at all times.
- If the patient leaves the ward for a procedure, the key should be returned to the registered nurse.
- The registered nurse should hold a master key for each cabinet and a spare should be kept on the ward.

If the ward is unable to provide a locked cabinet, this should not be a barrier to self-administration of insulin provided that:

- The patient is made aware of the potential risks of leaving insulin, needles, syringes, pen devices, or blood glucose monitoring equipment within reach or sight of others.
- There is a regular risk assessment and the patient does not remain in the same area as patients who are:
    - at risk of deliberate self-harm
    - acutely confused
    - have a current history of drug or alcohol abuse
    - have a history of medication overdose.

Checking and recording patient self-administration of medicines

The registered nurse is responsible for confirming the patient has self-administered insulin and the dose taken. This should be recorded on the prescription chart. If the patient becomes unable or unwilling to administer insulin, nursing staff must take over responsibility.

Medication errors and missed doses

- All drug errors should be reported by the normal incident reporting method.
- Minor discrepancies (e.g. variation in timing) must be discussed with the patient. If there is disagreement between the patient and ward staff about the appropriateness of the patient's decision, the diabetes specialist team should be asked to advise.
- If the patient makes an undisputed error in management or administration, nursing or medical staff must assess the patient's ability to continue to self-manage.
- All errors or discrepancies, including the action taken, must be documented in the nursing and medical records.

Blood glucose monitoring in hospital

Self-monitoring of blood glucose in hospital is an important issue that raises both patient safety and point-of-care testing (POCT) concerns over the quality assurance of individual patient meters. It is essential that local trust policies agreed by the POCT committee, or the biochemistry department if no POCT committee exists, are in place before allowing exclusive self-monitoring of blood glucose.

- Patients who are self-managing their diabetes should be able to test their blood glucose, using their own equipment where possible.
- Patients who are self-monitoring should make the results of tests available to nursing staff for inclusion in the inpatient record. However, hospital staff should only make treatment changes using blood results taken with a trust-approved and quality-controlled meter.
- Patients should test at regular intervals (minimum four times per day before meals and bed for those taking insulin) to allow hospital staff to assess the level of control.
- The diabetes specialist team should be consulted about any issues relating to blood glucose monitoring and patient self-management.
- Patients who are new to self-monitoring should receive education and support from the diabetes specialist team.
- Patients who use self-monitoring equipment not stocked by the hospital pharmacy may need to provide their own equipment or change to hospital-supplied equipment.
- Hospitals that have quality-control policies mandating the use of hospital-provided glucose meters should develop policies that allow the patient to retain control of blood glucose monitoring and diabetes management.

Management of hypoglycaemia and hyperglycaemia

- If the patient becomes hypoglycaemic (blood glucose below 4 mmol/L), treat in accordance with inpatient hypoglycaemia guidelines.[16] Refer to the diabetes specialist team if hypoglycaemia is recurrent or severe (requiring third party assistance).
- If the patient becomes hyperglycaemic (blood glucose levels above 14 mmol/L), ask the patient what they would normally do in this situation. If the patient is self-managing, they should decide what action is needed.
- If the patient is not self-managing but is well, seek advice from the diabetes specialist team or from medical staff.
- If the patient is unwell, check urine or blood for ketones and inform medical staff of the results. Consider using a variable-rate intravenous insulin infusion. Refer to local guidelines for the management of hyperglycaemia, if available.

Content and timing of meals

- Hospitals should ensure the content and timing of meals are appropriate for people with diabetes and that insulin can be taken with the meal.
- The carbohydrate content of meals should be shown on menus.
- People with diabetes should be allowed to make their own food choices. Guidance may be needed from a dietitian to ensure these choices are appropriate.
- People with type 1 diabetes may have received structured education (e.g. the dose adjustment for normal eating [DAFNE] programme) that enables them to eat what they like and to adjust their insulin accordingly. They know more about nutrition and diabetes than most health professionals and should not be stopped from choosing food from the 'normal' menu.

5. Self-management of insulin pumps (continuous subcutaneous insulin infusion [CSII] during hospital admission)

Insulin pumps may be used by people with type 1 diabetes to optimise blood glucose control. Pump users undergo detailed education and training in the use of the pump by the diabetes specialist team.

Essential information about insulin pumps

- Rapid- or short-acting insulin is infused continuously subcutaneously at a pre-programmed rate set by the patient or the diabetes specialist team.
- Bolus doses are taken to cover food.
- If the pump is discontinued for any reason without an alternative provision of insulin, diabetic ketoacidosis is likely to develop within a short space of time because there is no reservoir of long-acting insulin.

Principles of self-management of insulin pumps by inpatients

- Inpatients using insulin pumps should self-manage if well enough to do so.
- If the patient is not well enough to self-manage the pump or is unconscious/incapacitated, the pump should be discontinued and a variable-rate intravenous insulin infusion should be started immediately.
- An insulin pump should **never** be discontinued without immediate substitution of rapid-acting insulin via an alternative administration route.
- Insulin pumps should be adjusted only by the patient or a member of the diabetes specialist team.
- If an insulin pump is discontinued it should be stored safely until the patient is ready to restart the pump. The place of storage should be documented.
- If the patient is not able to self-manage but continued intravenous insulin is not necessary the diabetes specialist team should be asked to advise on a subcutaneous insulin injection regimen.
- When an insulin pump is restarted, the intravenous insulin infusion should not be discontinued until a mealtime bolus dose of insulin has been given via the pump.
- All patients admitted to hospital using an insulin pump should be referred to the diabetes specialist team.

Pump management for procedures requiring a short period of starvation

General principles

- Continuous infusion of subcutaneous insulin via a pump is designed to maintain stable blood glucose during the fasting state.
- Procedures requiring the patient to be nil by mouth for a limited period (no more than one missed meal) should be manageable with a pump.
- Plans for continued use of the pump during an elective procedure should be discussed and agreed with the patient before admission.
- Patients using a pump should not require overnight admission before the procedure.

For detailed guidelines for the management of insulin pumps during procedures requiring a short period of starvation (only one missed meal), see Appendix 5.[15]

For guidelines on the management of an insulin pump during radiological investigations and hyperglycaemia or hypoglycaemia, see Appendix 6.

6. Self-administration of other diabetes medication

- People with type 2 diabetes may take tablets, with or without insulin, to treat their diabetes.
- Hospitals may have local policies in place for self-management of all medication; oral diabetes medication would fall within the scope of these documents.
- There are some specific considerations for the self-administration of oral diabetes agents regarding the timing of the dose in relation to food:
    - metformin must be taken with food to reduce the incidence of gastrointestinal side effects
    - sulfonylureas (gliclazide, glimepiride) and gliptins (sitagliptin, vildagliptin, saxagliptin, linagliptin) should ideally be taken about half an hour before food
    - pioglitazone, repaglinide and nateglinide may be taken just before eating
    - the use of glucagon-like peptide-1 (GLP1) analogues may need to be reviewed on admission to hospital.

7. Audit standards

Specific audits will need to be developed and performed to support the introduction and continuing management of diabetes self-management. Below is an overview of the areas that will need to be covered.

Indicator	Standard
Education:	
Ensure staff are adequately trained to facilitate self-management of diabetes by completing the Safe Use of Insulin e-learning module	100% of staff responsible for supervising insulin use have completed the module
Ensure patients receive adequate education and support to safely self-manage diabetes	Yes
Protocols:	
Percentage of individuals with diabetes for whom the assessment and monitoring protocols have been correctly followed	100%
Patient satisfaction:	
Percentage of people who feel confident that diabetes is being adequately managed in hospital	100%
Percentage of individuals who feel that the ward staff have sufficient knowledge of diabetes	100%
Percentage of people who feel they are allowed to maintain control of their own diabetes management in hospital	75%
Percentage of individuals who feel that the timing and content of meals are appropriate for management of diabetes	75%
Outcome measures:	
Death or serious harm as a result of maladministration of insulin	0%
Serious untoward incidents relating to insulin administration	0%
Frequency of hypoglycaemic episodes recorded	
Frequency of medication errors relating to diabetes treatment	

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9. Appendices

Appendix 1: Agreement to self-manage diabetes during hospital admission

I wish to take responsibility for managing my diabetes (blood glucose monitoring and insulin adjustment) during my admission to [insert trust name]

I agree that:

... I will keep my medication safe and inaccessible to other patients

... I will check my blood glucose regularly and record the results

... I will record the dose of insulin taken and make the information available to staff

... If I am unable, for any reason, to make decisions about my diabetes management, medical or nursing staff should make decisions on my behalf until I am able to resume self-management

Signed: PRINT name: Date:

Witnessed by Healthcare Professional (signature):

PRINT name: Date: Position:

Any change in circumstances that may affect this agreement should be documented in the notes.

Appendix 2: Patient information leaflet

Introduction

We hope the following information will be helpful to you. If you have any questions please do not hesitate to contact the Diabetes Specialist Nurses on [telephone contact and working hours].

Self-management of your diabetes

If you have diabetes treated with insulin and are admitted to hospital you will be asked whether you wish to continue to make your own decisions about the management of your diabetes during your admission, if you are feeling well enough to do so.

As you are the person with most experience in caring for your diabetes we would encourage you to continue to make your own decisions about your treatment wherever possible.

If you choose not to self-manage during your admission, medical and nursing staff will take decisions on your behalf but, wherever possible, you will be consulted.

If the medical condition for which you were admitted means that you are not well enough to make your own decisions (for example, if you need sedation or if you need to be treated with intravenous insulin), medical and nursing staff will take over the management of your diabetes until you feel ready to look after yourself.

If you wish to take responsibility for managing your diabetes during your admission you will be asked to sign a form to confirm this.

You will also be asked to keep a record of your blood glucose levels and the insulin you have taken so that medical and nursing staff are aware of the decisions you have taken.

If you would like to see a member of the diabetes specialist team during your admission, please inform the nursing staff.

Appendix 3: Information for healthcare professionals

Insulin self-management for adult inpatients with diabetes

Introduction

There is evidence that inpatients with diabetes, particularly those taking insulin, may suffer harm during their admission as a result of prescribing and management errors by hospital staff. The National Patient Safety Agency (2010, 2011) has issued alerts to improve the safety of inpatients with diabetes and recommends that patients who wish to take responsibility for managing their diabetes and are well enough to do so should be allowed to self-manage.

Wherever possible, inpatients with insulin-treated diabetes should be encouraged to make their own decisions about insulin doses in response to their blood glucose results. Patients who are not well enough to take overall control but who are able to discuss their diabetes management should be encouraged to participate in decision-making.

Elective admissions

The pre-operative assessment clinic nurse should:

- Discuss the diabetes management plan for elective surgical admissions and establish whether the patient wishes to self-manage.
- Explain that there may be a time during the immediate post-operative period when nursing and medical staff may need to make decisions on the patient's behalf until he or she is fit to resume self-management.
- Ask the patient to sign the self-management agreement form if he or she wishes to self-manage.
- Ensure that the diabetes team is aware of the planned admission.

The admitting nurse should:

- Ask the patient whether he or she wishes to self-manage their diabetes.
- Discuss the circumstances in which the patient will **not** manage their diabetes (e.g. peri-operative/under sedation/illness impairing ability to take decisions/requiring an intravenous insulin infusion).
- Explain that circumstances may change during the admission and that the self-management decision may need to be reviewed in response to the medical situation.
- Explain that ultimate responsibility lies with the trust and if the patient is not considered well enough to self-manage, the nurses will take over.
- Request that the patient records his or her blood glucose results and the dose of insulin administered – this may be in their own record book but the results should be made available to staff.
- Emphasise the need for the patient to take responsibility for keeping his or her medicines safe and for ensuring that other patients cannot access them.
- Ask the patient to complete the agreement form taking responsibility for diabetes self-management if this has not been done already.
- Inform the diabetes specialist team that the patient has been admitted and has opted to self-manage.

Emergency admissions

Admitting staff should assess the patient's overall condition to decide whether there are any factors that would prevent the patient from safely self-managing their diabetes (e.g. impaired conscious level, diabetic ketoacidosis or other indication for an intravenous insulin infusion).

If the patient is able and wishes to self-manage, the points listed for elective admissions should be discussed and the consent form completed.

If the patient is not considered well enough to self-manage, the situation should be reviewed once the clinical condition improves.

If the patient has agreed to self-manage but the clinical circumstances subsequently change so that self-management is no longer possible, this should be recorded in the notes. If the patient reverts to self-management on recovery this should also be recorded.

References

National Patient Safety Agency (2010) *Rapid Response Report. Safer Administration of Insulin*. London, NPSA. Available from www.nrls.npsa.nhs.uk/alerts/?entryid45=74287, last accessed 21 Feb 2012

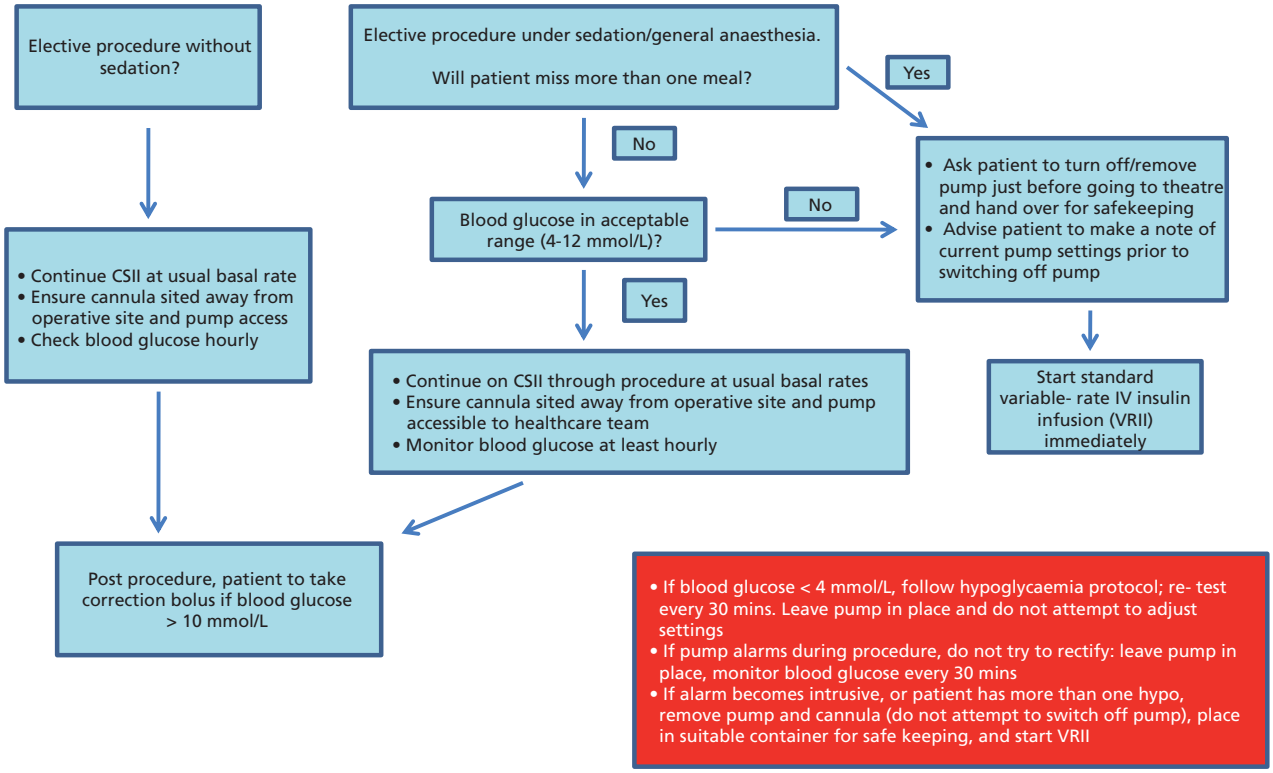
National Patient Safety Agency (2011) *The Adult Patient's Passport to Safer Use of Insulin*. London, NPSA. Available from www.nrls.npsa.nhs.uk/resources/?EntryId45=130397, last accessed 21 Feb 2012

Appendix 4: Self-administration levels – adapted from the Nursing and Midwifery Council (2007)

The level should be recorded in the medicine chart together with the date and name and signature of the assessor. This should be amended as the patient changes from one level to another.

Level 1	***The nurse administers medicines in conjunction with the patient, providing full explanation***
	The nurse is responsible for medication storage and the supervision of the administration process ensuring the patient understands the medications being administered. • At the time of administration the nurse and patient discuss what drugs should be taken at that time and the effect they have on the body. • The nurse may prompt the patient to test his/her knowledge of the drugs. • Patients felt to be capable of correct selection, of obtaining their dose and where necessary measuring it out for at least 1 day may be admitted to Level 2. • Patients who have been anaesthetised in the last 24 hours or are receiving patient-controlled analgesia must be classified as Level 1.
Level 2	***Patient self-administers under nurse supervision***
	While the nurse is responsible for safe storage of medications, the patient self-administers the medications under supervision. • The patient dispenses the medications under the supervision of a nurse who checks that the dose and the insulin selected are correct. • The nurse can still provide information to the patient but retains control over access to medications. • Having satisfied the nurse responsible of their proficiency in self-administering, after review of the nursing assessment and in consultation with the doctor, the patient may be moved on to Level 3. This should not normally be considered before the patient has taken their medication correctly for at least 1 day.
Level 3	***Patient self-manages medications independently***
	The patient demonstrates sufficient knowledge of his or her drugs and self-medicates unsupervised. For patients self-administering insulin: • Insulin and associated equipment (needles/syringes, pen devices, sharps bins, etc) will be kept by the patient. These must be stored by the patient out of sight and in a secure location of their keeping only accessible by themselves when needed. • The patient administers insulin without direct supervision. • The nurse checks suitability and compliance verbally. • The prescription chart is annotated with 'self' (denoting self-administered medication) and the nurse's signature in the administration section for each medication self-administered.

Appendix 5: Pump management for elective procedures under sedation or anaesthesia



CSII, continuous subcutaneous insulin infusion

Please discuss all pump patients with a member of the diabetes specialist team

Appendix 6: Guidelines for insulin pump therapy in specific situations

Pumps and radiological investigations

The pump must be suspended and removed prior to MRI, and should not be taken into the scanning room. Pump manufacturers also advise removing the pump prior to CT scanning. For plain x-rays, there is no need to remove the pump unless its position obscures the area of interest. The patient should reconnect the pump immediately following any radiological investigation. Pumps can be safely suspended/removed for up to 1 hour at a time without needing alternative insulin. A correction bolus may be needed on reconnecting the pump.

Hypoglycaemia in patients using CSII

Patients able to manage their pump

Treat hypoglycaemia with rapid-acting carbohydrates (e.g. dextrose tablets, Lucozade). Unlike patients using long-acting insulin, follow-up with long acting carbohydrates is *not usually* needed. Pump infusion rates may need adjustment, especially if there is a history of recurrent hypoglycaemia: **consult the diabetes specialist team**.

The unconscious/incapacitated patient

Initial treatment of hypoglycaemia should follow standard local guidelines. If hypoglycaemia is persistent, remove the cannula and pump. Once blood glucose has returned to normal, re-start insulin – either CSII if patient now alert and able to self-manage, or an alternative regimen (e.g. variable-rate intravenous insulin infusion [VRIII] or subcutaneous insulin); this is needed to prevent the development of ketoacidosis.

Pump management for the unconscious/incapacitated patient and in diabetic ketoacidosis

It is usually best for the patient to continue to self-manage their diabetes with the pump except:

- if unconscious, confused or incapacitated (e.g. if illness/pain prevents self-management)
- if undergoing major procedures under general anaesthesia lasting > 2 hours
- in the case of diabetic ketoacidosis (DKA).

The unconscious or incapacitated patient

If the patient is unable to self-manage the pump (i.e. unconscious or incapacitated): remove the cannula and detach the pump. **Place the pump in a safe place and document** – ask a relative to take the pump home for safe-keeping if possible. Immediately start alternative insulin (e.g. VRIII or subcutaneous insulin regimen) unless hypoglycaemic. If hypoglycaemic, start alternative insulin **once** hypoglycaemia is treated. CSII can be restarted once the patient has recovered.

Diabetic ketoacidosis

The altered tissue perfusion in DKA affects insulin absorption, making CSII unreliable. CSII should be temporarily discontinued in patients presenting in DKA: remove the cannula and detach the pump. For further management, follow standard DKA protocol (Joint British Diabetes Societies for Inpatient Care Group, 2010). CSII can be restarted once DKA has been treated. **All patients should have input from the diabetes specialist team** to review CSII settings that may need adjustment to prevent subsequent DKA, and to re-enforce 'sick day rules'.

Reference

Joint British Diabetes Societies Inpatient Care Group (2010) *The Management of Diabetic Ketoacidosis in Adults*. London, NHS Diabetes. Available from www.diabetes.org.uk/About_us/Our_Views/Care_recommendations/The-Management-of-Diabetic-Ketoacidosis-in-Adults/, last accessed 21 Feb 2012

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