

INSULIN: reducing errors in administration and prescribing

SAFETY

Advice for all healthcare professionals [1, 2, 3]

Training

- Take responsibility for making sure you receive regular training that includes insulin safety and all the insulin devices that you use, and ensure you are working to up to date policies. Refer to the Pan Mersey [Insulin comparison and identification guide](#).

Prescriptions and authorisation sheets

- If the insulin is being administered by the District Nursing Team, provide the appropriate authorisation in line with local policy.
- All written and electronic communications must describe insulin doses as a number of units followed by the word "units" spelled out in lower case [4]. Always specify the brand of the insulin formulation, the strength, the form of delivery, and the dose frequency.
- Check that high doses of insulin are intentional. Use the 25/50 rule to reduce accidental overdose, i.e., confirm rapid acting insulin, more than 25 units; intermediate, combination, or long acting insulin, more than 50 units [5].

Administration

- Never use a device you have not been trained to use.
- Healthcare staff involved in the administration of insulin should use safety needles and be trained on how to use safety needles correctly.
- Patients administering their own insulin should not be supplied with safety needles. There is a risk of misadministration and not receiving the full prescribed dose [6].
- Never use a syringe to withdraw insulin from a pre-filled pen or penfill cartridge [4]. This is a NEVER EVENT.
- Penfill cartridges must be used with specified devices and are not interchangeable.
- Healthcare staff involved in the administration of insulin should always check the expiry date of the insulin and the date the insulin was removed from the fridge.

INSULIN: reducing errors in administration and prescribing

Patient Education

- Ensure that patients read the pictorial or written information supplied and understand which insulin they are using so that they can be sure they are on the right treatment.
- Warn patients only to use insulin in the way they have been trained. Using it any other way may result in a dangerous overdose or underdose.
- Check the patient carries an up-to-date insulin passport. When insulin is prescribed, dispensed, or administered, cross-reference the available information to confirm the correct identity of insulin products [7]. Re-issue or update as appropriate.
- For advice and support for people with an insulin pump, contact the patient's insulin pump specialist team.

Advice for Specialists[†] [1, 2, 3]

- Give patients a patient booklet and Insulin Passport (or safety card).
- Ensure that patients receive appropriate training on the correct use of the product.
- Patients, their carers, or healthcare professional providing care should be asked to monitor their blood glucose, and this should be assessed by the prescribing team after starting a new treatment. You may need to adjust doses and timing of concurrent insulin and other blood glucose lowering products.
- If different short and long-acting insulins are being prescribed together, the differences in appearance and use between the two pen devices must be highlighted. Written and pictorial information must be given to the patient about different insulin types they are on.
- Ensure patients know if there is more than one strength of their insulin available. Explain differences in the design of the package and the pre-filled pen for high-strength insulins (more than 100 units per ml) and standard-strength insulins, especially if the patient has been transferred from standard-strength insulin to high-strength insulin. Focus on colour differentiation, warning statements on cartons or labels and other safety design features such as tactile elements on the pre-filled pen.
- Patients who are blind or with poor vision must be instructed to always get assistance from another person who has good vision and is trained in using the insulin device. Consider changes in regimen and monitoring to accommodate the available support.
- Ensure that people with diabetes who are receiving insulin therapy are given information about awareness and management of hypoglycaemia.
- Make sure that people with diabetes who use insulin and who drive are aware of the need to notify the Driver and Vehicle Licensing Agency (DVLA) and their insurer. Clinicians should refer to chapter 3 of the DVLA's [Assessing fitness to drive – a guide for healthcare professionals](#) for more information. This advice should be clearly documented on the patient's clinical record.
- Be aware of 'sick-day' rules and ensure that people with diabetes who are receiving insulin therapy are given appropriate information about these.
- Although biosimilar insulin products have demonstrated similar safety and efficacy to the originator product, they are not presumed to be identical in the same way as generic non-biological medicines are to their proprietary originator product [8]. Monitor glucose levels closely after starting a new treatment and in the following weeks.
- When switching patients from standard-strength insulin to an insulin formulation that is not bioequivalent (such as Toujeo, insulin glargine 300 units/ml), switching can be done on a unit to unit basis but the dose may need to be adjusted to achieve target ranges for plasma glucose level.

[†] Clinicians who have undertaken relevant training and demonstrate ongoing competency in insulin initiation or switching.

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Transfer of insulin prescribing to non-specialists

- Before requesting non-specialist prescribing of newly initiated insulin the diabetes team must be assured that the patient, carer, or both are willing, competent, and trained to:
 - Administer the insulin (or District Nursing support has been arranged).
 - If and when required, amend the dose of the insulin, either with the support of their diabetes healthcare professional or independently.
- Before prescribing responsibility transfers to a non-specialist the diabetes team must maintain clinical responsibility, review the patient, and prescribe sufficient insulin and administration devices for four weeks or until review by the diabetes team, whichever is longer.
- A copy of the review must be sent to the non-specialist prescriber with the request for transfer of prescribing. Include information about the dosing schedule.

Advice for General Practitioners [1, 2, 3]

- All insulin requires specialist † initiation of prescribing.
- Always prescribe insulin using the brand name, the strength, and the form of delivery.
- If specified, the dose must include a frequency and be expressed as a number of units followed by the word "units" spelled out in lower case.
- Always carefully check the product selected in electronic prescribing systems.
- Where clinical systems allow, consider using variable issue repeat prescriptions for insulin, blood glucose testing strips, and pen needles. This is particularly important for people using an insulin pump system who may infrequently require a back-up supply of insulin.

Advice for Pharmacists [1, 2, 3]

- Always carefully check the product selected in electronic dispensing systems.
- Advise patients to check the correct product has been supplied.
- Ensure that storage arrangements for combination insulin medicines facilitate correct selection of the medicine and avoid confusion with other medicines.
- Whenever practicable, it is recommended to check that the patient, their carer, or both are able to read the strength of insulin and the dose counter and have been trained on how to use a newly prescribed pen.

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Resources

Omniamed Communications (2021) 'The six steps to insulin safety'. *Primary Care Diabetes Society*. Available at <https://diabetesonthenet.com/cpd-modules/the-six-steps-to-insulin-safety/> (Accessed 27 May 2021).

Driver and Vehicle Licensing Agency (2021) *Assessing fitness to drive: a guide for medical professionals*. Available at <https://www.gov.uk/government/publications/assessing-fitness-to-drive-a-guide-for-medical-professionals> (Accessed 27 May 2021)

DIABETES UK (2021) *Diabetes and being ill*. Available at <https://www.diabetes.org.uk/guide-to-diabetes/life-with-diabetes/illness> (Accessed 27 May 2021).

References

1. Medicines and Healthcare products Regulatory Agency (2015) *High strength, fixed combination and biosimilar insulin products: minimising the risk of medication error*. Available at: <https://www.gov.uk/drug-safety-update/high-strength-fixed-combination-and-biosimilar-insulin-products-minimising-the-risk-of-medication-error> (Accessed 27 May 2021).
2. European Medicines Agency (2015) *Guidance on prevention of medication errors with high strength insulins*. Available at http://www.ema.europa.eu/docs/en_GB/document_library/Recommendation_on_medication_errors/2015/11/WC500197133.pdf (Accessed 27 May 2021).
3. National Institute for Health and Care Excellence (2019) *Safer insulin prescribing*. KTT20. Available at <https://www.nice.org.uk/advice/ktt20> (Accessed 27 May 2021).
4. NHS Improvement (2018) *Never Events list 2018*. Available at <https://www.england.nhs.uk/publication/never-events/> (Accessed 27 May 2021).
5. Dooley, M., Wiseman, M., McRae, A., et al (2011) 'Quality Improvement Report Reducing potentially fatal errors associated with high doses of insulin: a successful multifaceted multidisciplinary prevention strategy'. *BMJ Quality and Safety*, 20(7). <http://dx.doi.org/10.1136/bmjqs.2010.049668> (Accessed 27 May 2021)
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8. National Institute for Health and Care Excellence (2015) *Diabetes mellitus type 1 and type 2: insulin glargine biosimilar (Abasaglar)*. ESNM64. Available at <https://www.nice.org.uk/advice/esnm64/chapter/Key-points-from-the-evidence> (Accessed 27 May 2021).