The Hierarchy of Evidence

The Hierarchy of evidence is based on summaries from the National Health and Medical Research Council (2009), the Oxford Centre for Evidence-based Medicine Levels of Evidence (2011) and Melynyk and Fineout-Overholt (2011).

I Evidence obtained from a systematic review of all relevant randomised control trials.

II Evidence obtained from at least one well designed randomised control trial.

III Evidence obtained from well-designed controlled trials without randomisation.

IV Evidence obtained from well-designed cohort studies, case control studies, interrupted time series with a control group, historically controlled studies, interrupted time series without a control group or with case- series

V Evidence obtained from systematic reviews of descriptive and qualitative studies

VI Evidence obtained from single descriptive and qualitative studies

VII Expert opinion from clinicians, authorities and/or reports of expert committees or based on physiology

Melynyk, B. & Fineout-Overholt, E. (2011). Evidence-based practice in nursing & healthcare: A guide to best practice (2nd ed.). Philadelphia: Wolters Kluwer, Lippincott Williams & Wilkins.

National Health and Medical Research Council (2009). NHMRC levels of evidence and grades for recommendations for developers of guidelines (2009). Australian Government: NHMRC. http://www.nhmrc.gov.au/_files_nhmrc/file/guidelines/evidence_statement_form.pdf

OCEBM Levels of Evidence Working Group Oxford (2011).The Oxford 2011 Levels of Evidence. Oxford Centre for Evidence-Based Medicine. http://www.cebm.net/index.aspx?o=1025

Databases searched:	☐ CINAHL (Ebsco)	☐ Medline (Ebsco)	☐ Pubmed (NLM)	☐ Nursing (Ovid)	☐ Emcare (Ovid)
Keywords used:	Diabetic ketoacidosis, insulin, type 1 diabetes, blood sugar, blood glucose, DKA, transition, subcutaneous insulin, insulin injection				
Search limits:	After 2018				
Other search comments:	Used: CINAHL, BMJ, Cochrane, Medline, MIMS				

Reference (include title, author, journal title, year of publication, volume and issue, pages)	Evidence level (I-VII)	Key findings, outcomes or recommendations
Royal Children's Hospital, Melbourne, Australia, Clinical Practice Guideline - Diabetes Mellitus, [Internet, cited 10/12/2022], available from https://www.rch.org.au/clinicalguide/guideline_index/Diabetes_mellitus/	VIII	Medical indications patient is ready for transition, timing of subcutaneous insulin injection
Optimal prandial timing of bolus insulin in diabetes management: a review, D. Slattery, S. Amiel & P. Choudhary, Diabetic Medicine, 2017, Volume 35 Issue 3, p. 306-316	V	Insulin Aspart most commonly used for prandial control, insulin injections most effective 15-20 minutes before eating, injections postprandial lead to higher risk of hypoglycaemia
Diabetes Care in the Hospital: Standards of Medical Care in Diabetes – 2022, American Diabetes Association, Diabetes Care, Jan 2022, Volume 45 (Supplement. 1): S244-S253 / https://doi.org/10.2337/dc22-S016	VII	Specialised Endocrinology and Diabetes team direct the safest and stringent assessment for patients in DKA and requiring hospitalisation. A specialised diabetes team and unit can provide better understanding and support of the patients' treatment plan
Optimal Prandial Timing of Insulin Bolus in Youths with Type 1 Diabetes: A Systematic Review, E. Mozzillo & et al, Journal of Personalized Medicine, 2022, 12, 2058, p. 1 - 14	II	Prandial insulin injected 10 – 20 mins before a meal, particularly at breakfast, provides better post-prandial glycaemia and HbA1c without increasing the risk of hypoglycaemia, and without affecting total daily insulin dose and BMI.
Diabetic ketoacidosis, A. Kitbchi & L. Nematollahi, BMJ Best Practice, November 2017	IV	Subcutaneous insulin should be given 1-2 hours before stopping IV insulin, Criteria for resolution: bicarb >18, pH>7.30, anion gap <10, blood sugar <11.1
NovoRapid, MIMS Australia, revised June 2017	VII	Onset of action 10-20 mins. Max effect 1-3 hours. Duration 3-5 hours. Most closely mimics normal physiological mealtime response when given immediately before meal
Lantus, MIMS Australia, revised November 2017	VII	Steady effect. Duration 24 hours
Actrapid, MIMS Australia, revised August 2012	VII	Onset 30 mins. Max effect 2.5-5 hours. Duration 8 hours
Insulins: Comparative Information, Australian Medicines Handbook, 2018	VII	NovoRapid onset 15 mins, 1 hour to peak, duration 4-5 hours. Lantus onset 1-2 hours, no peak, duration 24 hours.

		Actrapid (neutral) onset 30 mins, 2-3 hours to peak, duration 6-8 hours. Levemir (insulin detemir) onset 3-4 hours, 9 hours to peak, duration 12-24 hours.