

# MD7005/MD7255 - Advanced Injectable Therapies

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Advanced Injectable Therapies

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1

Richard I. G. Holt, , Clive Cockram, , Allan Flyvbjerg, , and Barry J. Goldstein. Textbook of Diabetes. John Wiley & Sons, Incorporated 2016.  
<https://ebookcentral-proquest-com.ezproxy3.lib.le.ac.uk/lib/leicester/reader.action?docID=4769056&query=#>

2

Gururaj Setty S, Crasto W, Jarvis J, et al. New insulins and newer insulin regimens: a review of their role in improving glycaemic control in patients with diabetes. Postgraduate Medical Journal 2016;**92**:152–64. doi:10.1136/postgradmedj-2015-133716

3

Daly H, Davies M, Barnett J, et al. Development of a self-management education module for those with type 2 diabetes on injectable therapies. Practical Diabetes 2015;**32**:305–310a. doi:10.1002/pdi.1979

4

Ajikumar B Aryangat, John E Gerich. Type 2 diabetes: postprandial hyperglycemia and increased cardiovascular risk. Vascular Health and Risk Management 2010;**6**.  
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2860446/>

5

Ashwell SG, Amiel SA, Bilous RW, et al. Improved glycaemic control with insulin glargine plus insulin lispro: a multicentre, randomized, cross-over trial in people with Type 1 diabetes. Diabetic Medicine 2006;**23**:285–92. doi:10.1111/j.1464-5491.2005.01781.x

6

Bretzel RG, Nuber U, Landgraf W, et al. Once-daily basal insulin glargine versus thrice-daily prandial insulin lispro in people with type 2 diabetes on oral hypoglycaemic agents (APOLLO): an open randomised controlled trial. *The Lancet* 2008;**371**:1073–84. doi:10.1016/S0140-6736(08)60485-7

7

Carver C. Insulin Treatment and the Problem of Weight Gain in Type 2 Diabetes. *The Diabetes Educator* 2006;**32**:910–7. doi:10.1177/0145721706294259

8

Sharon Allard, Caroline Butler, Sue Cradock, Heather Daly, Jemma Edwards, Elizabeth Gilbert. Using Conversation Maps in practice: the UK experience. *Journal of Diabetes Nursing* 2010; **14**.  
<http://go.galegroup.com/ps/i.do?id=GALE|A245106172&v=2.1&u=leicester&it=r&p=EAIM&sw=w&asid=fe5329820c5da4ed2dd0a88a5ced5962>

9

Davies MJ, Donnelly R, Barnett AH, et al. Exenatide compared with long-acting insulin to achieve glycaemic control with minimal weight gain in patients with type 2 diabetes: results of the Helping Evaluate Exenatide in patients with diabetes compared with Long-Acting insulin (HEELA) study. *Diabetes, Obesity and Metabolism* 2009;**11**:1153–62. doi:10.1111/j.1463-1326.2009.01154.x

10

Davies MJ, Donnelly R, Barnett AH, et al. Exenatide compared with long-acting insulin to achieve glycaemic control with minimal weight gain in patients with type 2 diabetes: results of the Helping Evaluate Exenatide in patients with diabetes compared with Long-Acting insulin (HEELA) study. *Diabetes, Obesity and Metabolism* 2009;**11**:1153–62. doi:10.1111/j.1463-1326.2009.01154.x

11

Funnell MM. Overcoming Barriers to the Initiation of Insulin Therapy. *Clinical Diabetes* 2007;**25**:36–8. doi:10.2337/diaclin.25.1.36

12

Garber AJ, Wahlen J, Wahl T, et al. Attainment of glycaemic goals in type 2 diabetes with once-, twice-, or thrice-daily dosing with biphasic insulin aspart 70/30 (The 1-2-3 study). *Diabetes, Obesity and Metabolism* 2006;**8**:58-66. doi:10.1111/j.1463-1326.2005.00563.x

13

Gough SCL. A review of human and analogue insulin trials. *Diabetes Research and Clinical Practice* 2007;**77**:1-15. doi:10.1016/j.diabres.2006.10.015

14

Garber AJ, Ligthelm R, Christiansen JS, et al. Premixed insulin treatment for type 2 diabetes: analogue or human? *Diabetes, Obesity and Metabolism* 2007;**9**:630-9. doi:10.1111/j.1463-1326.2006.00654.x

15

Heller SR, Colagiuri S, Vaaler S, et al. Hypoglycaemia with insulin aspart: a double-blind, randomised, crossover trial in subjects with Type 1 diabetes. *Diabetic Medicine* 2004;**21**:769-75. doi:10.1111/j.1464-5491.2004.01244.x

16

Hermansen K, Davies M, Derezinski T, et al. A 26-Week, Randomized, Parallel, Treat-to-Target Trial Comparing Insulin Detemir With NPH Insulin as Add-On Therapy to Oral Glucose-Lowering Drugs in Insulin-Naive People With Type 2 Diabetes. *Diabetes Care* 2006;**29**:1269-74. doi:10.2337/dc05-1365

17

Holman RR, Thorne KI, Farmer AJ, et al. Addition of Biphasic, Prandial, or Basal Insulin to Oral Therapy in Type 2 Diabetes. *New England Journal of Medicine* 2007;**357**:1716-30. doi:10.1056/NEJMoa075392

18

Holman RR, Turner RC. A Practical Guide to Basal and Prandial Insulin Therapy. *Diabetic Medicine* 1985;**2**:45–53. doi:10.1111/j.1464-5491.1985.tb00592.x

19

Horvath K, Jeitler K, Berghold A, et al. Long-acting insulin analogues versus NPH insulin (human isophane insulin) for type 2 diabetes mellitus. In: *Cochrane Database of Systematic Reviews*. Chichester, UK: : John Wiley & Sons, Ltd 1996. doi:10.1002/14651858.CD005613.pub3

20

Mäkimmattila S, Nikkilä K, Yki-Järvinen H. Causes of weight gain during insulin therapy with and without metformin in patients with Type II diabetes mellitus. *Diabetologia* 1999;**42**:406–12. doi:10.1007/s001250051172

21

Malmberg K. Prospective randomised study of intensive insulin treatment on long term survival after acute myocardial infarction in patients with diabetes mellitus. *BMJ* 1997;**314**:1512–1512. doi:10.1136/bmj.314.7093.1512

22

Ismail-Beigi F. Glycemic Management of Type 2 Diabetes Mellitus. *New England Journal of Medicine* 2012;**366**:1319–27. doi:10.1056/NEJMcp1013127

23

Nathan DM, Buse JB, Davidson MB, et al. Management of Hyperglycemia in Type 2 Diabetes: A Consensus Algorithm for the Initiation and Adjustment of Therapy: A consensus statement from the American Diabetes Association and the European Association for the Study of Diabetes. *Diabetes Care* 2006;**29**:1963–72. doi:10.2337/dc06-9912

24

Marre M, Shaw J, Brändle M, et al. Liraglutide, a once-daily human GLP-1 analogue, added to a sulphonylurea over 26 weeks produces greater improvements in glycaemic and weight control compared with adding rosiglitazone or placebo in subjects with Type 2

diabetes (LEAD-1 SU). *Diabetic Medicine* 2009;**26**:268–78.  
doi:10.1111/j.1464-5491.2009.02666.x

25

Hirsch IB, Buse JB, Leahy J, et al. Options for prandial glucose management in type 2 diabetes patients using basal insulin: addition of a short-acting GLP-1 analogue versus progression to basal-bolus therapy. *Diabetes, Obesity and Metabolism* 2014;**16**:206–14.  
doi:10.1111/dom.12136

26

Srinivasan BT, Davies M. Glycaemic management of type 2 diabetes. *Medicine* 2014;**42**:711–7. doi:10.1016/j.mpmed.2014.09.011

27

Young LA, Buse JB. GLP-1 receptor agonists and basal insulin in type 2 diabetes. *The Lancet* 2014;**384**:2180–1. doi:10.1016/S0140-6736(14)61409-4

28

Bergenstal RM, Tamborlane WV, Ahmann A, et al. Effectiveness of Sensor-Augmented Insulin-Pump Therapy in Type 1 Diabetes. *New England Journal of Medicine* 2010;**363**:311–20. doi:10.1056/NEJMoa1002853

29

Diamant M, Van Gaal L, Stranks S, et al. Once weekly exenatide compared with insulin glargine titrated to target in patients with type 2 diabetes (DURATION-3): an open-label randomised trial. *The Lancet* 2010;**375**:2234–43. doi:10.1016/S0140-6736(10)60406-0

30

Gururaj Setty S, Crasto W, Jarvis J, et al. New insulins and newer insulin regimens: a review of their role in improving glycaemic control in patients with diabetes. *Postgraduate Medical Journal* 2016;**92**:152–64. doi:10.1136/postgradmedj-2015-133716

31

Rosenstock J, Raccach D, Koranyi L, et al. Efficacy and Safety of Lixisenatide Once Daily Versus Exenatide Twice Daily in Type 2 Diabetes Inadequately Controlled on Metformin: A 24-week, randomized, open-label, active-controlled study (GetGoal-X). *Diabetes Care* 2013;**36**:2945–51. doi:10.2337/dc12-2709

32

Bolinder J, Antuna R, Geelhoed-Duijvestijn P, et al. Novel glucose-sensing technology and hypoglycaemia in type 1 diabetes: a multicentre, non-masked, randomised controlled trial. *The Lancet* 2016;**388**:2254–63. doi:10.1016/S0140-6736(16)31535-5

33

Khunti K, Davies M, Majeed A, et al. Hypoglycemia and Risk of Cardiovascular Disease and All-Cause Mortality in Insulin-Treated People With Type 1 and Type 2 Diabetes: A Cohort Study. *Diabetes Care* 2015;**38**:316–22. doi:10.2337/dc14-0920

34

Inzucchi SE, Bergenstal RM, Buse JB, et al. Management of Hyperglycemia in Type 2 Diabetes, 2015: A Patient-Centered Approach: Update to a Position Statement of the American Diabetes Association and the European Association for the Study of Diabetes. *Diabetes Care* 2015;**38**:140–9. doi:10.2337/dc14-2441

35

Htike ZZ, Zaccardi F, Papamargaritis D, et al. Efficacy and safety of glucagon-like peptide-1 receptor agonists in type 2 diabetes: A systematic review and mixed-treatment comparison analysis. *Diabetes, Obesity and Metabolism* Published Online First: February 2017. doi:10.1111/dom.12849

36

Evans M, Schumm-Draeger PM, Vora J, et al. A review of modern insulin analogue pharmacokinetic and pharmacodynamic profiles in type 2 diabetes: improvements and limitations. *Diabetes, Obesity and Metabolism* 2011;**13**:677–84. doi:10.1111/j.1463-1326.2011.01395.x

37

Nauck M. Incretin therapies: highlighting common features and differences in the modes of action of glucagon-like peptide-1 receptor agonists and dipeptidyl peptidase-4 inhibitors. *Diabetes, Obesity and Metabolism* 2016;**18**:203–16. doi:10.1111/dom.12591

38

Srinivasan BT, Jarvis J, Khunti K, et al. Recent advances in the management of type 2 diabetes mellitus: a review. *Postgraduate Medical Journal* 2008;**84**:524–31. doi:10.1136/pgmj.2008.067918

39

Home PD. The pharmacokinetics and pharmacodynamics of rapid-acting insulin analogues and their clinical consequences. *Diabetes, Obesity and Metabolism* 2012;**14**:780–8. doi:10.1111/j.1463-1326.2012.01580.x

40

June James. Safety and insulin: implementation of national guidance at a local level. *Journal of diabetes nursing*  
[http://le-primo.hosted.exlibrisgroup.com/primo\\_library/libweb/action/openurl?ctx=&isServicesPage=true&rft.jtitle=Journal+of+Diabetes+Nursing&rft.aufirst=June&mp;dscnt=2&url\\_ctx\\_fmt=null&vid=44UOLE\\_services\\_page&rft.aulast=James&institution=44UOLE&url\\_ver=Z39.88-2004&rft.atitle=Safety+and+insulin%3A+implementation+of+national+guidance+at+a+local+level&dstmp=1488893669239&fromLogin=true](http://le-primo.hosted.exlibrisgroup.com/primo_library/libweb/action/openurl?ctx=&isServicesPage=true&rft.jtitle=Journal+of+Diabetes+Nursing&rft.aufirst=June&mp;dscnt=2&url_ctx_fmt=null&vid=44UOLE_services_page&rft.aulast=James&institution=44UOLE&url_ver=Z39.88-2004&rft.atitle=Safety+and+insulin%3A+implementation+of+national+guidance+at+a+local+level&dstmp=1488893669239&fromLogin=true)

41

Rorsman P, Renström E. Insulin granule dynamics in pancreatic beta cells. *Diabetologia* 2003;**46**:1029–45. doi:10.1007/s00125-003-1153-1

42

L. Luzi. Effect of loss of first-phase insulin secretion on hepatic glucose production and tissue glucose disposal in humans. *American Journal of Physiology - Endocrinology and Metabolism* 1989;**257**:E241–6. <http://ajpendo.physiology.org/content/257/2/E241>

43

Luc JC van Loon. Plasma insulin responses after ingestion of different amino acid or protein mixtures with carbohydrate. *The American Journal of Clinical Nutrition* 2000;**72**:96–105. <http://ajcn.nutrition.org/content/72/1/96.full>

44

Menting JG, Whittaker J, Margetts MB, et al. How insulin engages its primary binding site on the insulin receptor. *Nature* 2013;**493**:241–5. doi:10.1038/nature11781

45

Wahren J, Kallas A. Loss of Pulsatile Insulin Secretion: A Factor in the Pathogenesis of Type 2 Diabetes? *Diabetes* 2012;**61**:2228–9. doi:10.2337/db12-0664

46

Richter B, Neises G. 'Human' insulin versus animal insulin in people with diabetes mellitus. In: *Cochrane Database of Systematic Reviews*. Chichester, UK: : John Wiley & Sons, Ltd 1996. doi:10.1002/14651858.CD003816.pub2

47

Crasto W, Jarvis J, Hackett E, et al. Insulin U-500 in severe insulin resistance in type 2 diabetes mellitus. *Postgraduate Medical Journal* 2009;**85**:219–22. doi:10.1136/pgmj.2008.073379

48

Swinnen SG, Simon AC, Holleman F, et al. Insulin detemir versus insulin glargine for type 2 diabetes mellitus. In: *Cochrane Database of Systematic Reviews*. Chichester, UK: : John Wiley & Sons, Ltd 1996. doi:10.1002/14651858.CD006383.pub2

49

Yki-Järvinen H, Kauppinen-Mäkelin R, Tiikkainen M, et al. Insulin glargine or NPH combined with metformin in type 2 diabetes: the LANMET study. *Diabetologia* 2006;**49**:442–51. doi:10.1007/s00125-005-0132-0



50

Riddle MC, Aronson R, Home P, et al. Adding Once-Daily Lixisenatide for Type 2 Diabetes Inadequately Controlled by Established Basal Insulin. *Diabetes Care* 2013;**36**:2489–96. doi:10.2337/dc12-2454

51

Gough SCL, Bhargava A, Jain R, et al. Low-Volume Insulin Degludec 200 Units/mL Once Daily Improves Glycemic Control Similarly to Insulin Glargine With a Low Risk of Hypoglycemia in Insulin-Naïve Patients With Type 2 Diabetes. *Diabetes Care* 2013;**36**:2536–42. doi:10.2337/dc12-2329

52

Hirsch IB, Buse JB, Leahy J, et al. Options for prandial glucose management in type 2 diabetes patients using basal insulin: addition of a short-acting GLP-1 analogue versus progression to basal-bolus therapy. *Diabetes, Obesity and Metabolism* 2014;**16**:206–14. doi:10.1111/dom.12136

53

Zinman B, Fulcher G, Rao PV, et al. Insulin degludec, an ultra-long-acting basal insulin, once a day or three times a week versus insulin glargine once a day in patients with type 2 diabetes: a 16-week, randomised, open-label, phase 2 trial. *The Lancet* 2011;**377**:924–31. doi:10.1016/S0140-6736(10)62305-7

54

Horvath K, Jeitler K, Berghold A, et al. Long-acting insulin analogues versus NPH insulin (human isophane insulin) for type 2 diabetes mellitus. In: *Cochrane Database of Systematic Reviews*. Chichester, UK: : John Wiley & Sons, Ltd 1996. doi:10.1002/14651858.CD005613.pub3

55

Buse JB, Bergenstal RM, Glass LC, et al. Use of Twice-Daily Exenatide in Basal Insulin-Treated Patients With Type 2 Diabetes. *Annals of Internal Medicine* 2011;**154**. doi:10.7326/0003-4819-154-2-201101180-00300

56

Rosenstock J, Jelaska A, Frappin G, et al. Improved Glucose Control With Weight Loss, Lower Insulin Doses, and No Increased Hypoglycemia With Empagliflozin Added to Titrated Multiple Daily Injections of Insulin in Obese Inadequately Controlled Type 2 Diabetes. *Diabetes Care* 2014;**37**:1815–23. doi:10.2337/dc13-3055

57

Frandsen CSS, Madsbad S. Efficacy and safety of dipeptidyl peptidase-4 inhibitors as an add-on to insulin treatment in patients with Type 2 diabetes: a review. *Diabetic Medicine* 2014;**31**:1293–300. doi:10.1111/dme.12561

58

Hirsch IB, Franek E, Mersebach H, et al. Safety and efficacy of insulin degludec/insulin aspart with bolus mealtime insulin aspart compared with standard basal-bolus treatment in people with Type 1 diabetes: 1-year results from a randomized clinical trial (BOOST T1). *Diabetic Medicine* 2017;**34**:167–73. doi:10.1111/dme.13068

59

Rodbard HW, Bode BW, Harris SB, et al. Safety and efficacy of insulin degludec/liraglutide (IDegLira) added to sulphonylurea alone or to sulphonylurea and metformin in insulin-naïve people with Type 2 diabetes: the DUAL IV trial. *Diabetic Medicine* 2017;**34**:189–96. doi:10.1111/dme.13256

60

Rosenstock J, Davies M, Home PD, et al. A randomised, 52-week, treat-to-target trial comparing insulin detemir with insulin glargine when administered as add-on to glucose-lowering drugs in insulin-naïve people with type 2 diabetes. *Diabetologia* 2008;**51**:408–16. doi:10.1007/s00125-007-0911-x

61

Raskin P, Allen E, Hollander P, et al. Initiating Insulin Therapy in Type 2 Diabetes: A comparison of biphasic and basal insulin analogs. *Diabetes Care* 2005;**28**:260–5. doi:10.2337/diacare.28.2.260

62

Davies M, Storms F, Shutler S, et al. Improvement of Glycemic Control in Subjects With Poorly Controlled Type 2 Diabetes: Comparison of two treatment algorithms using insulin glargine. *Diabetes Care* 2005;**28**:1282–8. doi:10.2337/diacare.28.6.1282

63

Pickup JC, Reznik Y, Sutton AJ. Glycemic Control During Continuous Subcutaneous Insulin Infusion Versus Multiple Daily Insulin Injections in Type 2 Diabetes: Individual Patient Data Meta-analysis and Meta-regression of Randomized Controlled Trials. *Diabetes Care* 2017; **40**:715–22. doi:10.2337/dc16-2201

64

Davies MJ, Leiter LA, Guerci B, et al. Impact of baseline HbA1c, diabetes duration and BMI on clinical outcomes in the LixiLan-O trial testing iGlarLixi (insulin glargine/lixisenatide titratable fixed-ratio combination) versus insulin glargine and lixisenatide monocomponents. *Diabetes, Obesity and Metabolism* Published Online First: April 2017. doi:10.1111/dom.12980

65

Raccah D, Huet D, Dib A, et al. Review of basal-plus insulin regimen options for simpler insulin intensification in people with Type 2 diabetes mellitus. *Diabetic Medicine* Published Online First: 2 June 2017. doi:10.1111/dme.13390

66

Marso SP, McGuire DK, Zinman B, et al. Efficacy and Safety of Degludec versus Glargine in Type 2 Diabetes. *New England Journal of Medicine* Published Online First: 12 June 2017. doi:10.1056/NEJMoa1615692

67

Wang W, Liu H, Xiao S, et al. Effects of Insulin Plus Glucagon-Like Peptide-1 Receptor Agonists (GLP-1RAs) in Treating Type 1 Diabetes Mellitus: A Systematic Review and Meta-Analysis. *Diabetes Therapy* Published Online First: 14 June 2017. doi:10.1007/s13300-017-0282-3

68

Villani M, de Courten B, Zoungas S. Emergency treatment of hypoglycaemia: a guideline and evidence review. *Diabetic Medicine* 2017;**34**:1205–11. doi:10.1111/dme.13379

69

Leelarathna L, Roberts SA, Hindle A, et al. Comparison of different insulin pump makes under routine care conditions in adults with Type 1 diabetes. *Diabetic Medicine* 2017;**34**:1372–9. doi:10.1111/dme.13412

70

Reduced weight gain with insulin detemir compared to NPH insulin is not explained by a reduction in hypoglycemia. - PubMed - NCBI.  
<http://www.ncbi.nlm.nih.gov/pubmed/18715200>

71

New IDegLira data show rapid and predictable glycaemic improvements in people with type 2 diabetes.  
<http://www.multivu.com/players/English/72762519-novo-nordisk-IDegLira-treatment/>

72

Anderson B, Funnell M, American Diabetes Association. *The art of empowerment: stories and strategies for diabetes educators*. 2nd ed. Alexandria, Va: : American Diabetes Association 2005.

73

MacKinnon M. *Providing diabetes care in general practice: a practical guide to integrated care*. 4th ed. London: : Class 2002.  
<https://ebookcentral-proquest-com.ezproxy3.lib.le.ac.uk/lib/leicester/detail.action?docID=581376>

74

Walker RA, Rodgers J, Diabetes UK. Diabetes: a practical guide to managing your health. Fully revised and updated. London: : Dorling Kindersley 2010.

75

Professor Kamlesh Khunti - Coding, Classification and Diagnosis of Diabetes.  
4AD. <https://www.youtube.com/watch?v=AhhWTmEFuag>

76

Raccah D, Huet D, Dib A, et al. Review of basal-plus insulin regimen options for simpler insulin intensification in people with Type 2 diabetes mellitus. Diabetic Medicine 2017;**34**:1193-204. doi:10.1111/dme.13390