



Hypoglycaemia Assessment in the Older Person

Key Considerations in Practice



**how old is
old?**





Diabetes and Ageing

pain, falls, incontinence, weight loss, low BMI, dizziness, sensory impairment, and malnutrition



Hypoglycaemia

Imbalance of...

- Glucose supply
- Glucose utilisation
- Insulin levels



4's the floor!





Signs and symptoms will vary and the level at which people experience symptoms will vary.





Early symptoms:

feeling hungry, sweating, tingling lips, shaking, trembling, dizziness, tiredness, palpitations.

May become:

Pale, irritated, tearful, stropky, moody.

Later Symptoms:

Weakness, blurred vision, difficulty concentrating, confusion, unusual behaviour, slurred speech, clumsiness, feeling sleepy, seizures, collapse.





Blunted physiological counter-regulation with ageing causes:

weakness

faintness

sleepiness

rather than typical autonomic symptoms, delaying recognition of hypoglycaemia





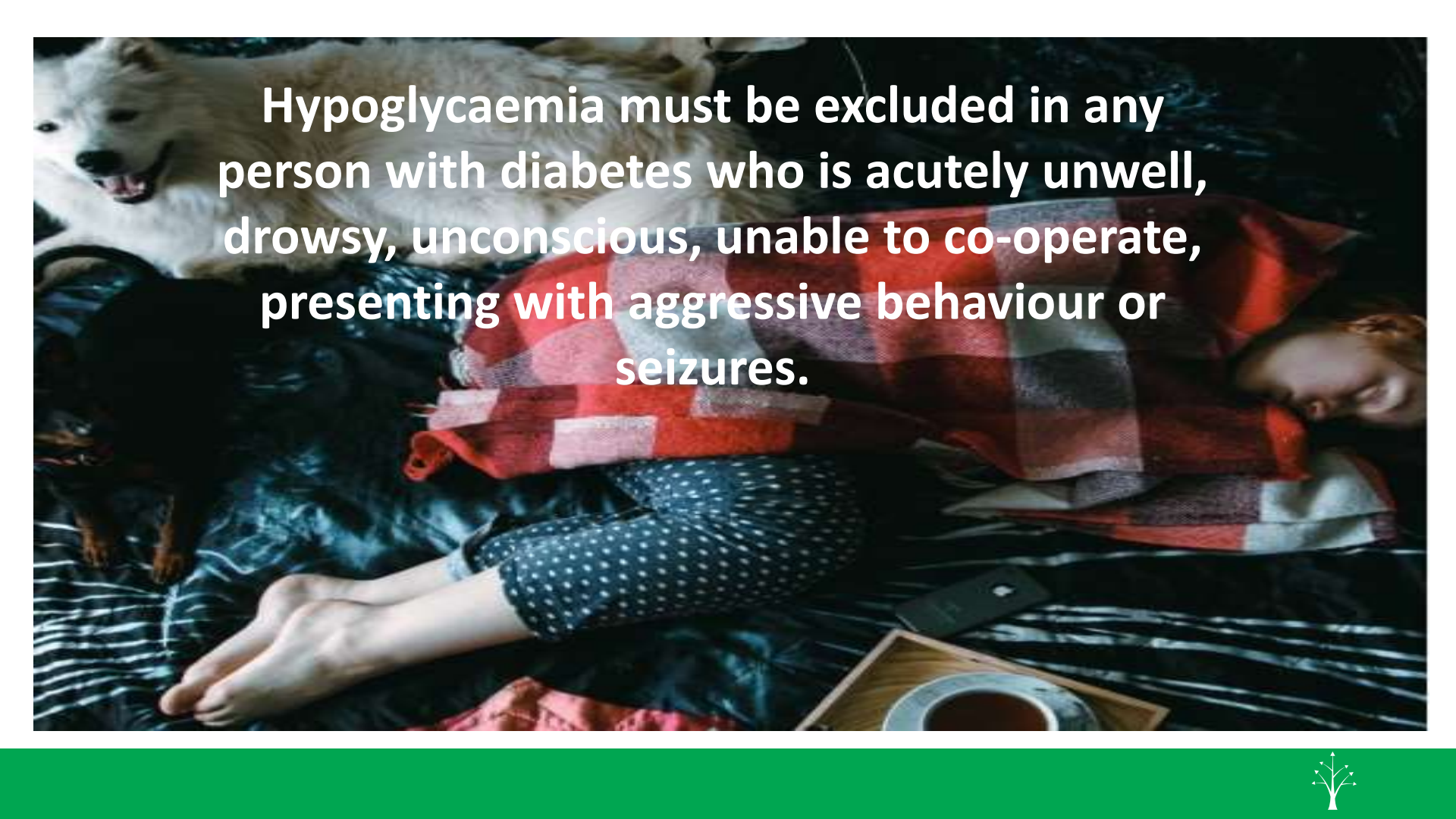
**sometimes no
symptoms!**

**sometimes symptoms
masked by other things
eg. UTI, dementia and
confusion.**



Always investigate unusual behaviour!



A photograph of a person with red hair sleeping on a bed, covered by a red and white plaid blanket. They are wearing dark blue polka-dot pajamas. A white dog is lying on the bed to the left, and a small brown dog is partially visible. A smartphone lies on the bed near the person's feet. The background is dark and textured.

Hypoglycaemia must be excluded in any person with diabetes who is acutely unwell, drowsy, unconscious, unable to co-operate, presenting with aggressive behaviour or seizures.





**If conscious 15-20g quick acting CHO. Check BG 10-15 minutes.
Repeat if necessary. Up to 3 times. Long acting CHO.
If unconscious/unable to swallow Glucagon 1mg SC/IM**



older people at risk



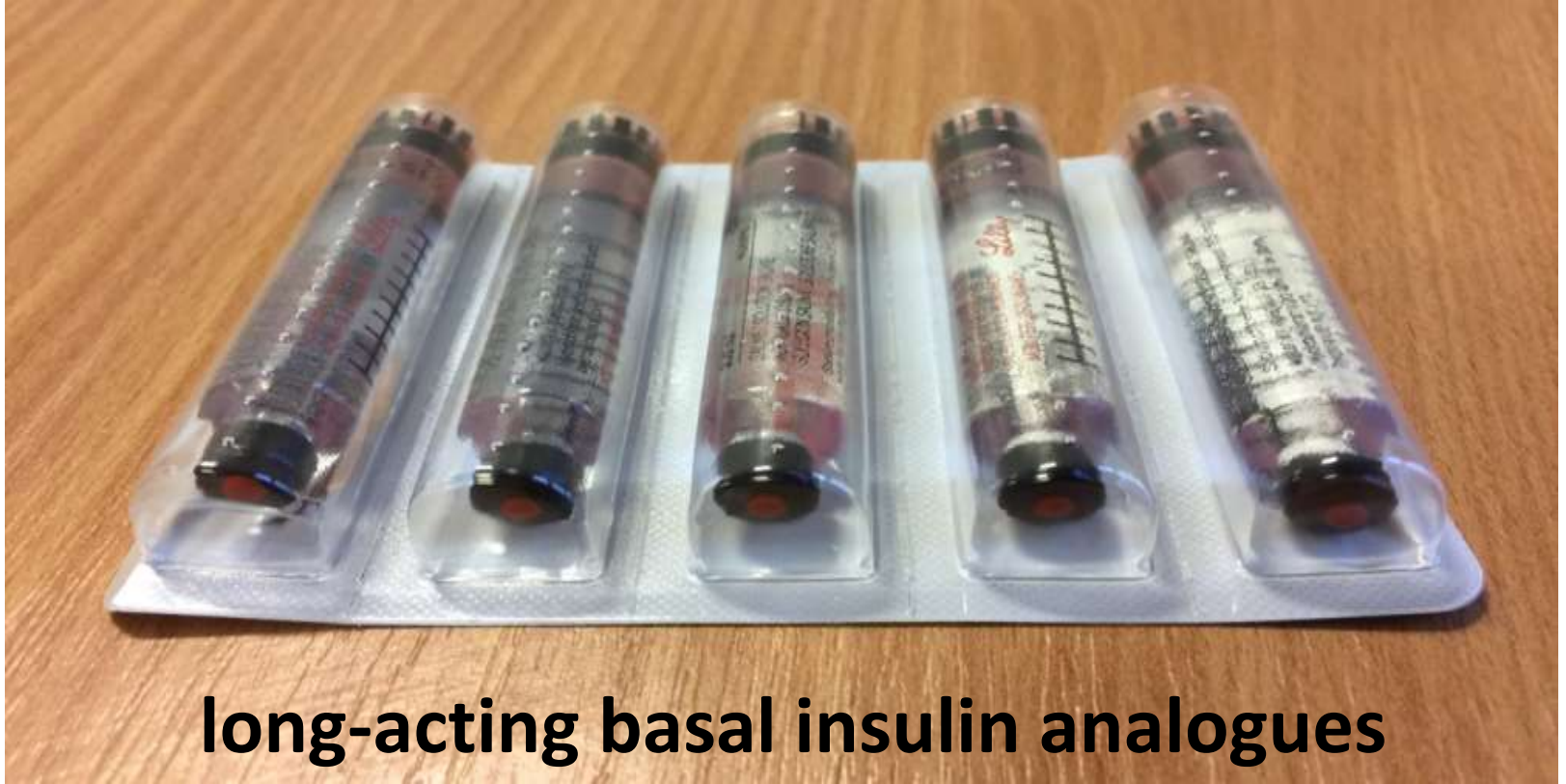
- **Multiple co-existing chronic illnesses**
- **Requirement for SU or insulin**
- **Impairment of ADL**
- **Functional dependency**
- **Cognitive impairment**
- **Vascular disease**
- **CKD**
- **High treatment burden**
- **Frail**



medication



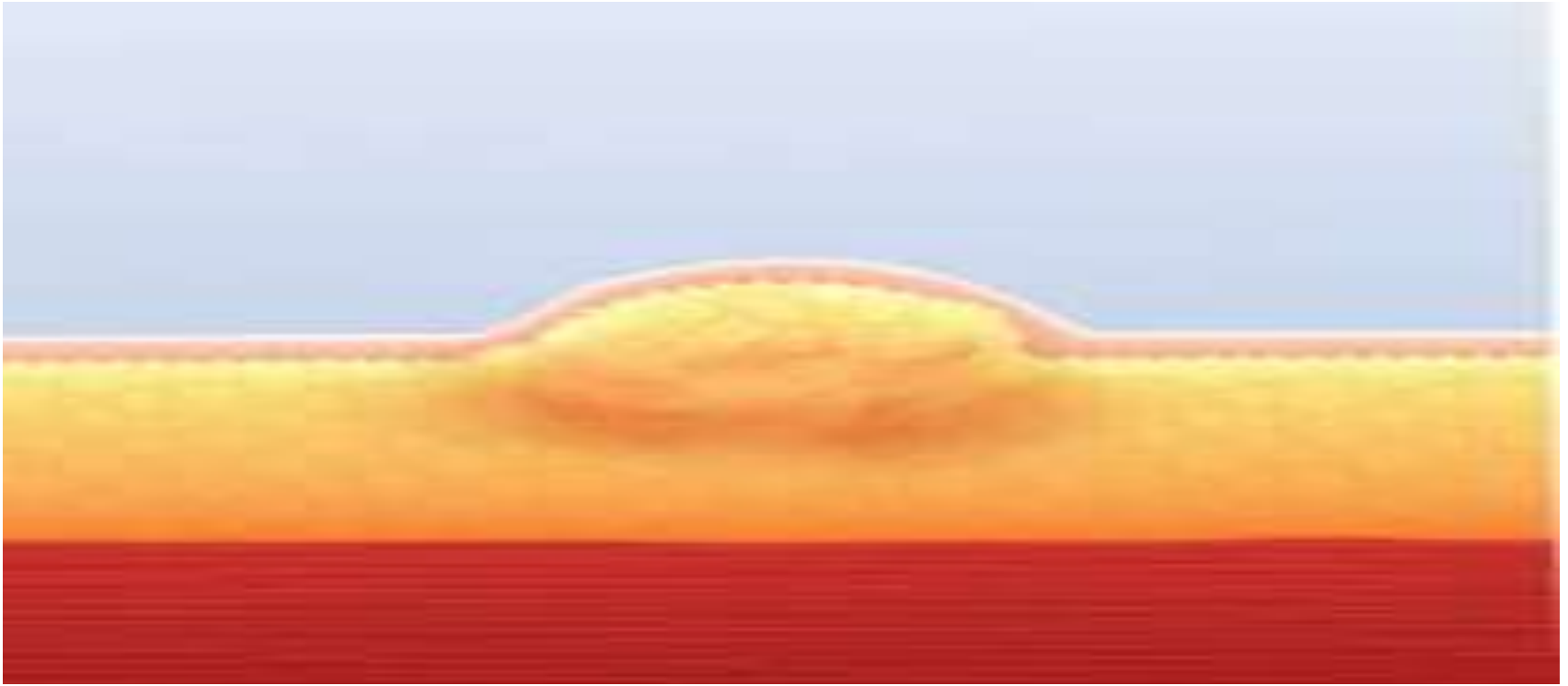
lower risk insulins



long-acting basal insulin analogues



lipohypertrophy



hypo risk with SU's



- Don't underestimate risk!
- Prolonged recovery
- Hospitalisation common
- Glibenclamide not recommended
- Reduce/avoid in CKD
- Risk v Benefit
- Can you reduce or withdraw?



polypharmacy



more medications = more risks



- drug interactions
- adverse events
- frailty
- falls
- functional disability
- cognitive decline



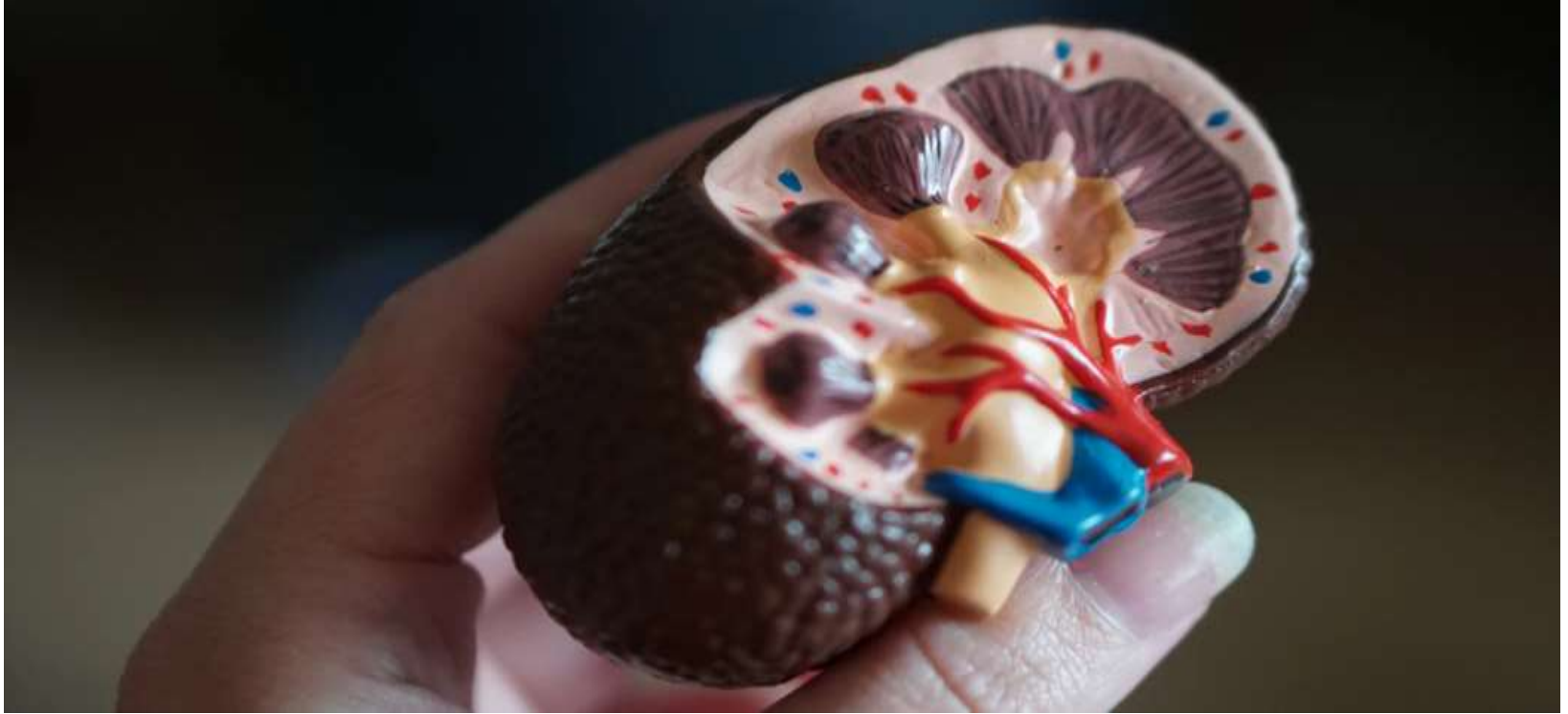
always review meds following hypo



- **Assess whether insulin needs reducing (10-20% reduction as guide)**
- **If SU induced, consider reducing or discontinuing SU**
- **If SU induced, admit for assessment and further treatment**



kidney disease



frailty



cognitive decline



consequences of hypos



UK audit 2015

**Out of 1182 paramedic
call outs for people
with T2 hypoglycaemia,
There was a 22%
mortality rate within
one year**



Hypoglycaemia is associated with an increased risk of cardiovascular events and death, particularly in those with pre-existing CVD



severe hypoglycaemia risks injury, harm and serious adverse outcomes:



- **Cardiovascular events**
- **Disease progression: retinopathy, neuropathy and CKD**
- **Falls and fractures**
- **Cognitive decline and dementia**
- **Increased mortality**



how do we avoid it?



individualise targets

QOF HbA1c < 75 (9%)

Fasting or pre-meal BG - 5.2- 8.3mmol/l

Bedtime – 6.0-10.0 mmol/l



Cynthia Aged 60



- **HbA1c** 57 mmol/mol (7.4%)
- **BMI** 32
- **eGFR** >90 ml/min
- **eFI** ...
- **Medications:**
 - Metformin 1g BD
 - Gliclazide 80mg BD
 - Insuman Basal 32 & 26 units



Cynthia Aged 70



- **HbA1c** 64 mmol/mol (8%)
- **BMI** 35
- **eGFR** 72 ml/min
- **eFI** Mild
- **Medications:**
 - Metformin 1g BD**
 - Gliclazide 160mg BD**
 - Insuman Basal 50 & 48 units**



Cynthia Aged 80



- **HbA1c** 49 mmol/mol (6.6%)
- **BMI** 26
- **eGFR** 48 ml/min
- **eFI** severe
- **Medications:**
 - Metformin 1g BD
 - Gliclazide 160mg BD
 - Insuman Basal 26 & 26 units



What happened to Cynthia?

- Cynthia was seen by her practice nurse for annual review.
- They talked about Strictly for 35 seconds!
- Cynthia was asked how she felt and was she happy with the way she felt.
- They discussed goals, Cynthia said she'd like to feel well enough to go to church and coffee mornings.
- They discussed what target HbA1c Cynthia would be happy with, she said she just wants to feel better.



Cynthia's medication

- Cynthia was asked how she took her medication.
- She said she often forgets the evening ones but always gives her insulin, not always half an hour before eating though.
- They made a plan together to gradually reduce and stop the Glicazide.
- Then eventually to switch the Insuman to once a day Semglee.
- Her daughter offered to check her BG levels for her before bed.





conclusion (top tips!)

- Always investigate unusual behaviour and drowsiness
- Caution with declining eGFR
- Caution with frailty and dementia
- Always review meds:
 - are they necessary?
 - might they cause harm?
 - can you reduce/simplify?
- Review and relax targets when appropriate



A white card with a folded edge stands on a wooden surface. The background is a soft-focus photograph of tulips, with purple ones on the left and yellow and red ones on the right. The card has the text "thank you!" and "any questions?" in a bold, black, sans-serif font.

thank you!
any questions?

EDEN@uhl-tr.nhs.uk

0116 2584674



References

1. C.T. Cigolle, P.G. Lee, K.M. Langa, Y.Y. Lee, Z. Tian, C.S. Blaum, Geriatric conditions develop in middle-aged adults with diabetes, *J. Gen. Intern. Med.* 26 (3) (2010) 272–279
2. Handbook of insulin therapies. Davies, Castro, Jarvis
3. When hypoglycaemia is not obvious: Diagnosing and treating under-recognized and undisclosed hypoglycemia Colin Kenny
<https://www.nhs.uk/conditions/low-blood-sugar-hypoglycaemia/>
4. V. McAulay, I.J. Deary, B.M. Frier, Symptoms of hypoglycaemia in people with diabetes, *Diabet. Med.* 18 (9) (2001) 690–705
5. The Hospital Management of Hypoglycaemia in Adults with Diabetes Mellitus 3rd edition Revised February 2018 JBDS-IP(Joint British Diabetes society for Inpatient Care)
6. Factors influencing safe glucose-lowering in older adults with type 2 diabetes: A PeRsOn-centred ApproaCh To IndiVidualisEd (PROACTIVE) Glycemic Goals for older people A position statement of Primary Care Diabetes Europe C.E. Hambling a,b,*, K. Khuntib, X. Cosc, J. Wensd, L. Martineze, P. Topseverf, S. Del Pratog, A. Sinclair h, G. Schernthaneri, G. Ruttenj, S. Seidu
7. JBDS-IP Hospital Management of Hypoglycaemia in Adults with Diabetes 3rd edition Feb 2018
8. C. Wysham, A. Bhargava, L. Chaykin, R. de la Rosa, Y. Handelsman, L.N. Troelsen, et al., Effect of insulin degludec vs insulin glargine U100 on hypoglycemia in patients with type 2 diabetes: the SWITCH 2 randomized clinical trial, *JAMA* 318 (1) (2017) 45–56
9. Polypharmacy among patients with diabetes: a cross-sectional retrospective study in a tertiary hospital in Saudi Arabia Monira Alwhaibi^{1,2}, Bander Balkhi^{1,2}, Tariq M Alhawassi^{1,2,3}, Hadeel Alkofide¹, Nouf Alduhaim¹, Rawan Alabdulali¹, Hadeel Drweesh¹, Usha Sambamoorthi⁴ <https://bmjopen.bmj.com/content/8/5/e020852>
10. J.E. Morley, B. Vellas, G. Abellan van Kan, S.D. Anker, J.M. Bauer, R. Bernabei, et al., Frailty consensus: a call to action, *J. Am. Med. Dir. Assoc.* 14 (6) (2013) 392–397, <http://dx.doi.org/10.1016/j.jamda.2013.03.022>, Elsevier Ltd
11. N. Dhalwani, R. Fahami, H. Sathanapally, S. Seidu, M. Davies, K. Khunti, Association between polypharmacy and falls in older adults: a longitudinal study from England, *BMJ Open* 7 (2017), e016358 [cited 2017 Nov 13]
12. M. Noale, N. Veronese, P. Cavallo Perin, A. Pilotto, A. Tiengo, G. Crepaldi, et al., Polypharmacy in elderly patients with type 2 diabetes receiving oral antidiabetic treatment, *Acta Diabetol.* 53 (2) (2016) 323–330, Springer Milan.



References

13. D.S. Budnitz, M.C. Lovegrove, N. Shehab, C.L. Richards, Emergency hospitalization for adverse drug events in older Americans, *NEJM* 365 (2012) 2002–2012, <http://www.nejm.org.ezproxy3.lib.le.ac.uk/doi/full/10.1056/NEJMsa1103053>
14. A. Poudel, P. Yates, D. Rowett, L.M. Nissen, Use of preventive medication in patients with limited life expectancy: a systematic review, *J. Pain Symptom Manage.*
15. Frequency of Hypoglycemia and Its Significance in Chronic Kidney Disease Maureen F. Moen,*† Min Zhan,† Van Doren Hsu,‡ Lori D. Walker,‡ Lisa M. Einhorn,*† Stephen L. Seliger,*† and Jeffrey C. Fink*†
16. J. Hewitt, L. Smeeth, N. Chaturvedi, C.J. Bulpitt, A.E. Fletcher, Self management and patient understanding of diabetes in the older person, *Diabet. Med.* 28 (1) (2011) 117–122,
17. Z. Punthakee, M.E. Miller, L.J. Launer, J.D. Williamson, R.M. Lazar, T. Cukierman-Yaffee, et al., Poor cognitive function and risk of severe hypoglycemia in type 2 diabetes: posthoc epidemiologic analysis of the ACCORD trial, *Diabetes Care* 35 (April (4)) (2012) 787–793 [cited 2015 Jan 4].
18. G.J. Biessels, M.W.J. Strachan, F.L.J. Visseren, L.J. Kappelle, R.A. Whitmer, Dementia and cognitive decline in type 2 diabetes and prediabetic stages: towards targeted interventions, *Lancet Diabetes Endocrinol.* 2 (3) (2014) 246–255, [http://dx.doi.org/10.1016/S2213-8587\(13\)70088-3](http://dx.doi.org/10.1016/S2213-8587(13)70088-3),
19. K. Mattishent, Y.K. Loke, Bi-directional interaction between hypoglycaemia and cognitive impairment in elderly patients treated with glucose lowering agents: systematic review and meta-analysis, *Diabetes Obes. Metab.* 33 (2015)
20. R.H. Tuligenga, Intensive glycaemic control and cognitive decline in patients with type 2 diabetes: a meta-analysis, *Endocr. Connect.* 4 (2) (2015) R16–R24,
21. Bremer JP, Jauch-Chara K, et al. hypoglycaemia unawareness in older compared to middle-aged patients with type 2 diabetes. *Diabetes care* 2009;32:1513-7
22. Khunti K, Chatterjee S, Gerstein HC, et al. Do sulphonylureas still have a place in clinical practice? *Lancet Diabetes Endocrinol* 2018;Feb 28;pii:S2213-8587(18)30025-



References

23. Gangji AS, Cukierman T, Gerstein HC, Goldsmith CH, Clase CM. A systematic review and meta-analysis of hypoglycemia and cardiovascular events: a comparison of glyburide with other secretagogues and with insulin. *Diabetes Care* 2007;30:389–394
24. Holman RR, Paul SK, Bethel MA, Matthews DR, Neil HA. 10-year follow-up of intensive glucose control in type 2 diabetes. *N Engl J Med* 2008;359:1577–1589
25. K. Mattishent, Y.K. Loke, Bi-directional interaction between hypoglycaemia and cognitive impairment in elderly patients treated with glucose lowering agents: systematic review and meta-analysis, *Diabetes Obes. Metab.* 33 (2015)
26. R.G. McCoy, K.J. Lipska, X. Yao, J.S. Ross, V.M. Montori, N.D. Shah, Intensive treatment and severe hypoglycemia among adults with type 2 diabetes, *JAMA Intern. Med.* 176 (7) (2016) 969–978.
27. <https://www.nice.org.uk/guidance/ng28/chapter/1-Recommendations#hba1c-measurement-and-targets>
28. C. Wysham, A. Bhargava, L. Chaykin, R. de la Rosa, Y. Handelsman, L.N. Troelsen, et al., Effect of insulin degludec vs insulin glargine U100 on hypoglycemia in patients with type 2 diabetes: the SWITCH 2 randomized clinical trial, *JAMA* 318 (1) (2017) 45–56)
29. <https://www.sps.nhs.uk/repositories/type-2-diabetes-frailty-reviews-in-older-people/>
30. https://267lv2ve190med3l1mgc3ys8-wpengine.netdna-ssl.com/wpcontent/uploads/2015/06/Long_acting_insulin_analogue_-_guidance_V2-1_Jul14.pdf
31. Hypoglycaemia in adults in the community : recognition, management and prevention TREND UK

