

Norwegian General Practice Nursing Home (NORGEp-NH) criteria for potentially inappropriate medication use in elderly (>70 years) nursing home residents.

A: Single substance criteria <i>Regular use should be avoided</i>	
	Comments
1. Combination analgesic codeine/paracetamol	Poor long-term effects. Constipation, sedation, falls
2. Tricyclic antidepressants (TCAs) ¹	Anticholinergic effects, cardiotoxicity
3. Non-steroid anti-inflammatory drugs (NSAIDs)	High risk of side effects and interactions
4. First-generation antihistamines ²	Anticholinergic effects, prolonged sedation
5. Diazepam	Oversedation, falls, fractures
6. Oxazepam: Dosage > 30 mg/day	Oversedation, falls, fractures
7. Zopiklone: Dosage > 5 mg/day	Oversedation
8. Nitrazepam	Oversedation, falls, fractures
9. Flunitrazepam	Oversedation, falls, fractures, addiction
10. Chlometiazole	Poor safety record. Risk of cardiopulmonary death
11. Regular use of hypnotics	Oversedation, falls, fractures

B: Combination criteria <i>Combinations to avoid</i>	
	Comments
12. Warfarin 1 NSAIDs	Increased risk of bleeding
13. Warfarin +SSRIs/SNRIs ³	Increased risk of bleeding
14. Warfarin +ciprofl oxacin/ofl oxacin/ erythromycin/ clarithromycin	Increased risk of bleeding
15. NSAIDs/coxibs ⁴ + ACE-inhibitors ⁵ /AT2-antagonists ⁶	Increased risk of kidney failure
16. NSAIDs/coxibs + diuretics	Reduced effect of diuretics, risk of heart and kidney failure
17. NSAIDs/coxibs + glucocorticoids	Increased risk of bleeding, fluid retention
18. NSAIDs/coxibs +SSRI/SNRIs	Increased risk of bleeding
19. ACE-inhibitors/AT2-antagonists+potassium or potassium-sparing diuretics	Increased risk of hyperkalaemia
20. Beta blocking agents + cardioselective calcium antagonists	Increased risk of atrioventricular block, myocardial depression, hypotension, orthostatism
21. Erythromycin/clarithromycin + statins	Increased risk of adverse effects of statins
22. Bisphosphonate +proton pump inhibitors	Increased risk of fractures
23. Concomitant use of 3 or more psychotropics ⁷	Increased risk of falls, impaired memory
24. Tramadol + SSRIs	Risk of serotonin syndrome
25. Metoprolol + paroxetine/fl uoxetine/ bupropion	Hypotension, orthostatism
26. Metformin + ACE-inhibitor AT2-antagonists + diuretics	Risk of impaired renal function and metformin-induced lactacidosis, especially in dehydration

C: Deprescribing criteria. Need for continued use should be reassessed⁸

	Comments
27. Anti-psychotics (incl. “ atypical ” substances ⁹)	Frequent, serious side effects. Avoid long-term use for BPSD10
28. Anti-depressants	Limited effect on depression in dementia
29. Urologic spasmolytics	Limited effect for urinary incontinence in old age Risk of anticholinergic side effects
30. Anticholinesterase inhibitors	Temporary symptomatic benefits only. Frequent side effects
31. Drugs lowering blood pressure	Hypotension, orthostatism, falls
32. Bisphosphonates	Assess risk – benefit in relation to life expectancy
33. Statins	Assess risk – benefit in relation to life expectancy
34. Any preventive medicine	Assess risk – benefit in relation to life expectancy

Notes

¹Amitriptyline, doxepine, chlormipramine, trimipramine, nortryptiline; ²dexchlorfeniramine, promethazine, hydroxyzine, alimemazine (trimeprazine); ³selective serotonin reuptake inhibitors/selective norepinephrine reuptake inhibitors; ⁴cyclooxygenase-2-selective inhibitors; ⁵angiotensin-converting enzyme inhibitors; ⁶angiotensin II receptor antagonists; ⁷from the groups centrally acting analgesics, antipsychotics, antidepressants, and/or benzodiazepines; ⁸this should be undertaken at regular intervals. For criteria 27 – 29, a safe strategy for re-evaluation is first to taper dosage, then stop the drug while monitoring clinical condition; ⁹risperidone, olanzapine, quetiapine, aripiprazole; ¹⁰behavioural and psychological symptoms in dementia.