

# 14 - References

## References

910 The Maudsley® Prescribing Guidelines in Psychiatry CHAPTER 12 Movement disorders and Parkinson's disease By increasing dopaminergic neurotransmission, nicotine is thought to provide a protective effect against both drug-induced EPSEs and idiopathic Parkinson's disease. Smokers are less likely to suffer from antipsychotic-induced movement disorders than non-smokers<sup>5</sup> and use anticholinergic drugs less often.<sup>6</sup> Parkinson's disease occurs less frequently in smokers than in non-smokers and the onset of clinical symptoms is delayed.<sup>5,45</sup> This may reflect the inverse association between Parkinson's disease and sensation-seeking behavioural traits, rather than a direct effect of nicotine.<sup>46</sup> The protective effect may not be related to nicotine at all but rather to other compounds in tobacco smoke.<sup>47</sup> Drug interactions Polycyclic hydrocarbons in tobacco smoke are known to stimulate the hepatic microsomal enzyme system, particularly CYP1A2,<sup>7</sup> the enzyme responsible for the metabolism of many psychotropic drugs. Smoking can lower the blood levels of some drugs by more than 50%.<sup>7</sup> This can both affect efficacy and influence adverse effects and needs to be taken into account when making clinical decisions. The drugs most likely to be affected are clozapine,<sup>48</sup> fluphenazine, haloperidol, chlorpromazine, olanzapine, many tricyclic antidepressants, mirtazapine, fluvoxamine and propranolol. Vaping has no effect on hepatic enzyme function. See 'Smoking and psychotropic drugs' in Chapter 11. Smoking cessation and withdrawal symptoms Withdrawal symptoms occur within 6–12 hours of stopping smoking and include intense craving, depressed mood, insomnia, anxiety, restlessness, irritability, difficulty in concentrating and increased appetite. Nicotine withdrawal can be misdiagnosed as depression, anxiety, sleep disorders and mania.<sup>49</sup> Withdrawal can also exacerbate the symptoms of schizophrenia.<sup>6</sup> See also 'Nicotine and smoking cessation' in Chapter 4. References

1. Benowitz NL, et al. Cardiovascular effects of nasal and transdermal nicotine and cigarette smoking. *Hypertension* 2002; 39:1107–1112.
2. Yevtushenko OO, et al. Influence of 5-HT<sub>2C</sub> receptor and leptin gene polymorphisms, smoking and drug treatment on metabolic disturbances in patients with schizophrenia. *Br J Psychiatry* 2008; 192:424–428.
3. Anderson JE, et al. Treating tobacco use and dependence: an evidence-based clinical practice guideline for tobacco cessation. *Chest* 2002; 121:932–941.
4. Berrettini W. Nicotine addiction. *Am J Psychiatry* 2008; 165:1089–1092.
5. Goff DC, et al. Cigarette smoking in schizophrenia: relationship to psychopathology and medication side effects. *Am J Psychiatry* 1992; 149:1189–1194.
6. Ziedonis DM, et al. Schizophrenia and nicotine use: report of a pilot smoking cessation program and review of neurobiological and clinical issues. *Schizophr Bull* 1997;

23:247-254.

7. Lyon ER. A review of the effects of nicotine on schizophrenia and antipsychotic medications. *Psychiatr Serv* 1999; 50:1346-1350.
8. Winterer G. Why do patients with schizophrenia smoke? *Curr Opin Psychiatry* 2010; 23:112-119.
9. Sharma R, et al. Motivations and limitations associated with vaping among people with mental illness: a qualitative analysis of Reddit discussions. *Int J Environ Res Public Health* 2016; 14:7.
10. Bianco CL. Rates of electronic cigarette use among adults with a chronic mental illness. *Addict Behav* 2019; 89:1-4.
11. Bennett ME, et al. Tobacco smoking and nicotine vaping in persons with first episode psychosis. *Schizophr Res* 2024; 267:141-149.
12. Han B, et al. Tobacco use, nicotine dependence, and cessation methods in US adults with psychosis. *JAMA Network Open* 2023; 6:e234995.
13. Weiser M, et al. Higher rates of cigarette smoking in male adolescents before the onset of schizophrenia: a historical-prospective cohort study. *Am J Psychiatry* 2004; 161:1219-1223.
14. Hunter A, et al. The effects of tobacco smoking, and prenatal tobacco smoke exposure, on risk of schizophrenia: a systematic review and meta-analysis. *Nicotine Tob Res* 2020; 22:3-10.

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15. Caponnetto P, et al. Tobacco smoking, related harm and motivation to quit smoking in people with schizophrenia spectrum disorders. *Health Psychol Res* 2020; 8:9042.
16. Harris JG, et al. Effects of nicotine on cognitive deficits in schizophrenia. *Neuropsychopharmacology* 2004; 29:1378-1385.
17. Gupta T, et al. Nicotine usage is associated with elevated processing speed, spatial working memory, and visual learning performance in youth at ultra high-risk for psychosis. *Psychiatry Res* 2014; 220:687-690.
18. Ferchiou A, et al. Exploring the relationships between tobacco smoking and schizophrenia in first-degree relatives. *Psychiatry Res* 2012; 200:674-678.
19. McEvoy JP, et al. Smoking and therapeutic response to clozapine in patients with schizophrenia. *Biol Psychiatry* 1999; 46:125-129.
20. Jacobsen LK, et al. Nicotine effects on brain function and functional connectivity in schizophrenia. *Biol Psychiatry* 2004; 55:850-858.
21. Sacco KA, et al. Effects of cigarette smoking on spatial working memory and attentional deficits in schizophrenia: involvement of nicotinic receptor mechanisms. *Arch Gen Psychiatry* 2005; 62:649-659.
22. Smith RC, et al. Effects of nicotine nasal spray on cognitive function in schizophrenia. *Neuropsychopharmacology* 2006; 31:637-643.
23. Olincy A, et al. Proof-of-concept trial of an alpha7 nicotinic agonist in schizophrenia. *Arch Gen Psychiatry* 2006; 63:630-638.
24. Lieberman JA, et al. Cholinergic agonists as novel treatments for schizophrenia: the promise of rational drug development for psychiatry. *Am J Psychiatry* 2008; 165:931-936.
25. Kelly DL, et al. Lack of beneficial galantamine effect for smoking behavior: a double-blind randomized trial in people with schizophrenia. *Schizophr Res* 2008; 103:161-168.
26. De Haan L, et al. Occupancy of dopamine D2 receptors by antipsychotic drugs is related to nicotine addiction in young patients with schizophrenia. *Psychopharmacology (Berl)* 2006; 183:500-505.
27. Gilbody S, et al. Smoking cessation for people with severe mental illness (SCIMITAR+): a pragmatic randomised controlled trial. *Lancet Psychiatry* 2019; 6:379-390.
28. Caponnetto P, et al. Impact of an electronic cigarette on smoking reduction and cessation in schizophrenic smokers: a prospective 12-month pilot study. *Int J Environ Res Public Health* 2013; 10:446-461.
29. Kozak K, et al. Pharmacotherapy for smoking cessation in schizophrenia: a systematic review. *Expert Opin*

Pharmacother 2020; 21:581–590. 30. Hickling LM, et al. A pre-post pilot study of electronic cigarettes to reduce smoking in people with severe mental illness. *Psychol Med* 2019; 49:1033–1040. 31. Glassman AH. Cigarette smoking: implications for psychiatric illness. *Am J Psychiatry* 1993; 150:546–553. 32. Cai J, et al. E-cigarette use or dual use of E-cigarette and combustible cigarette and mental health and cognitive impairment: findings from the National Health Interview Survey, 2020–2021. *J Affect Disord* 2024; 351:878–887. 33. Wilhelm K, et al. Clinical aspects of nicotine dependence and depression. *Med Today* 2004; 5:40–47. 34. Gandelman JA, et al. Transdermal nicotine for the treatment of mood and cognitive symptoms in nonsmokers with late-life depression. *J Clin Psychiatry* 2018; 79:18m12137. 35. Boden JM, et al. Cigarette smoking and depression: tests of causal linkages using a longitudinal birth cohort. *Br J Psychiatry* 2010; 196:440–446. 36. Bainter T, et al. A key indicator of nicotine dependence is associated with greater depression symptoms, after accounting for smoking behavior. *PLoS One* 2020; 15:e0233656. 37. Taylor G, et al. Change in mental health after smoking cessation: systematic review and meta-analysis. *BMJ* 2014; 348:g1151. 38. Cather C, et al. Improved depressive symptoms in adults with schizophrenia during a smoking cessation attempt with varenicline and - behavioral therapy. *J Dual Diagn* 2017; 13:168–178. 39. Van der Meer RM, et al. Smoking cessation interventions for smokers with current or past depression. *Cochrane Database Syst Rev* 2013; 8:CD006102. 40. Ranjit A, et al. Depressive symptoms predict smoking cessation in a 20-year longitudinal study of adult twins. *Addict Behav* 2020; 108:106427. 41. Zong H, et al. Electronic cigarettes and cardiovascular disease: epidemiological and biological links. *Pflugers Arch* 2024; 476:875–888. 42. Xu G, et al. Association of attention-deficit/hyperactivity disorder with E-cigarette use. *Am J Prev Med* 2021; 60:488–496. 43. Taylor MR, et al. Tobacco and ADHD: a role of MAO-- inhibition in nicotine dependence and alleviation of ADHD symptoms. *Front Neurosci* 2022; 16:845646. 44. McNealy KR, et al. The co-use of nicotine and prescription psychostimulants: a review of their behavioral and neuropharmacological interactions. *Drug Alcohol Depend* 2023; 248:109906. 45. Scott WK, et al. Family-based case-control study of cigarette smoking and Parkinson disease. *Neurology* 2005; 64:442–447. 46. Evans AH, et al. Relationship between impulsive sensation seeking traits, smoking, alcohol and caffeine intake, and Parkinson’s disease. *J Neurol Neurosurg Psychiatry* 2006; 77:317–321. 47. Rose KN, et al. Clearing the smoke: what protects smokers from Parkinson’s disease? *Mov Disord* 2024; 39:267–272. 48. Derenne JL, et al. Clozapine toxicity associated with smoking cessation: case report. *Am J Ther* 2005; 12:469–471. 49. Conti AA, et al. Severity of negative mood and anxiety symptoms occurring during acute abstinence from tobacco: a systematic review and meta-analysis. *Neurosci Biobehav Rev* 2020; 115:48–63.

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