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Fluvoxamine for the treatment of COVID-19

In the TOGETHER study,¹ Gilmar Reis and colleagues showed a benefit of early treatment with fluvoxamine with notably a reduction in the need for hospitalisation, which was defined as retention in a COVID-19 emergency setting for more than 6 h or transfer to a tertiary hospital.¹ The authors mentioned that the findings of their study, together with fluvoxamine's safety, tolerability, ease of use, low cost, and widespread availability, might influence national and international guidelines on the clinical management of COVID-19. We wish to comment further to raise awareness of the fact that fluvoxamine has a high potential for drug–drug interactions (appendix),² which needs to be considered when prescribing in patients with COVID-19.

On the one hand, the antidepressant fluvoxamine is mainly metabolised by the cytochrome P450 (CYP) enzyme CYP2D6 and therefore can be affected by comedications inhibiting this enzyme. On the other hand, fluvoxamine is a strong inhibitor of CYP1A2 and CYP2C19, as well as a moderate inhibitor of CYP2C9, CYP2D6, and CYP3A4 and consequently can increase the exposure of comedications metabolised by these enzymes.^{3,4} CYP inhibition is expected to occur immediately after initiation of fluvoxamine. Therefore, although the time course of fluvoxamine treatment is relatively short (10 days),¹ drug–drug interactions cannot be ignored and their management can be challenging particularly for comedications whose dosage is titrated based on the clinical response (eg, antiepileptics, antidepressants, and neuroleptics). Their dosage would have to be reduced and increased again within a 2-week period, which can potentially destabilise the patient. Other concerns relate to the potential of fluvoxamine to cause serotonin toxicity or to prolong the QT interval

when combined with comedications carrying this same risk. Caution is also warranted when prescribing fluvoxamine to patients with diabetes as glycaemic control might be altered; therefore, potentially requiring a dosage adjustment of the antidiabetic drug. Finally, coadministration of fluvoxamine is contraindicated with drugs that inhibit monoamine oxidase (eg, linezolid, phenelzine, and tranylcypromine) because such combinations might raise serotonin levels and consequently lead to elevated blood pressure, tremor, confusion, coma, and death.

Patients with COVID-19 are often at high risk of drug–drug interactions due to the presence of comorbidities and related polypharmacy. Therefore, we wish to highlight that consideration should be given to stop non-essential medications to limit drug–drug interactions. The benefit of starting a treatment with fluvoxamine should be balanced against the risk of a potential drug–drug interactions, and drug–drug interactions should be systematically screened using specialised, up-to-date web resources.²

CM received a research grant from Gilead; and lecture honoraria from Merck Sharpe and Dohme and ViiV Healthcare. FM has received an educational grant from Gilead Sciences and Abbvie; consultancy fees from Gilead Sciences, ViiV Healthcare, and Merck; and lecture fees from Gilead and ViiV. AB has received educational grants and lecture honoraria from Gilead and Abbvie. SK has received educational grants for the Liverpool drug interaction website (www.covid-druginteractions.org), AbbVie, Gilead Sciences, Merck Sharpe and Dohme, Novartis, and Sobi; speakers' honoraria from ViiV Healthcare, Gilead Sciences, and AbbVie; consultancy fees from ViiV Healthcare and Merck; and research funding from Gilead Sciences, and ViiV Healthcare. DJB has received educational grants from AbbVie, Novartis, Merck, Gilead, and Sobi; DJB has received lecture fees from AbbVie, Gilead Sciences, Merck, ViiV Healthcare; and consultancy fees from Gilead Sciences.

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- 1 Reis G, Dos Santos Moreira-Silva EA, Silva DCM, et al. Effect of early treatment with fluvoxamine on risk of emergency care and hospitalisation among patients with COVID-19: the TOGETHER randomised, platform clinical trial. *Lancet Glob Health* 2022; **10**: e42–51.
- 2 University of Liverpool. COVID-19 Drug interaction. <https://www.covid19-druginteractions.org> (accessed Nov 23, 2021).
- 3 Van Harten J. Overview of the pharmacokinetics of fluvoxamine. *Clin Pharmacokinet* 1995; **29** (suppl 1): 1–9.
- 4 Jazz Pharmaceuticals. Fluvoxamine (Luvox highlights of prescribing information 2008). https://www.accessdata.fda.gov/drugsatfda_docs/label/2008/022235lbl.pdf (Nov 23, 2021).

See Online for appendix