

How plasma donation can affect your patient's pharmacotherapy

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Many economically disadvantaged psychiatric patients donate plasma for financial incentive. However, plasmapheresis (PP)—separation of plasma and cellular components of blood—can increase drug clearance, which may affect how you manage patients who donate plasma frequently.

Donated plasma is used to help patients with hemophilia and other blood disorders and burn victims. It's also valuable for medical research. Typically, donors cannot be taking lithium, experiencing active hallucinations, receiving ≥ 3 psychotropic medications, or have had a psychiatric hospitalization in the past 12 months. Patients can donate while taking antidepressants, mood stabilizers, antipsychotics, and anticonvulsants.¹

Pharmacotherapeutic concerns

During PP, solutes in plasma such as drugs can be removed, increasing drug clearance by 30%.^{2,3} PP affects both protein-bound and free drug concentrations. PP effectively clears drugs that are highly protein bound and have a small volume of distribution. As a result, serum levels of psychotropics are lowered. Most psychotropics except lithium are bound to plasma protein. Because of high protein binding, plasma concentrations of psychotropics may rebound after PP. Antipsychotics are highly protein bound—85% to 90%—and highly lipophilic. For a list of protein binding percentages of commonly used psychotropics, see this article at CurrentPsychiatry.com.⁴

Plasma is regenerated 24 to 48 hours after PP; therefore, the clinical effect on daily psychotropic dosing should be small unless

the donations are frequent. Long-term and regular plasma donation may result in hypoalbuminemia and hypocholesterolemia⁵; however, the effects of hypoalbuminemia on psychotropics routinely bound to serum proteins are unknown. Patients with an acute infection or malnourishment could have further decreased albumin production or increased catabolism, resulting in a significant decrease in serum albumin concentration, which may affect psychotropic pharmacokinetics.⁵

Other concerns

Beware of financial incentives because economically disadvantaged psychiatric patients are vulnerable to coercion. Some plasma donor centers will pay donors a specific amount—ranging from \$20 to \$30—for their first 2 donations and offer monthly bonuses if a patient donates 8 times a month.

The amount of plasma a patient can donate is based on their weight; patients who weigh more get paid more. This may conflict with your attempts to motivate patients to lose weight.

References

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Disclosures

Dr. Selvaraj receives an internal grant from Creighton University.

Drs. Gabel and Ramaswamy report no financial relationship with any company whose products are mentioned in this article or with manufacturers of competing products.

Acknowledgement

The authors would like to thank Darrel E. Willoughby, Librarian, Omaha Veterans Affairs Medical Center, Omaha, NE, for his assistance with this article.

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for a table listing protein binding percentages of common psychotropics

Table

Protein binding percentages of common psychotropics

Drug(s)	Percentage of protein binding
Lamotrigine; topiramate	Minimal
Desvenlafaxine	30%
Carbamazepine	40% to 90%
Venlafaxine	40% to 50%
Oxcarbazepine	40% to 60%
Escitalopram	56%
All other SSRIs	75%
Bupropion	84%
Mirtazapine	85%
Duloxetine; divalproex	90%
Tricyclic antidepressants	98%

SSRIs: selective serotonin reuptake inhibitors

Source: Reference 4