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Covariate Adjustment and Propensity Scores

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To the Editor:

Drs. Haukoos and Lewis included covariate adjustment in a list of traditional ways propensity scores are used.¹ Although this is true, covariate adjustment is not considered a best practice in propensity score methods. Researchers should interpret results of analyses done in this manner with extreme caution. By including a propensity score as a covariate in a multivariable model, researchers cannot take full advantage of the propensity score's features. Covariate adjustment does not allow balancing of covariates across treated and control groups as well as could be achieved with matching or weighting and therefore does not control for as much observed selection bias as the other methods of using propensity scores.² Moreover, the analytic sample may include individuals outside the range in which treated and comparison groups' propensity score distributions overlap (for whom no valid treatment effect can be estimated).³ Covariate adjustment is sensitive to distributional assumptions and accurate specification of the propensity score,² and it leads to inefficient estimates. All of these issues increase the chance that a true treatment effect will be obscured; the use of covariate adjustment with a propensity score should be discouraged.

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