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Is the INR an adequate single test for detection of acute traumatic coagulopathy?

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The authors respond

We appreciate the interest in our recent study of acute traumatic coagulopathy and agree that abnormalities of multiple coagulation pathways characterize this syndrome (1). Without dismissing the importance of derangements not fully captured by the international normalized ratio (INR) — including fibrinogen deficiency and dysfunction — we suggested that fibrinogen was unlikely to outperform INR as a stand-alone ATC definition predicated upon an independent association with adverse trauma outcomes. Drs. David, Levrat and Bouzat (2) highlight two important questions: 1) how many injured patients with an INR

1.5 have derangements in other coagulation parameters and 2) whether such patients suffer more adverse outcomes than other patients with INRs in this range. While we acknowledged the limitations imposed by our inability to evaluate these questions directly, others have demonstrated that almost all trauma patients with markedly increased partial thromboplastin time or critically low fibrinogen levels also have an INR >1.5 (3). The overlap between hyperfibrinolysis and an INR >1.5 is less certain. The two abnormalities do correlate closely, likely because they share multiple risk factors and, via overactivation of protein C, a possible mechanism (4). However, since hyperfibrinolysis treatment reduces mortality after trauma (5), we welcome further study of the incidence and outcomes of hyperfibrinolysis among patients with INR 1.5 as well as whether hyperfibrinolysis modifies the adverse effects of an INR >1.5.

Viscoelastic assays are attractive for the study of traumatic coagulopathy due to their speed and holistic assessment of coagulation. The results of a recent consensus conference,

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however, illustrate the barriers to defining ATC using these tests (6). Despite advocating adoption of viscoelastic testing in trauma care, conference participants recognized that different studies link different thresholds of different viscoelastic parameters to outcomes — often without adjustment for confounders — and failed to agree on a viscoelastic definition of or treatment criteria for ATC. Participants also noted the marked variability between laboratories and assay systems (6–8). Finally, unless these tests' availability improves — just 23% of level I and 10% of level II trauma centers in the United States presently use them (9) — a definition based solely on viscoelastic assays would preclude diagnosis of most patients with ATC.

The absence of a consensus ATC definition limits comparison between both laboratory and clinical studies of the syndrome and hinders investigation of its management. Overall, we believe its simplicity, standardization, widespread availability and better-established independent association with mortality make an INR-based definition of ATC a good basis for further study of the condition's mechanisms and targeted treatment.

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