Pleural effusion is excess fluid that accumulates in the fluid-filled space between the lungs and chest cavity. The condition is diagnosed approximately 1 million times each year in the United States; however, the ability to determine if the fluid is transudative or exudative in a quick and concise way still remains a challenge. The methods we determined to differentiate between transudative and exudative fluid quantify the pH, glucose, and total protein as well as identify the presence of catalase and the specific gravity of the fluid.

Fabrication of the design has resulted in a prototype that may successfully differentiates between transudative and exudative effusion with decreased waiting time for the results and increased convenience. Continued work will investigate other test that can be added to the Multivariable Bedside Test to increase the sensitivity and specificity of the test.

**Goal:** To create a clinical method that is cost efficient, convenient, and quick for the characterization of fluid properties to differentiate between transudative or exudative pleural effusion.

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