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## I finally understand how applying the Fagan nomogram can change medical decision-making

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## REFLECTION ON CLINICAL DECISION SCIENCE: I finally understand how applying the Fagan nomogram can change medical decision-making

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It is clear to me now that the Fagan nomogram<sup>1</sup> should be applied regularly to patient care as it has the power to change medical decision making.

Our attending assigned us three clinical cases and instructed us to complete a Fagan nomogram for each; unbeknown to me at the time, one of these cases would finally click the lightbulb for me regarding their application. As the team sat down to complete these nomograms, my intern came up and asked, “where do you look up the pre-test probability?” It was a question I remember having myself. I informed my intern that the pre-test probability is what you assign to the case based on your own clinical judgment. I received a blank stare, as if they were waiting for the secret reference source and correct answer in determining the pre-test probability. It was a look that was all too familiar. I previously believed that the Fagan nomogram was a preset algorithm. Believing this, I never understood the point of using the nomogram as the outcome seemed predetermined. I thought, “why go through the steps when it never changes your decision-making.” However, after completing the third case and seeing the impact of the post-test probability, my mind was opened to the Fagan nomogram.

The case was a patient in their 40s with typical GERD symptoms and no serious risk factors. The group assigned a pre-test probability of 5% that this was angina from myocardial ischemia. We plotted a positive stress test on the Fagan nomogram and the post-test probability was 20%. Even in light of a positive stress test, the probability that this pain had a coronary etiology was only 20%. Given this result, we decided that the stress test would not be clinically relevant, especially since a positive test could result in catheterizing this patient. It was at this moment the Fagan nomogram finally clicked for me: for the first time I saw it as a tool that should be used before ordering a test.

As fate would have it, our medicine service admitted a patient very similar to our theoretical case. It was a young patient with chest pain that the ED admitted for a stress test. They asked us which cardiologist we wanted to use. We responded, “We’ll evaluate the patient and make a decision.” After gathering the history from the patient, our team was able to determine that the pain they were having was likely from GERD and situational stress. The medicine team pulled out our new favorite tool and plotted the likelihood of a positive stress test. The post-test probability for this patient was so low that the team canceled the stress test ordered by the ED and then proceeded to discharge the patient all in the same day. The Fagan nomogram saved this patient from an unnecessary hospital stay, radiation from the nuclear test, and a potentially false positive test that would have led to further interventions and invasive procedures.

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