



# Test Before You Take - What Is Pharmacogenomics?

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## Introduction

Pharmacogenomics is a new and emerging technology provided by pharmacists, whereby the application of a patient's genetic information is used to optimize a patient's response to medication therapy.

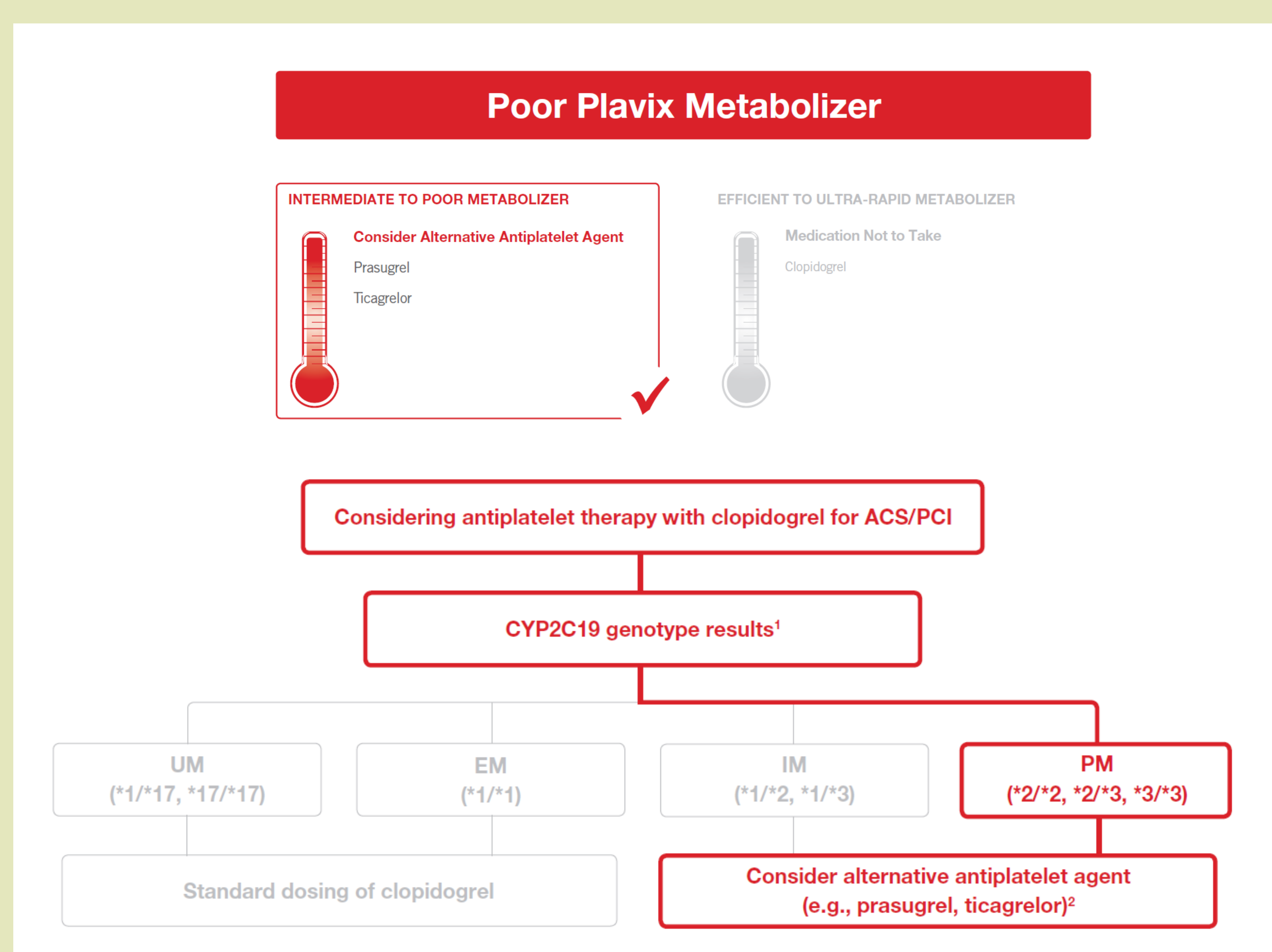
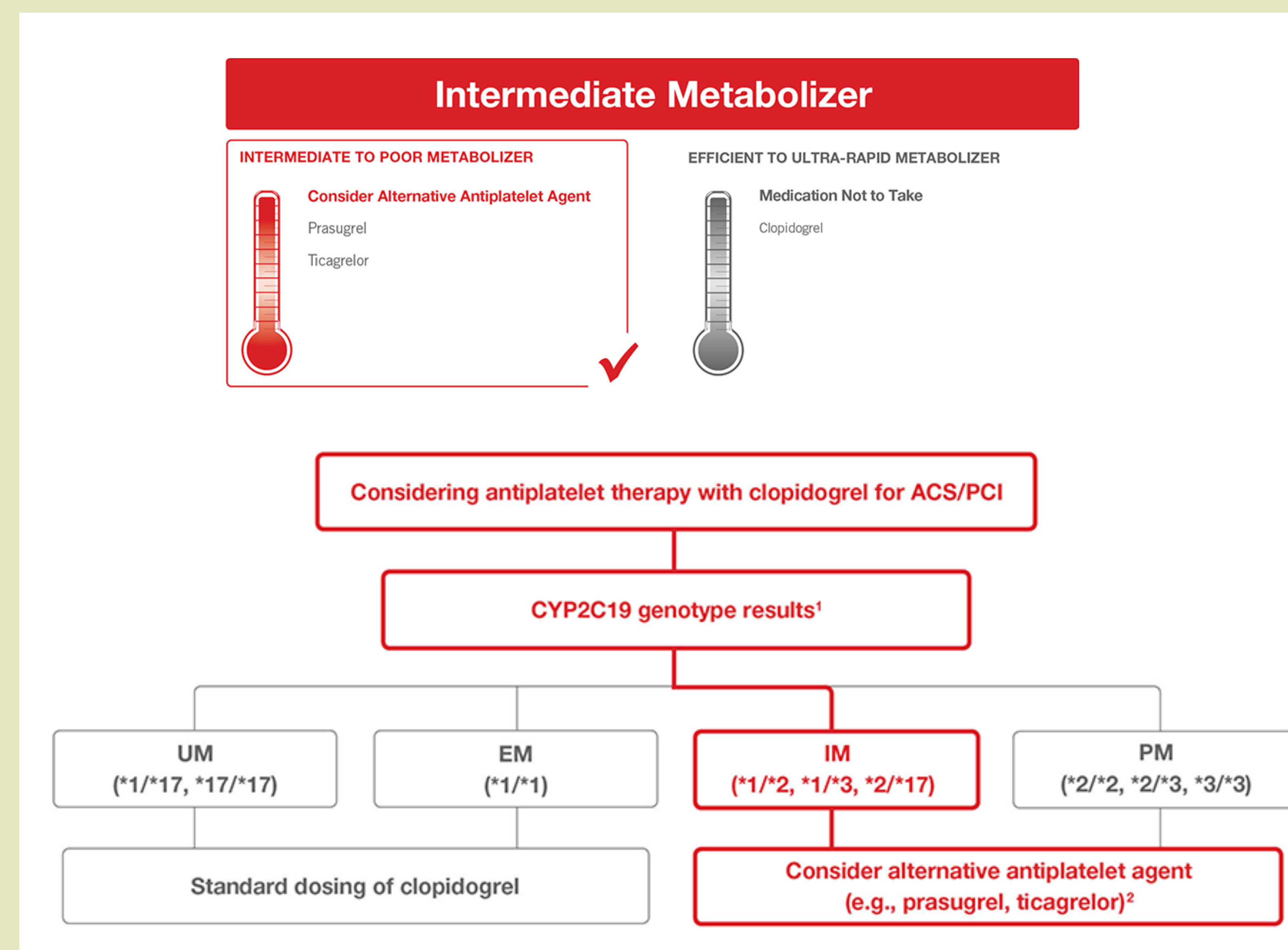
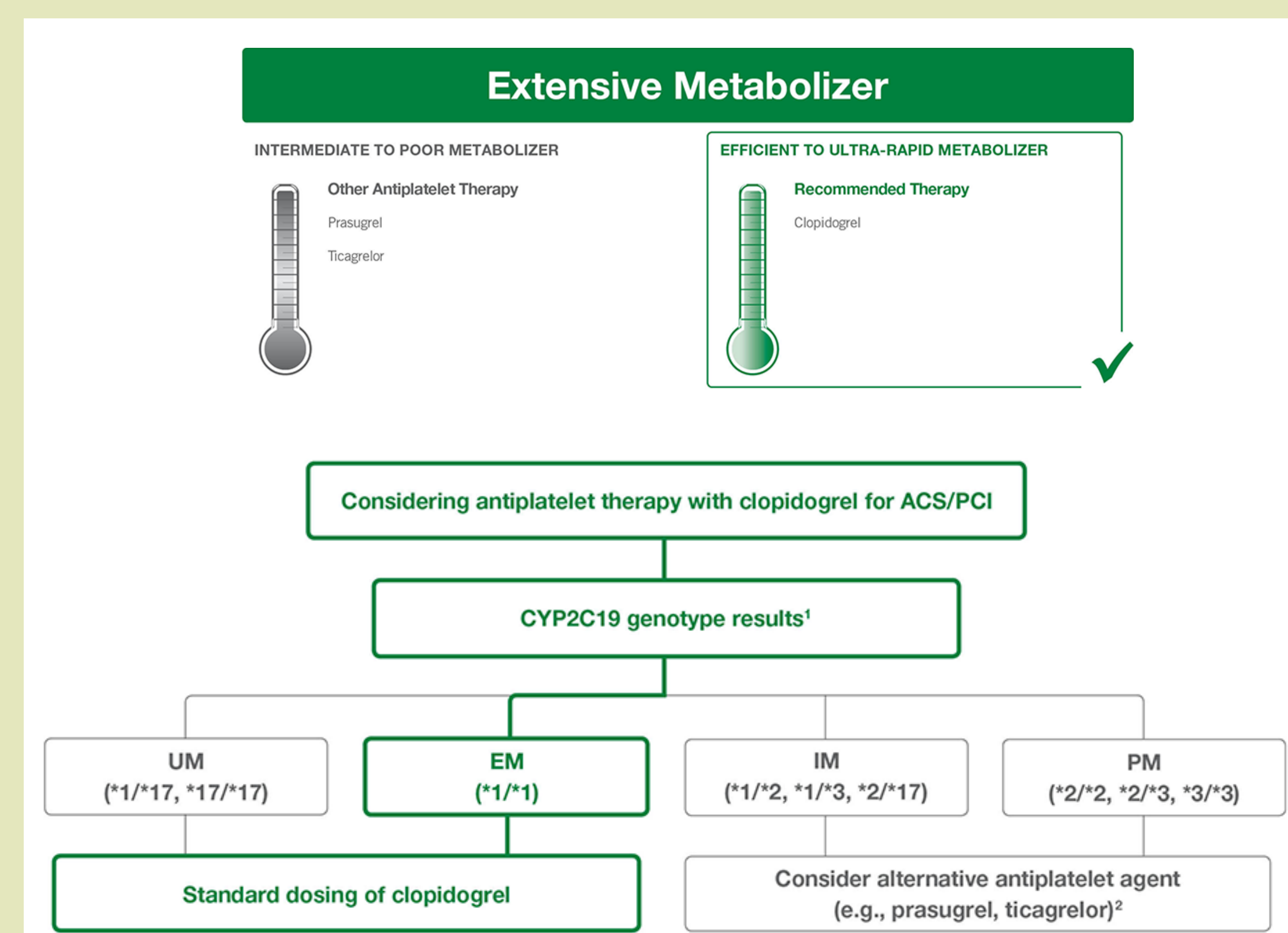
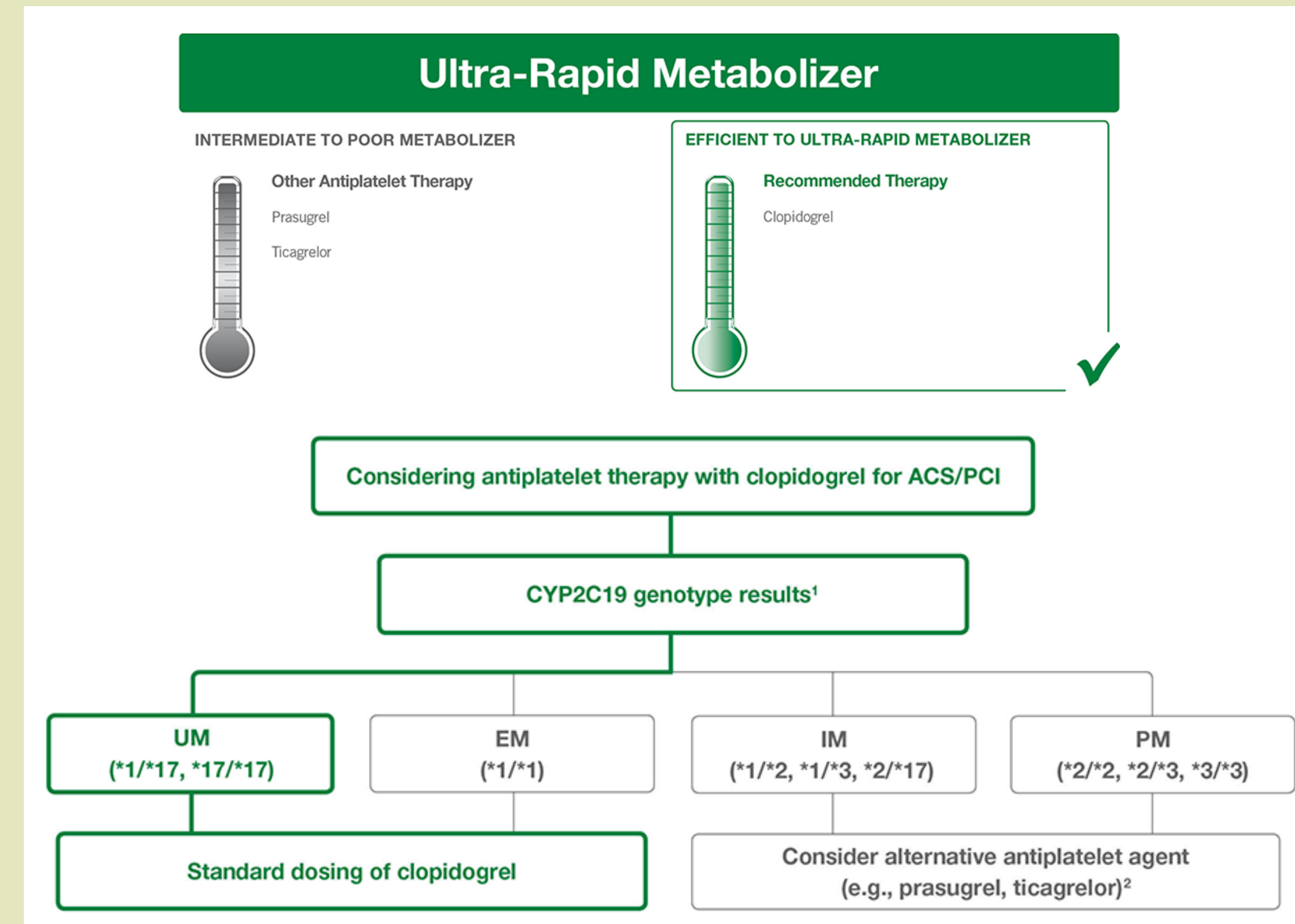
It has been shown that three out of ten people have a genetic makeup that does not respond to Plavix. These patients are four times more likely to have a heart attack or stroke. Therefore, the value of genetic testing in the prevention of such effects has been reinforced. Now, more than ever, genetic testing is an affordable and trusted way to predict prescription safety (Zbytek, 2014).

The testing is a simple process that includes three steps:

- **STEP ONE:** The patient has both cheeks swabbed, and the pharmacist ships the swabs in a provided envelope for the genetic testing.
- **STEP TWO:** The pharmacist places the order online on their individual store account.
- **STEP THREE:** Once the sample is received, results are returned in 24 hours through a secured digital forum.

There are two categories showing the standard dosing of Plavix that is appropriate, which are either the **ultra-rapid metabolizer** or **extensive metabolizer**. The other two categories that show whether an alternative antiplatelet agent should be considered are an **intermediate metabolizer** and a **poor metabolizer**.

\* Cost of testing is reimbursed 100% by Medicare.

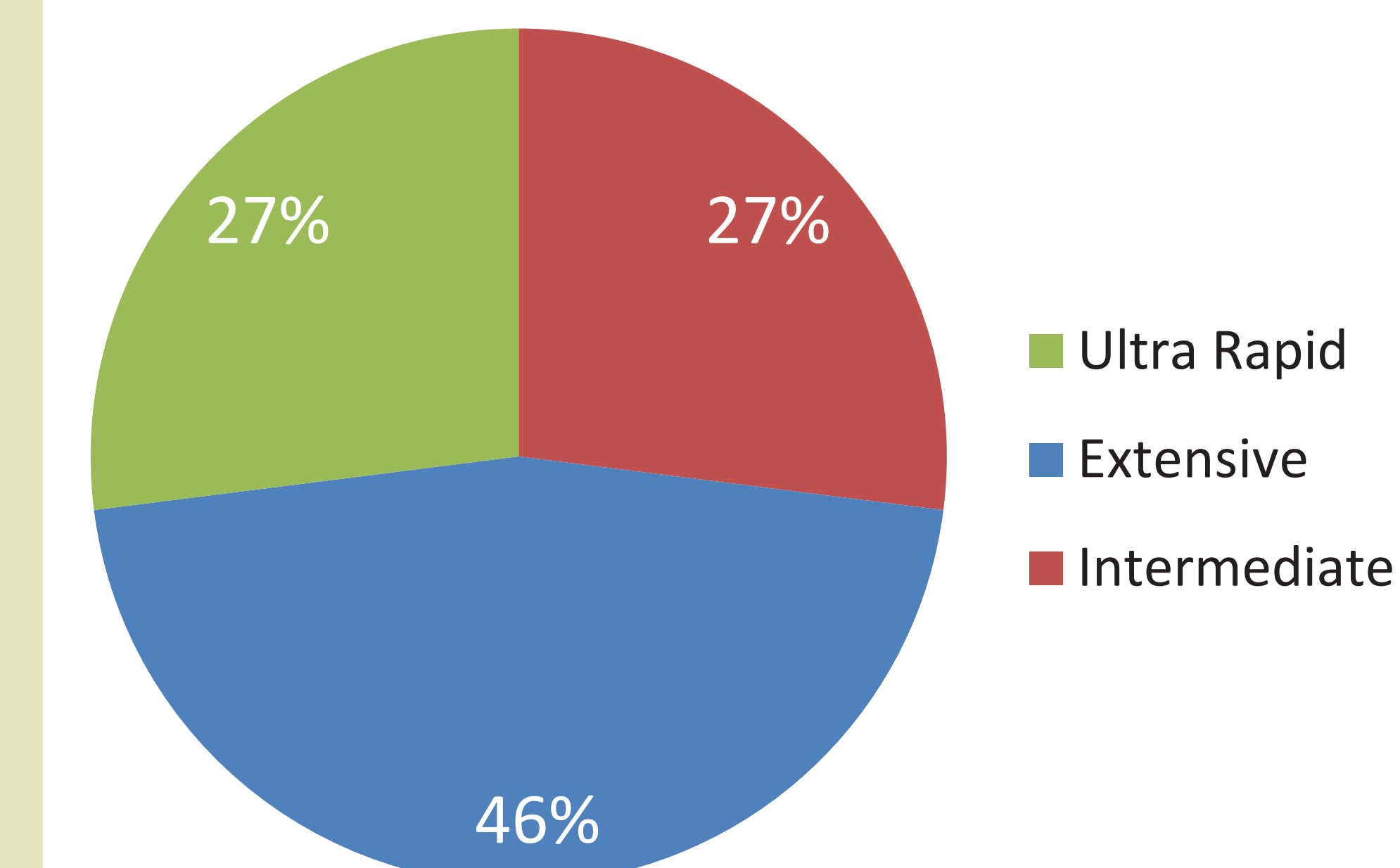


## Case Study

A 79-year-old female with a history of a stroke, dilated cardiomyopathy, cardiac murmurs, arthritis, osteoporosis, congestive heart failure, compression fractures, diabetes, hypertension, hypothyroidism and cataracts was ordered to receive Lovenox 40 mg daily, Plavix 75 mg daily, Lantus 40 units every evening, Metanx one capsule daily, Protonix 40 mg daily, Amlodipine 5 mg every night, Aspirin 81 mg daily, Levothyroxine 112 mcg daily, Metoprolol Tartrate 12.5 mg twice a day, and Simvastatin 20 mg daily by the referring hospital. After the pharmacist in our hospital reviewed the medications, she recognized the need for the genetic testing in this patient. The test indicated a genetic predisposition for impaired metabolic activation of Plavix. Simply stated, she was an intermediate to poor metabolizer of the drug. This result indicated a need for alternative treatment.

After further discussion with her physician, the Plavix was changed to Effient. Effient is a drug that decreases platelet aggregation in a mechanism similar to Plavix. The change in therapy for this patient resulted in improved drug efficacy and decreased the risk for serious adverse effects.

## Plavix Testing



Of the 11 patients swabbed in our hospital in 2014, 27% of those (intermediate metabolizers) needed an alternative antiplatelet agent ordered. After discussion between the pharmacist and the patient's physician, the patients were changed to another agent, most commonly Effient.

## References

Zbytek, B. (2014). Test before you take. Retrieved March 18, 2014, from <https://www.harmonyxdiagnostics.com/Services/Plavix/Default.aspx>