

Lp-PLA2 (PLAC[®]) Test

Clinical Utility of the Lp-PLA2 (PLAC) Test

The PLAC test measures the amount of lipoprotein-associated phospholipase (Lp-PLA2) in blood. Lp-PLA2 is an enzyme primarily associated with low density lipoprotein (LDL). LDL carries Lp-PLA2 to the coronary artery walls where it activates an inflammatory response. This makes plaque, if present, more prone to rupture. Because this enzyme is associated with causing inflammation of coronary artery walls, high levels of Lp-PLA2 would therefore seem to indicate an increased risk of heart attack or stroke.

Traditional inflammatory markers, such as hsCRP, and CRP, whilst recognised as being useful systemic inflammatory markers are not as sensitive for identifying inflammation of the coronary artery walls. As a result, the PLAC Test, which is measuring levels of Lp-PLA2, serves as a specific independent coronary marker.

Lp-PLA2 activity

The PLAC Test measures Lp-PLA2 activity quantitatively. This assists with the prediction of risk caused by the thickening, or hardening, of the arteries caused by the build-up of plaque. Given that the majority of heart attacks and strokes are caused by plaque rupture and thrombosis, rather than narrowing of the arteries, it would seem that individuals with high levels of Lp-PLA2 might benefit from more aggressive management with therapeutic intervention and/or lifestyle modification.

Why is the Lp-PLA2 (PLAC) test different from other tests?

- Lp-PLA2 is independent of traditional cardiovascular risk factors
- Lp-PLA2 is an enzyme produced in the plaque itself and its measurement is therefore more specific than other inflammatory markers.
- Increases in Lp-PLA2 levels are not caused by traditional risk factors.
- Imaging tests whilst able to assess the anatomical state of blood vessels, cannot identify plaque that is vulnerable to rupture

The PLAC test helps identify hidden risk

Lp-PLA2 levels help to identify hidden risk of cardiovascular event that might be missed from the use of more conventional risk factors (eg cholesterol levels,

blood pressure, family and smoking history). Lipid levels alone cannot provide a great deal of information on the status of the artery wall whereas Lp-PLA2 is a direct measure of artery wall enzyme activity, independent of other cardiovascular markers.

Cardiovascular heart disease is the first cause of mortality in Europe resulting in 4.3 million deaths each year (2011). Heart and circulatory disease was responsible for over a quarter of deaths in the UK in 2011 (British Heart Foundation). CVD is also one of the main causes of death in people under 75 in the UK. 26% of premature deaths in men and 18% of premature deaths in women were from CVD in 2011. In 2011 over 42,000 people under 75 died from CVD.

The PLAC[®] Test is recommended for patients with established CVD3 or patients at moderate to intermediate risk for CVD, such as patients with, including but not limited to, two or more of the following risk factors:



Family history



Diabetes



Obesity



Smoker



Males aged ≥ 45 or females ≥ 55



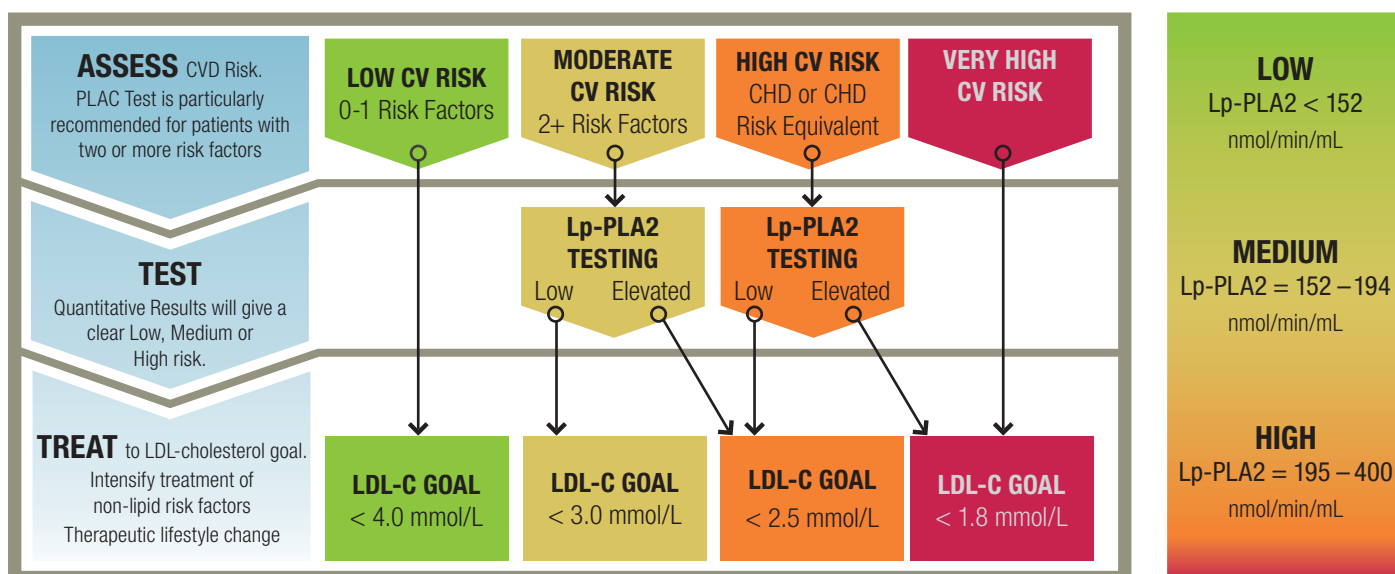
High cholesterol



High blood pressure

More than 125,000 published patient results confirm the PLAC Test for Lp-PLA2 is the only evidence-based assay for measuring the new modifiable risk factor, lipoprotein-associated phospholipase A₂, for CVD events.

Recommendation for use of Lp-PLA2 testing



The PLAC test helps improve patient management

It is not intended that the PLAC Test should replace blood lipid testing or other traditional risk factors identified for cardiovascular disease. It provides an additional independent risk marker.

The PLAC test is recommended for patients with known CVD disease, or for patients with moderate/intermediate risk for CVD including, but not limited, to two or more of the following risk factors:

- Family history of CVD
- Diabetes
- Obesity
- Metabolic Syndrome/Chronic Kidney Disease
- Smoking
- Gender/Age (male > 55/female > 45)
- High Cholesterol
- On lipid lowering treatment
- High blood pressure
- High saturated fat diet/physical inactivity

Information to guide treatment

Risk Levels are reported quantitatively as Low, Medium or High:

Low	< 151 nmol/min/ml
Medium	152 – 194 nmol/min/ml
High	> 195 nmol/min/ml

High levels of Lp-PLA2 are consistently linked to higher risk of heart attack and stroke in multiple population based studies* Individuals with an elevated PLAC Test result who have two or more other risk factors are at 2 or 3 times the risk of a cardiac event. High blood pressure combined with elevated PLAC levels further raise this risk. More aggressive patient management in the form of lifestyle changes, as well as blood pressure or lipid lowering agents in an attempt to lower the Lp-PLA2 levels may therefore be advantageous. Further investigations using other independent cardiovascular disease markers (Apo B, Lp(a), hs-CRP etc) as well as scans and imaging may be considered.

An elevated PLAC test is an actionable tool, and may indicate a need for more aggressive therapy, including treatment to lower LDL Cholesterol levels. Lipid lowering agents including statins are proven to reduce cardiovascular events. Knowing that there is active disease, rather than just risk, may create a greater sense of urgency in patients to become more compliant with treatment recommendations.

*DiaDexus Bibliography (<http://www.plactest.com/healthcare/annotated-bibliography.html>)

Test information

TEST	CODE	SAMPLE TYPE	TURNAROUND TIME
Lp-PLA2 [PLAC] Test	PLA2	1 x GOLD/SST B *	48 hours

*Sample collection and preparation: ambient and unspun sample stability has been validated for up to 5 days and samples can therefore be posted. Samples for this test can also be collected using TDL TINIES. Patients do NOT need to fast for this test.

For further information, please contact:

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