



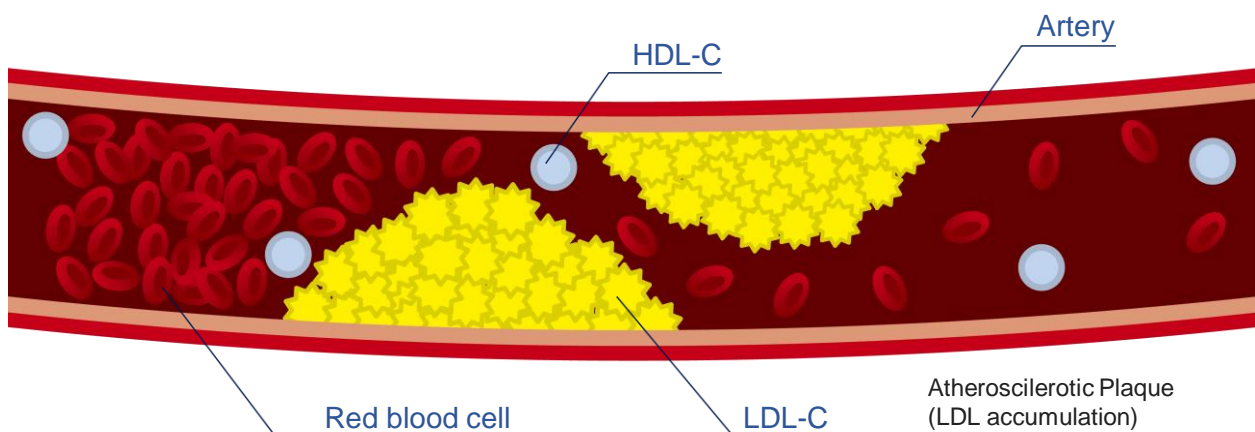
Relationship between Dyslipidemia and Cholesterol

What is dyslipidemia?

Dyslipidemia is a medical condition characterized by an abnormal amount of lipids, such as cholesterol, high-density lipoprotein cholesterol(HDL-C), low-density lipoprotein cholesterol (LDL-C), and triglycerides, in the blood.

Although dyslipidemia doesn't have obvious symptoms, it can lead to arteriosclerosis, which can turn into a stroke, cardiovascular disease(CVD) and other death-causing diseases.

LDL-C causes clogged arteries.



Characteristic of HDL-C & LDL-C



HDL-C helps remove excess cholesterol in the blood and carries it back to the liver for disposal. That's why HDL-C is often referred to as "good" cholesterol.



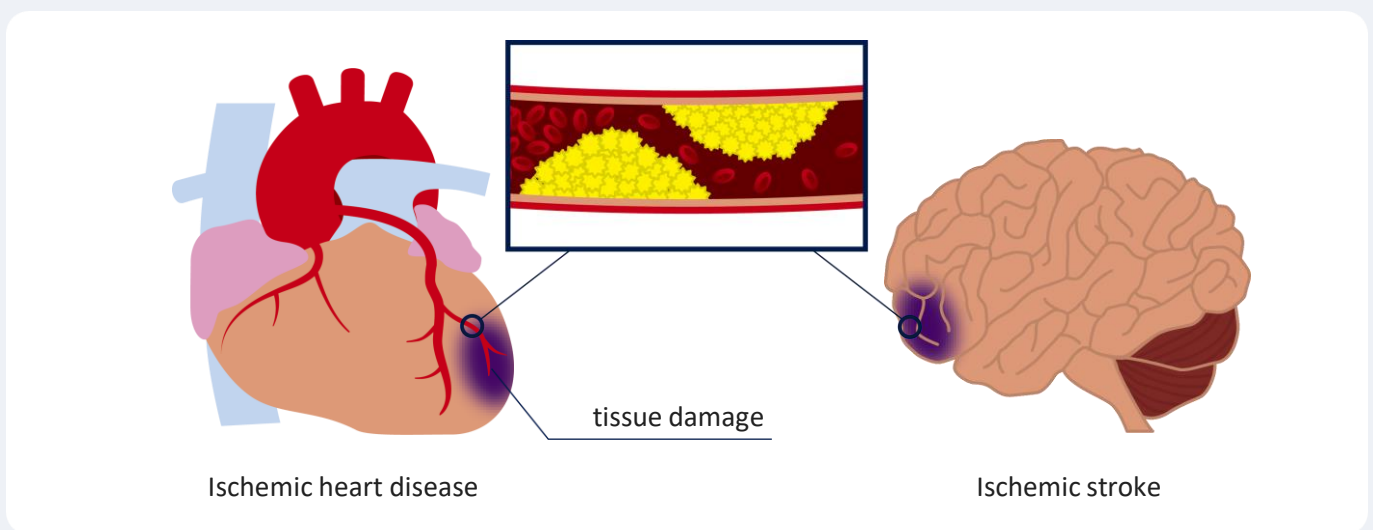
LDL-C, on the contrary, is often referred to as "bad" cholesterol because high levels of LDL-C is associated with a higher risk of cardiovascular disease.



Risk of Increased LDL-C

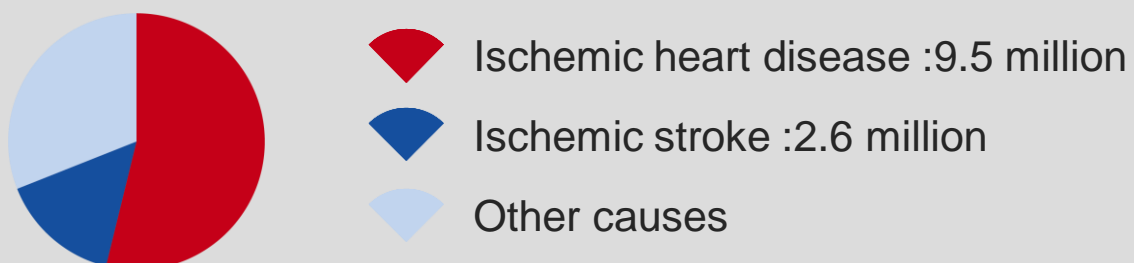
High levels of LDL-C can cause plaque to build up in the arteries, which can clog the arteries and decrease blood flow to the heart and brain, increasing the risk of death. Reduction of LDL-C level is the major therapeutic target in clinical practice and current guidelines focus on it.

In fact, there are many studies reporting correlations between ischemic heart disease or ischemic stroke and LDL-C.



Rates of ischemic heart disease and ischemic stroke in cardiovascular disease¹

Cardiovascular disease deaths in 2016 approx. **17.6 million**



Of these CVD deaths, 69% were “Ischemic heart disease” and “Ischemic stroke”

¹ K. Foreman et al., Lancet, 392(10), 2052-2090, 2018

In fact, cardiovascular disease is the leading cause of death worldwide, ischemic heart disease and ischemic stroke, mainly caused by high LDL-C levels, account for a large proportion.



Evaluation Method for LDL-C

The clinical management of patients at risk for cardiovascular disease (CVD) is critically dependent on their levels of LDL-C.

Friedewald Equation, developed in 1972, is still widely used method for estimating LDL-C levels.

Friedewald Equation

$$\text{LDL-C} = \text{CHO} - \text{HDL-C} - (\text{TG}/5)$$

(CHO : total cholesterol, TG : triglyceride)

However, it has been known to have some weaknesses.

Disadvantages of Friedewald Equation

1. Not available for postprandial specimens
2. Not accurate when triglyceride level is ≥ 400 mg/dL
3. Tend to underestimate, especially at low LDL-C levels



Direct measurement is recommended for LDL-C

Advantages of direct measurement

1. No need for fasting (No burden to the patient)
2. Better precision





Direct measurement of LDL-C is more accurate than the Friedewald equation, especially in patients with high triglyceride levels or at low LDL-C levels.

Dyslipidemia and cholesterol value can be effectively managed through lifestyle modifications, medications, and regular monitoring. Regular screenings allow for early detection and intervention. Therefore, if a patient has high TG or is undergoing aggressive treatment, direct measurement of LDL-C is recommended instead of calculation.



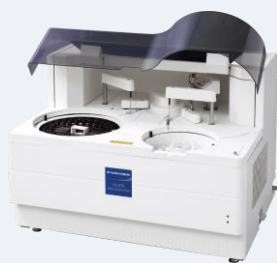
Reagent Package Information

FURUNO has the necessary items for cholesterol management.
With dedicated analyzer and reagents, FURUNO provides reliable values and support!

Product Name	Product No.	FURUNO Analyzer	Configuration	
			R1	R2
 Cholesterol CHOD/PAP Monoreagent	CF03917067-F5	CA-270	5 x 67 mL	-
	CF03917067-F	CA-400	10 x 67 mL	-
	CF03917067-F4	CA-800	4 x 20 mL	-
	CF03917067-F16		16 x 20 mL	-
 HDL-Cholesterol fluid homogeneous	CF04917080-F0X	CA-270	2 x 30mL	2 x 10mL
	CF04917080-F2X	CA-400	2 x 60mL	2 x 20mL
	CF04917080-FX	CA-800	6 x 60mL	6 x 20mL
 LDL-Cholesterol fluid homogeneous	LF05917040-FX	CA-270	3 x 30mL	3 x 11mL
	LF05917080-FX	CA-400	3 x 60mL	3 x 20mL
		CA-800		
 Triglycerides fluid Mono	TF01917067-F5	CA-270	5x 67mL	-
	TF01917067-F	CA-400	10 x 67mL	-
	TF01917067-F4	CA-800	4 x 20mL	-
	TF01917067-F16		16 x 20mL	-

Reagents are manufactured by Centronic GmbH certified according to ISO13485.

FURUNO Analyzers



Model: CA-270



Model: CA-400



Model: CA-800

*Please check our web site (<https://www.furuno.com/en/medical>) for more details.



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