

# Clinical UPDATE

## Lindora Medical Clinics Use VAP® Cholesterol Test to Help Patients Achieve “Metabolic Equilibrium”



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### Introduction

In today's era of low physical activity and high-fat, high-cholesterol, low nutritional-value diets, Americans have put their health at risk while at the same time increasing their belt sizes. In fact, more than 136 million Americans are classified as being either overweight or obese.<sup>1</sup>

The result—a surge in hypercholesterolemia, high blood pressure, and diabetes, as well as increased cardiovascular disease risk. Today, more than 71 million Americans have been diagnosed with some type of cardiovascular disease, 65 million have high blood pressure, 14 million suffer from diabetes, and nearly 100 million suffer from high total cholesterol.<sup>2</sup> Multiple treatment options are available for these patients, ranging from lifestyle modifications such as a low-fat diet and increased exercise, to drug therapy and surgery.

One key treatment option is a multi-faceted, medically supervised weight loss program created by Lindora Medical Clinics. The program combines diet, moderate exercise, and motivational tools to help patients become lean and healthy for life. Because obesity significantly

increases the risk for cardiovascular disease, a main focus of Lindora's innovative Metabolic Fitness Treatment Program™ involves the identification and treatment of heart disease risk. The Metabolic Fitness Treatment Program is a 10-week plan pioneered by the Lindora medical team. It includes some of the most advanced health evaluations available, combined with an innovative assessment tool called the Metabolic Fitness Quotient™ and a customized, comprehensive treatment plan.

Lindora clinicians are recognized experts in the treatment of obesity and its adverse health effects, focusing on 18 specific co-morbidities such as hyperlipidemia, hypertension, sleep apnea, and other conditions that are caused or aggravated by obesity. As a result, all Lindora patients undergo a comprehensive battery of tests in order to assess their overall health, identify heart disease and other health risks, and provide a baseline for evaluating progress. For cholesterol measurement, Lindora exclusively uses the next-generation VAP (Vertical Auto Profile) Cholesterol

Test, an expanded lipid profile that provides twice the predictive ability in identifying heart disease risk compared with the routine cholesterol test.<sup>3</sup> Available since 2004 at all 36 Lindora Medical Clinics in Southern California, the VAP Test measures a range of cholesterol components and subclasses that play a significant role in the development of heart disease but are not measured by the routine cholesterol test. The VAP Test also provides more accurate, direct low-density lipoprotein (LDL) measurements, rather than the estimates given by the routine test.

By using the VAP Test and the comprehensive, accurate cholesterol information it offers, Lindora clinicians can better assess their patients' true risk for conditions that go hand-in-hand with being overweight, such as heart disease, stroke, and metabolic syndrome—which in many patients is a precursor to diabetes.

### The VAP Test at Lindora

To diagnose dyslipidemia, an accurate cholesterol measurement is crucial. Initially, Lindora relied on routine cholesterol tests for the majority of its patients,

 **Lindora**<sup>®</sup>  
COMPREHENSIVE WEIGHT CONTROL

The  
**VAP**<sup>®</sup>  
Cholesterol Test

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using the VAP Test only for those patients with a history of cholesterol problems or other heart disease risk factors. However, Lindora's clinicians became increasingly frustrated by variations in the LDL measurements provided by the routine cholesterol test, which relies on the Friedewald equation to calculate LDL from total cholesterol, high-density lipoprotein (HDL), and triglycerides [LDL = TC – HDL – (TG/5)]. For patients with high triglycerides, such as those with metabolic syndrome, the routine cholesterol test was unable to provide the accurate, consistent LDL results that Lindora clinicians needed to assess heart disease risk, develop customized treatment plans, and optimize results for their patients. The routine cholesterol test also requires patient fasting, which presented additional challenges with measurement accuracy, as not all patients complied with this requirement. As a result, it was not uncommon to see 20- to 40-point LDL variances with the routine cholesterol test.

The VAP Test's ability to provide a more accurate, directly measured LDL cholesterol number was a critical reason that Lindora

began exclusively using the test in its program. Another important factor for Lindora was that in addition to providing the information found in a routine lipid panel, the VAP Test measures other cholesterol subclasses and components that are important for assessing heart disease risk and directing therapy. A growing body of scientific evidence supports the benefits of expanded cholesterol testing such as that provided by the VAP Test. For example:

- Patients with small, dense LDL (Pattern B) have a 400 percent higher risk of heart disease than those with large, buoyant LDL.<sup>4-6</sup>
- Lipoprotein(a) [Lp(a)] is an independent and critical risk factor for heart disease and stroke.<sup>7,8</sup>
- Low HDL<sub>2</sub> indicates an increased risk for heart disease, even in patients with "normal" total HDL.<sup>9</sup>

The VAP Cholesterol Test also helps Lindora clinicians identify patients with metabolic syndrome by identifying the "atherogenic lipid triad" of low HDL, elevated triglycerides, and small, dense LDL particles. Many of these cholesterol subclasses and components are highlighted in updated National Cholesterol

Education Program Adult Treatment Panel III (NCEP ATP III) guidelines as emerging risk factors and secondary targets of therapy for heart disease.<sup>10</sup>

### Know Your Numbers & Your Risk Factors

"Know your numbers" is a mantra for Lindora, aimed at focusing patients' attention on understanding their risk factors for a variety of diseases and conditions, and emphasizing the importance of changing their lifestyles in order to prevent or reduce the risk of serious health problems, such as heart disease and diabetes. Lindora's comprehensive health assessment often uncovers hidden health problems—even in patients who are only 10–15 pounds overweight and do not have any obvious risk factors. Patients have responded enthusiastically to this informative and motivational approach.

Lindora's comprehensive health assessment includes such key information as waist circumference, blood pressure, body mass index, current medications, fasting blood sugar, hemoglobin A1c, liver ratio, and high-sensitivity C-reactive protein (hs-CRP), a measurement of inflammation that is an independent risk factor for heart disease. Patients also appreciate having access to a state-of-the-art lipid panel such as the VAP Test, which sheds light on hidden health risks (see Table).

Lindora clinicians typically see patients with a variety of cholesterol abnormalities that can be treated with lifestyle changes and medications, ranging from elevated LDL

### Lindora's Metabolic Fitness Quotient™

VAP® Cholesterol Test Measurements	Other Tests & Assessments
Total cholesterol	Waist circumference
LDL-C	Blood pressure
HDL-C (HDL <sub>2</sub> & HDL <sub>3</sub> )	Body mass index
Triglycerides	Number of prescriptions to treat metabolic syndrome
Lipoprotein(a)	Fasting blood sugar
LDL pattern	HgB A1c
TG/HDL (metabolic ratio)	AST/ALT ratio
Hs-CRP (high-sensitivity C-reactive protein)	Number of steps per day
	Lindora Lifestyle Assessment Survey

and triglycerides to low HDL and the presence of small, dense LDL. Metabolic syndrome also is increasingly seen, especially in Hispanic patients, many of whom have diabetes or are pre-diabetic. Lindora's patient base consists primarily of women (80%)—a patient population that often is unaware of its heart disease risk and therefore benefits from a comprehensive testing and risk stratification program.

The ability to measure HDL subclasses—HDL<sub>2</sub> and HDL<sub>3</sub>—also is valuable because HDL<sub>2</sub> is more cardioprotective than HDL<sub>3</sub>. Low HDL<sub>2</sub> is a risk factor for heart disease in patients with normal total cholesterol and total HDL.<sup>9</sup> It also is an independent risk factor for diabetics with peripheral vascular disease.<sup>11</sup> The VAP Test helps clinicians better assess heart disease risk by providing measurements for both HDL<sub>2</sub> and HDL<sub>3</sub>.

A distinguishing factor of the Lindora program is that patients often are diagnosed in a pre-disease state, which allows the clinical staff to work with patients and their physicians on preventive measures. For example, it is not uncommon for a VAP Test to uncover pre-diabetes, or metabolic syndrome, a condition that, beyond the atherogenic lipid triad, is characterized by disturbed glucose and insulin metabolism, central obesity, and hypertension. Patients with metabolic syndrome and diabetes are rapidly growing in number and are at significantly increased risk of heart disease, making the identification and treatment of the conditions a high priority for the medical community.

### “Metabolic Equilibrium”

Lindora's evidence-based program emphasizes prevention and lifestyle changes as a first step in helping patients achieve “metabolic equilibrium” and better overall health and fitness. Diet and exercise are emphasized in the program. Patients with various lipid abnormalities or other issues also receive a list of recommended supplements, such as essential fatty acids, folic acid, and coenzyme Q-10. In addition, medications such as statins or niacin may be prescribed to address specific lipid abnormalities, often in cooperation with the patient's primary care physician.

Patients receive a VAP Test when they begin the Metabolic Fitness Treatment Program and again at the program's conclusion in 10 weeks. At the 10-week mark, dramatic improvements in patients' cholesterol levels frequently are observed, ranging from a shift in cholesterol particle size from Pattern B or AB, to a more large and buoyant Pattern A, often from lifestyle changes alone. In addition, HDL, LDL, and triglyceride levels usually are improved through weight loss, nutritional supplements, and medications. Upon completion, Lindora's patients are encouraged to visit their primary care physicians and obtain follow-up VAP Tests in 3–4 months to track progress and adjust treatment, if necessary. A number of Lindora's patients have reduced or even discontinued use of certain medications due solely to diet and lifestyle changes, so follow-up

measurements and treatment adjustments are essential.

Furthermore, throughout the program, Lindora's clinical staff reviews test results with patients and provides instructions about working closely with patients' primary care physicians in order to optimize treatment results and track improvements. Results achieved through the Lindora program are strong motivators for patients to take charge of their health—and their cholesterol numbers—before major health problems arise.

### Lessons Learned

Lindora serves about 5,000 patients per day, providing an innovative program aimed at achieving not only weight loss, but also a healthier lifestyle. The VAP Test allows Lindora's medical staff to dig deeper in order to better understand and address health risks faced by patients. The test directly measures LDL cholesterol, identifies metabolic syndrome, and quantifies the residual risk posed by components such as Lp(a), LDL Pattern B, low HDL<sub>2</sub>, and others.

Working together with patients and their physicians, Lindora clinicians help patients improve their numbers—and reduce their risk for a variety of diseases—through diet, lifestyle, and therapeutic changes. The valuable lessons learned from Lindora's unique Metabolic Fitness Treatment Program can be utilized by clinicians throughout the country to aid clinical judgment and determine optimal treatment goals for patients fighting the weight loss battle. ■

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Dr. Sabina Kobylinski is medical director of Lindora Medical Clinics, where she oversees a medical staff of 13 physicians and nurse practitioners and also is involved in direct patient care. Dr. Kobylinski also directs the organization's medical training and education efforts, and its clinical research activities. Prior to joining Lindora, Dr. Kobylinski spent 10 years in private practice as a family practice physician, during which she gained extensive experience using the VAP Test.

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