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By: Michael C. Cobble, MD, AAFP, FNLA  
Chief Medical Officer, Atherotech

## Improved Cardiac Management with a Comprehensive Lipid Profile: Use of a Comprehensive Lipoprotein Profile Test in a Managed Care Program is Associated with Improved Patient Outcomes. John McAna, PhD. et al. *Population Health Management*. February 2012.

### Summary of a Clinical Study Using the VAP® Test

To evaluate the effectiveness of incorporating the comprehensive VAP Cholesterol Test in a cardiovascular disease management treatment protocol, a two-year study was conducted comparing outcomes between cardiovascular disease patients evaluated with standard lipid profiles to those evaluated with the VAP (Vertical Auto Profile) Test.

WellMed Medical Management, a managed care company, enrolled a total of 1,767 patients (cases) diagnosed with cardiovascular disease between July 1, 2006, and June 30, 2008. All enrollees had at least one VAP Test during the study period.

The study demonstrates that accurately identifying multiple dyslipidemias and then targeting therapies toward specific lipid subclasses improves patient outcomes and reduces total treatment costs by more than 35%.

### Conclusions

- A treatment protocol incorporating the VAP Test can improve outcomes and reduce utilization and costs in a disease management program for cardiac patients.
- The increased level of clinical detail allows for improved risk stratification and more targeted pharmacotherapy toward specific dyslipidemias.
- The VAP Test group had lower total costs in year two (\$4,852.62 vs. \$7,413.18; p=0.0255), fewer total inpatient stays (13.1% vs. 18.3% of controls; p=0.0175) and fewer total ED visits (11.9% vs. 15.6% of controls; p=0.0832).
- Repeated use of the VAP Test, combined with adjustments to therapy, led to lower LDL and higher HDL<sub>3</sub> levels among cases.
- Prescription use and frequency of lipid measurement suggested improved control due to a targeted approach to managing specific dyslipidemias.

### Utilization and Cost Comparisons

|                          | Case       | Control    | Test result | p-value |
|--------------------------|------------|------------|-------------|---------|
| Cost                     |            |            |             |         |
| Mean total cost year one | \$4,307.70 | \$5,141.02 | -1.34**     | 0.1157  |
| Mean total cost year two | \$4,852.62 | \$7,413.18 | -2.24**     | 0.0255  |
| Mean ED costs both years | \$22.24    | \$33.15    | -1.92**     | 0.0561  |
| Mean IP costs both years | \$732.80   | \$876.20   | -1.80**     | 0.0722  |

\*\*t-test

The study showed that accurately identifying multiple dyslipidemias can lead to total treatment cost reductions of more than 35%. Over a two-year period, this resulted in an average per-patient savings of \$3,393.88.

## Highlights

### Improved Risk Stratification with the VAP Test

- Analysis of VAP Test results show that the VAP Test can detect more cases of dyslipidemia than the standard lipid panel would show. This increased clinical detail allows for more accurate assessment of clinical risk and can result in more effective treatment strategies leading to improved outcomes.
- Increasing frequency of monitoring with the VAP Test, combined with adjustments to therapy, led to lower LDL and higher HDL<sub>3</sub> levels among cases.
- The HDL<sub>2,3</sub> subclasses provide a better measure of protection than total HDL.
- Cholesterol VLDL<sub>1,2,3</sub> sub-particles and LDL<sub>4+3+2+1</sub> pattern density values reveal atherosclerotic changes earlier and with greater accuracy.
- In addition to standard profile results, the VAP Test measures LDL density (i.e. Pattern A vs. Pattern B), IDL, HDL subclasses and Lp(a), further improving risk stratification.

### Improved Treatment Strategies

- There was a significant difference between cases and controls in the distribution and prescription types for control of lipids.
- Cases were more likely to have more than one type of drug prescribed, and were also more likely to have used niacin-containing drugs (Niaspan® or Advicor®) than controls (36% vs. 14%).

### Reduced Costs

- Total claims costs were higher for controls than cases in the first year, and this gap widened and became statistically significant in year two.
- The average claims cost for controls were \$2,500 higher than cases, while the cost of the comprehensive lipid profile was only about \$15 higher than the standard profile.
- Total treatment costs were 35% higher for individuals receiving general treatment following standard lipid profile testing compared to those receiving targeted therapy based on the results of the comprehensive lipid profile.
- The control group had higher percentages of inpatient stays and longer stays than cases.

### Better Prescription Compliance

- Cases stayed on therapy longer before the first gap in therapy than controls.

To help providers and patients attain the best possible outcomes, Atherotech offers personalized provider and patient education at no additional charge.

Provider and Patient Resources:

- **Medical Science Consultants** are an educational resource for providers in interpretation of VAP Test results, lipoprotein physiology and pathophysiology, clinical implications and treatment options, resulting in a better understanding of risk and treatment selection.
- **The Lipid Library**® is an online resource rich in content, providing timely expert opinions, teaching tools, and patient educational materials. Visit The Lipid Library at [www.thelipidlibrary.com](http://www.thelipidlibrary.com).
- **Cobble's Corner** is a blog established to share patient cases from the trenches of lipidology and educate on diagnosis and treatment management of dyslipidemia, cholesterol and heart disease, among other related conditions. Visit Cobble's Corner at [www.cobblescorner.com](http://www.cobblescorner.com).
- **Our Healthy Heart**™ by Atherotech provides your patient with individualized lifestyle modification education based upon their Atherotech-provided test results along with compliance strategies.

