Quest Diagnostics®

Healthy Living | Weight Health

# Diagnostic insights to navigate **weight management for better health**

## New therapies and approaches on the horizon

The obesity epidemic and associated cardiometabolic risk factors contributing to related conditions, such as cardiovascular disease, poor glycemic control, chronic kidney disease, fatty liver disease, and common endocrine disorders, are on the rise. Pharmacologic and lifestyle approaches for weight loss are beginning to show the potential to reverse these trends. Therapies such as glucagon-like peptide-1 (GLP-1) receptor agonist medications, can lead to significant weight loss, but without lifestyle changes including exercise to maintain muscle mass, the long-term benefit on cardiometabolic health is not sustained.[1,2] Therefore, the need to monitor short-term and long-term cardiometabolic health risk has never been more important.

Quest Diagnostics can help assess and monitor the effects of weight management and define patients' personalized cardiometabolic risk using diagnostic laboratory insights to help achieve the goal of healthy living.

**Determine whether patients' cardiometabolic health is improving with weight loss** through routine monitoring with laboratory testing.

## Assessing cardiometabolic risk through weight management

Obesity impacts most organ systems of the body. Furthermore, weight loss through lifestyle modifications of diet and exercise can globally improve cardiometabolic health. GLP-1 RA therapy is a means of decreasing appetite and can lead to significant weight loss. Optimal weight and cardiometabolic health may be achieved when therapies are simultaneously combined with diet and exercise.[2] While medication-assisted weight loss can also improve diabetes management and cardiovascular, liver, and kidney disease outcomes, there is evidence of weight regain and resumption of cardiometabolic risk following discontinuation of the regimen.[1] By integrating routine monitoring with laboratory testing, providers can determine whether patients focused on weight loss and lifestyle changes are on track to achieve sustainable, improved cardiometabolic health.

### Comprehensive cardiometabolic approach to weight management

Strategies to **target and maintain weight loss**

Strategies to **quantify and monitor effects of weight changes** through laboratory testing

**Common methods to achieve weight loss:**

- Exercise
- Healthy diet
- Prescription weight loss medication
- Bariatric surgery

| Cardiometabolic focus | Association of weight and cardiometabolic health risk factors |
|---|---|
| **Glycemic control** | Changes in weight may impact insulin, blood glucose, and insulin resistance[3] |
| **Cardiovascular health** | Changes in weight may impact lipids and vascular inflammation[4]<br>Lipid-modifying therapies may require adjustment as weight changes are sustained[5] |
| **Endocrine health*** | Hormones, such as thyroid stimulating hormone and testosterone, are associated with weight changes and exercise capacity[6,7] |
| **Kidney and liver health** | Chronic kidney disease and nonalcoholic fatty liver disease risk are impacted by sustained changes in weight[8,9] |
| **Nutrition health** | Essential vitamin and mineral levels may be affected by diet, exercise, and weight changes.[10] Assessment is important to help maintain muscle mass |

*Side effects of different prescription weight loss medications impact thyroid health and may be considered for monitoring with laboratory testing.

## Comprehensive insights along the patient journey

Pharmacologic and lifestyle approaches provide patients with an avenue to weight loss, and laboratory testing provides insight into the impact of patients' overall cardiometabolic health as their weight changes. Analyzing biomarkers focused on specific organ systems impacted by cardiometabolic dysfunction can offer insights into whether a medication-based weight loss plan is not only leading to weight loss but also reducing chronic disease risk. Laboratory testing helps inform whether cardiometabolic risk has decrease with weight loss and if treatment modifications are necessary. In general, diagnostic insights provide a comprehensive overview throughout the patient journey pre-, during, and post-weight loss treatment.

**Pre-treatment**

Assess eligibility and establish baseline prior to initiating weight loss therapy

**Treatment**

Evaluate progress and safety while taking prescription weight loss therapy and implementing lifestyle changes

**Post-treatment**

Monitor short- and long-term effects after discontinuing prescription weight loss therapy and maintaining lifestyle changes

| Cardiometabolic System | Laboratory Tests to Consider | Quest Test Code | Cleveland HeartLab (CHL) Test Code |
|---|---|---|---|
| **Glycemic control** | HbA1c[a] | 91732 | C145 |
| | Insulin Resistance Panel with Score[a,b] | 36509 | 36509 |
| **Cardiovascular disease** | Lipid Panel[a,c] | 91716 | C906 |
| | Apolipoprotein B (ApoB)[a] | 91726 | C123 |
| | Myeloperoxidase (MPO) | 92814 | C133 |
| | Lp-PLA2 Activity | 94218 | 94218 |
| | hs-CRP | 91737 | C121 |
| | ADMA/SDMA | 94153 | C301 |
| **Endocrine disorders** | Thyroid Stimulating Hormone (TSH) | 899 | C157 |
| | Testosterone, Free (Dialysis) and Total (MS)[d] | 36170 | 1300 |
| | Sex Hormone Binding Globulin | 30740 | C326 |
| **Nonalcoholic fatty liver disease** | Comprehensive Metabolic Panel (CMP) with FIB-4 Index, Reflex to ELF[e-g] | 12736 | N/A[e,f] |
| | Complete Blood Count (CBC) | 6399 | C915 |
| **Chronic kidney disease** | Kidney Profile[h] | 39165 | 39165 |
| **Nutrition health** | Iron, TIBC, and Ferritin Panel[i] | 5616 | N/A[i] |
| | OmegaCheck® | 92701 | C302 |
| | Micronutrient, Coenzyme Q10 | 10178 | C295 |
| | Micronutrient, Vitamin A (Retinol) | 10179 | N/A |
| | Micronutrient, Vitamin B12 | 10194 | 927 |
| | Micronutrient, Vitamin C | 10181 | N/A |
| | Micronutrient, Selenium | 10217 | N/A |
| | Vitamin D, 25-Hydroxy | 91735 | C277 |

Panel and profile components may be ordered together or separately, which may vary for Quest and CHL customers:

a. **Metabolic Risk Panel (Quest & CHL: 39447)**: the following components may be ordered together: HbA1c, Insulin Resistance Panel with Score, Lipid Panel, and ApoB. See table above for test codes

b. **Insulin Resistance Panel with Score**: Insulin, Intact, LC/MS/MS (Quest: 93103; CHL: C146 for Insulin measured via immunoassay); C-Peptide (Quest: 372; CHL: C136)

c. **Lipid Panel**: Cholesterol Total (Quest: 91717; CHL: C117); Triglycerides (Quest: 91718; CHL: C119); HDL Cholesterol (Quest: 91719; CHL: C118)

d. **Testosterone, Free (Dialysis) and Total (MS)**: Testosterone, Total, MS (Quest & CHL: 15983)

e. **Comprehensive Metabolic Panel with FIB-4 Index, Reflex to ELF**: Liver Fibrosis, Fibrosis-4 (FIB-4) Index Panel (Quest & CHL: 30555); Enhanced Liver Fibrosis (ELF) Score (Quest & CHL: 10350); Comprehensive Metabolic Panel (Quest: 10231; CHL: C901); Glucose (Quest: 483; CHL: C101); Calcium (Quest: 303; CHL: C102); Sodium (Quest: 836; CHL: C103); Potassium (Quest: 733; CHL: C104); Carbon Dioxide (CO2) (Quest: 310; CHL: C105); Blood Urea Nitrogen (BUN) (Quest: 294; CHL: C107); Creatinine with eGFR (Quest: 375; CHL: C108); BUN/Creatinine Ratio (Quest: 296; CHL: 2968); Protein, Total (Quest: 754; CHL: C110); Albumin (Quest: 223; CHL: C109); Globulin; Albumin/Globulin Ratio; Alkaline Phosphatase (ALP) (Quest: 234; CHL: C111); Aspartate Aminotransferase (AST) (Quest: 822; CHL: C113); Alanine Aminotransferase (ALT) (Quest: 823; CHL: C112); Bilirubin, Total (Quest: 287; CHL: C114); Platelet Count (Quest: 723; CHL: 1380)

f. **Liver Fibrosis, Fibrosis-4 (FIB-4) Index Panel (Quest & CHL: 30555)**: Aspartate Aminotransferase (AST) (Quest: 822; CHL: C113); Alanine Aminotransferase (ALT) (Quest: 823; CHL: C112); Platelet Count (Quest: 723; CHL: 1380); FIB-4 Index

g. **Reflex testing** may be performed at an additional charge, if indicated by the initial test result

h. **Kidney Profile**: Albumin, Random Urine with Creatinine (Quest: 6517; CHL: C170); Creatinine with eGFR (Quest: 375; CHL: C108)

i. **Iron, TIBC, and Ferritin Panel**: Iron, Total and Total Iron Binding Capacity (Quest & CHL: 7573); Ferritin (Quest: 457; CHL: C140)

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## Who is suitable for testing?

- Individuals with **cardiometabolic conditions or risk factors**, such as overweight/obesity, prediabetes, or type II diabetes
- Individuals being **considered for, currently taking, or who have previously taken prescription weight loss medications**
- Individuals who want to **quantify the benefits of weight loss** from prescription weight loss medications and lifestyle changes

**Assess the effects of weight management on cardiometabolic risk.**
For more information, contact your cardiometabolic account executive.


References

1. Wilding JPH, Batterham RL, Davies M, et al. Weight regain and cardiometabolic effects after withdrawal of semaglutide: The STEP 1 trial extension. *Diabetes Obes Metab*. 2022;24(8):1553-1564. doi:10.1111/dom.14725 2. Jensen SBK, Blond MB, Sandsdal RM, et al. Healthy weight loss maintenance with exercise, GLP-1 receptor agonist, or both combined followed by one year without treatment: a post-treatment analysis of a randomised placebo-controlled trial. *eClinicalMedicine*. Published online February 2024:102475. doi:10.1016/j.eclinm.2024.102475 3. Perreault L, Davies M, Frias JP, et al. Changes in glucose metabolism and glycemic status with once-weekly subcutaneous semaglutide 2.4 mg among participants with prediabetes in the step program. *Diabetes Care*. 2022;45(10):2396-2405. doi:10.2337/dc21-1785 4. Hatoum IJ, Nelson JJ, Cook NR, et al. Dietary, lifestyle, and clinical predictors of lipoprotein-associated phospholipase A2 activity in individuals without coronary artery disease. *Am J Clin Nutr*. 2010;91(3):786-793. doi:10.3945/ajcn.2009.28870 5. Mach F, Baigent C, Catapano AL, et al. 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. *Eur Heart J.* 2020;41(1):111-188. doi:10.1093/eurheartj/ehz455 6. Svare A, Nilsen TIL, Bjøro T, et al. Serum TSH related to measures of body mass: longitudinal data from the HUNT Study, Norway: Serum TSH and body mass. *Clinical Endocrinology.* 2011;74(6):769-775. doi:10.1111/j.1365-2265.2011.04009.x 7. Brand JS, van der Tweel I, Grobbee DE, et al. Testosterone, sex hormone-binding globulin and the metabolic syndrome: a systematic review and meta-analysis of observational studies. *Int J Epidemiol*. 2011;40(1):189-207. doi: 10.1093/ije/dyq158 8. Yun HR, Kim H, Park JT, et al. Obesity, metabolic abnormality, and progression of ckd. *Am J Kidney Dis*. 2018;72(3):400-410. doi:10.1053/j.ajkd.2018.02.362 9. Cusi K, Isaacs S, Barb D, et al. American association of clinical endocrinology clinical practice guideline for the diagnosis and management of nonalcoholic fatty liver disease in primary care and endocrinology clinical settings: co-sponsored by the American Association for the Study of Liver Diseases (AASLD). *Endocr Pract*. 2022;28(5):528-562. doi:10.1016/j.eprac.2022.03.010 10. Poli VFS, Sanches RB, Moraes A dos S, et al. The excessive caloric intake and micronutrient deficiencies related to obesity after a long-term interdisciplinary therapy. *Nutrition*. 2017;38:113-119. doi:10.1016/j.nut.2017.01.012


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