Normal insulin with undetectable C-peptide concentrations indicates exogenous insulin administration in a bodybuilder (1). Insulin has anabolic functions that inhibit breakdown and promote nutrient storage (2). Pharmaceutical-grade insulin is available without prescription, providing an easy-to-obtain performance enhancer (3). Although a urinary testosterone/luteinizing hormone ratio ≥30 is a diagnostically sensitive marker for anabolic steroids (4), the combination of increased testosterone and undetectable luteinizing hormone in plasma suggests exogenous use. The prevalence of doping in recreational athletes is estimated at up to 15% (5), making this scenario possible in many hospitals.

Author Contributions: All authors confirmed they have contributed to the intellectual content of this paper and have met the following 3 requirements: (a) significant contributions to the conception and design, acquisition of data, or analysis and interpretation of data; (b) drafting or revising the article for intellectual content; and (c) final approval of the published article.

Authors’ Disclosures or Potential Conflicts of Interest: No authors declared any potential conflicts of interest.

References
3. Elkin SL, Brady S, Williams IP. Bodybuilders find it easy to obtain insulin to help them in training. BMJ 1997;314:1280.

Direct-to-Consumer Cardiac Screening Tests: User Beware
Christina M. Lockwood*

Cardiovascular disease (CVD) is the leading cause of death in the US. Given the rising number of individuals affected with CVD and its significant treatment costs, prevention through recognition of risk factors and attenuation of modifiable behaviors is essential for improving outcomes and controlling the healthcare cost burden. Accordingly, public health initiatives have increasingly focused on prevention strategies through promotion of cardiovascular health. Therefore, it is not surprising that private companies are attempting to capitalize on consumer concerns about undetected CVD through diagnostic test services.

Direct-to-consumer (DTC) cardiac screening tests provide cardiovascular risk estimates and frequently bypass medical professionals for interpretation and follow-up. Companies directly advertise to the public and offer services in corporate wellness programs and community-based health-screening events, or through their own facilities. A recent commentary in the Journal of the American Medical Association by Lovett and Liang highlights some ethical considerations and professional guidelines surrounding cardiovascular risk assessment in the context of DTC testing (1). The authors focus on carotid artery stenosis ultrasound, peripheral arterial disease ankle–brachial index, 1-time atrial fibrillation electrocardiogram (ECG), abdominal aortic aneurysm (AAA) ultrasound, hyperlipidemia, high-sensitivity C-reactive protein (hs-CRP), and coronary calcium scoring with computed tomography (CT) screenings. Each of the cardiac screening tests has been critically evaluated by the American College of
Cardiology Foundation (ACCF)/American Heart Association (AHA) and the US Preventive Services Task Force (USPSTF). For any test to be considered appropriate for screening and implemented into routine clinical practice, there are certain criteria that must be met. These include a low false-positive rate, high sensitivity for detecting early disease, and demonstrated ability to improve patient outcome without unnecessary risk from follow-up interventions.

Tests that are neither beneficial nor harmful include carotid artery stenosis ultrasound, peripheral arterial disease ankle–brachial index, atrial fibrillation, and AAA. Recommendations from the USPSTF advocate for AAA screening specifically in men between the ages of 65 and 75 years who have any history of smoking, and highlight the need for pretest consultation with a health professional. Conversely, women are advised against routine AAA screening, a recommendation based on results from a large, randomized controlled trial that showed no benefit. The ACCF/AHA also advise that a 1-time ECG for atrial fibrillation may be considered in all asymptomatic individuals, yet there are a high number of false-negative results when ECG is used as a screening modality for atrial fibrillation because the condition is frequently paroxysmal. Therefore, an isolated negative ECG interpretation may erroneously reassure the patient/consumer, ultimately resulting in avoidance of future routine health exams owing to a perceived sense of good health.

Screening for hs-CRP, hyperlipidemia, and coronary calcium scoring with CT may have benefit in select individuals. For example, ACCF/AHA advises that hs-CRP can be helpful for guiding statin therapy in men older than 50 years and women older than 60 years, but recommends against measurement in low- and high-risk asymptomatic adults. There is a clear evidence-based benefit for detection and treatment of hyperlipidemia and dyslipidemia in patients with known CVD and adults at high risk for CVD. The case for hyperlipidemia screening in asymptomatic young adults who are not at immediate risk for CVD is less established, and the USPSTF indicates that there is insufficient evidence to make a recommendation. Coronary calcium scoring with CT is also appropriate only in select individuals, in whom the benefit appears to be in screening only those individuals who have an intermediate Framingham risk score.

Deciding which, if any, screening tests are indicated for a given person must occur in the context of the individual’s family and personal history, as well as his/her current medical conditions. Furthermore, before administration of any test procedure, advance informed consent should be obtained. The complexity of accurately determining cardiovascular risk and the uncertainties in interpretation of a test result highlight the need for pre- and posttest counseling from a trained medical professional. Discussions have traditionally occurred in consultation with a clinician familiar with evidence-based recommendations as well as the patient’s medical history. Despite the clear requirement for medical consultation, there is currently no legislation requiring specific informed consent, counseling, or access to follow-up care.

The ACCF/AHA and the USPSTF guidelines illustrate that universal cardiovascular screening may pose more harm than benefit, leading to specific recommendations for testing in the appropriate populations. Furthermore, because these tests make claims about medical conditions they should be subject to oversight from regulatory agencies. DTC genetic testing has generated public and media interest and excitement, which has also stimulated intense policy debate. The US Food and Drug Administration released draft guidance on DTC genetic testing, which should eventually be expanded to all DTC testing. Regulatory agencies should mandate disclosure of testing limitations and pretest evaluation as components of informed consent. The potential public health benefits of cardiovascular screening support the continued presence of DTC testing. However, patient safety and public health risks pose challenges that necessitate increased awareness and responsibility.

Author Contributions: All authors confirmed they have contributed to the intellectual content of this paper and have met the following 3 requirements: (a) significant contributions to the conception and design, acquisition of data, or analysis and interpretation of data; (b) drafting or revising the article for intellectual content; and (c) final approval of the published article.

Authors’ Disclosures or Potential Conflicts of Interest: No authors declared any potential conflicts of interest.

Reference


DOI: 10.1373/clinchem.2012.182998