

Early Detection of Unsuspected Cardiovascular Risk in Asymptomatic Blood Donors

UOC Medicina Transfusionale Villa Sofia-Cervello | Palermo, Italy



Cardiovascular diseases (CVD) are the leading cause of death globally with most deaths due to heart attack or strokes, including in Italy, where cardiovascular diseases are also the leading cause of hospitalization.

Accordingly, detection of cardiac risk early in the disease progression has the potential to significantly improve patient outcomes.

Existing tools used for cardiac risk stratification, while useful, have limitations such as lack of risk correlation, potentially inaccurate risk prediction and suboptimal cutoffs, with heavy dependence on age correlation. Use of cardiac-specific biomarkers, such as cardiac troponin, used in conjunction with clinical and diagnostic findings, can provide additional information regarding cardiac risk, which may help overcome some of those limitations.

Cardiac troponin is a well-known biomarker for heart specificity, but is not yet used routinely in cardiac risk assessment, however, use of the marker can help enable early identification, categorization and prediction of future risk for cardiovascular events in healthy, asymptomatic people.

Recognizing the potential impact enhanced risk prediction could have on patient well-being, an interdisciplinary clinical care team at Villa Sofia Hospital of Palermo, consisting of cardiology, radiology and pathology, worked with the transfusion center on an initiative to improve early detection of unsuspected cardiovascular risk in asymptomatic blood donors.

The team implemented a cardiovascular disease prevention initiative, including the addition of high-sensitivity cardiac troponin I (hs-cTnI) as a cardiac-specific biomarker to identify and stratify cardiovascular risk—before the manifestation of symptoms.

The initiative engaged blood donors who were apparently healthy individuals without a history of, or symptoms of, CVD with no known risk factors regardless of age. The high-sensitivity troponin I was added to infectious disease assays already required for blood donors, as well as additional cardiac markers.

Villa Sofia Hospital reported that when used in conjunction with other diagnostic findings, values of hs-cTnI >6 ng/L for men and >4 ng/L for women identified donors at medium-high risk for future CVD events. Any initiative enrollee who received an assessment identifying medium or high risk for future CVD event was sent for a follow-up cardiology visit with further diagnostic investigation, including imaging as indicated.

Patients in the low-risk category also benefitted from this best practice protocol, as the transfusion center provides lifestyle advice and regular check-up recommendations to help them maintain health.

“It brings us great pleasure to know that we are giving our patients the best possible care,” said cardiologist Dr. Calogero Falletta. “In this case, the addition of high-sensitivity troponin I created a unique opportunity for risk stratification in healthy donors for early detection of medium-high risk in otherwise asymptomatic patients, identifying options for rapid investigation for those who may need it.”

The added value for patients who choose to donate blood has had a subsequent positive impact on donor engagement, thus helping to address a significant challenge for healthcare.

“It can be difficult to find blood donors,” said Dr. Patrizia Carta, CQB Biologist at UOC Medicina Transfusionale Villa Sofia, who coordinated the initiative. “Offering the added incentive of a more thorough risk evaluation driven by a cardiac-specific biomarker has become a delight for our donors and as such, has helped us more readily engage donors and generate more donations since implementation of the program.”

Through the initiative, which was built on a foundation of laboratory intelligence, 3% of blood donors (89 out of 3,340) who were asymptomatic—without any known risk factor of cardiovascular disease—were identified early as having medium-to-high risk for future adverse cardiovascular events. In one case, investigative results and clinical evaluation led to identification of a structural cardiomyopathy, enabling early treatment and reducing the risk of downstream negative outcomes.

In addition to early identification to help enable prevention of future cardiac events in medium- and high-risk blood donors, this initiative has positively impacted not just donor satisfaction, but has also positively affected clinicians who report increased satisfaction related to providing excellent care.

As CVD places a significant strain on the healthcare system over the lifetime of a patient, this initiative has generated an estimated savings of between €267,000 and €445,000 for the Sicily Healthcare Regional System.

For their significant outcomes and patient-centric initiative, the integrated clinical care team led by Dr. Carta at UOC Medicina was recognized for achievement by the UNIVANTS of Healthcare Excellence award program.

UNIFY for something greater. Learn more about the UNIVANTS of Healthcare Excellence award at UnivantsHCE.com