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## Health Professional News

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### **Launch of large study on vascular events in noncardiac surgery patients - prospective study to find previously undetected myocardial infarctions through troponin testing**

Roche Diagnostics has announced its support of the VISION (Vascular events In noncardiac Surgery patients cOhort evaluation) study, a large multicenter, international, prospective cohort trial evaluating major vascular events in 40,000 noncardiac surgery patients aged 45 or above to determine whether regular troponin testing after surgery might help healthcare professionals to detect myocardial infarctions they might have otherwise missed.

Each year an estimated 200 million adults undergo noncardiac surgery requiring hospital admission. Orthopedic, intraabdominal, and vascular surgeries are commonplace in modern medicine; advances in less invasive surgical techniques, anesthesiology and pain management have allowed substantial progress in treating disease and improving the quality of life of millions of patients, but these procedures are also associated with adverse vascular events. VISION will evaluate the incidence of major vascular events (i.e. vascular death, nonfatal myocardial infarction, nonfatal cardiac arrest, and nonfatal stroke at 30 days after surgery) in this patient population. The study will examine the proportion of patients with perioperative myocardial infarction that may have gone undetected if there were no monitoring of cardiac biomarkers. It will also evaluate the relationship between postoperative troponin T measurements and the 1-year risk of vascular death. Investigators will then develop a clinical model designed to predict major vascular events within 30 days after surgery and will determine if NT-proBNP (a marker of heart failure and cardiovascular risk) can enhance risk prediction prior to surgery.

"An enormous proportion of the population is having noncardiac surgery requiring hospital admission. Prior research<sup>(1, 2)</sup> suggests that about 1.5% of adults having this kind of surgery would suffer a major vascular event. But as more and more older patients with a higher burden of heart disease are undergoing these procedures, we believe the incidence of major vascular events is increasing," said VISION's principal investigator, Dr. P J Devereaux, of McMaster University Hospital, Hamilton, Ontario, Canada.

It is suspected that a substantial proportion of perioperative myocardial infarctions go undetected if cardiac biomarkers are not monitored after surgery. The majority of these myocardial infarctions occur during the first 2 days after surgery, when most patients receive pain medication that can mask cardiac symptoms. Existing research has primarily used CK-MB in the diagnosis of perioperative myocardial infarction, but this test is problematic in this clinical setting. "Fortunately, there is a relatively simple test with troponins, which may allow us to pick up these heart attacks," Dr. Devereaux confirms. "We believe that since troponin is specific to the heart, it's a much better biomarker than CK-MB."

"For the VISION study, we began with the hypothesis that if we measured troponins regularly, we might see major vascular events about 4% of the time, which is more than double previous estimates. Then we hypothesized that we could develop a simple clinical model that would be more accurate for predicting major vascular events after noncardiac surgery and that NT-proBNP would enhance risk prediction. We believe routinely measuring troponin after surgery would allow us to avoid overlooking potentially two thirds of the heart attacks that happen around the time of surgery, so that we don't have to rely on symptoms alone. We suspect that heart attacks that occur after surgery are

independent predictors of vascular deaths in the coming year, and that this information can inform clinical decision making. "The study is already recruiting well. "We figure that in another two years' time, recruitment of patients should reach the planned 40,000 mark," said Dr. Devereaux.

## **Summary**

Noncardiac surgery is associated with adverse vascular events. The VISION study will evaluate the incidence of major vascular events and develop a more reliable prediction model and assess the utility of NT-proBNP to predict major perioperative vascular complications. If the promising preliminary data from the VISION pilot study is confirmed, monitoring troponin T after noncardiac surgery may allow physicians to avoid overlooking perioperative myocardial infarctions, facilitating timely intervention and better risk prevention.

## **VISION Funding and Coordination**

The VISION Study is an investigator-initiated study that is funded by many peer-reviewed grants in several countries. Roche Diagnostics is supplying the Troponin T and NT-proBNP measurements to the VISION Study. The VISION Study is coordinated by the CLARITY Research Group at McMaster University in Hamilton, Ontario, Canada. VISION is also supported by the recently launched CANadian NETwork and Centre for Trials Internationally (CANNeCTIN), which is funded by the Canadian Institutes of Health Research (CIHR) and the Canadian Foundation for Innovation (CFI).

### References

- 1) Lee TH, Marcantonio ER, Mangione CM, et al. Derivation and prospective validation of a simple index for prediction of cardiac risk of major noncardiac surgery. *Circulation* 1999; 100(10):1043-9.
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