

Siemens blood gas analyser chosen for study of hypoxia levels on Mount Everest

Study reveals data supporting the development of new treatment strategies for critically ill patients

Doctors from University College London (UCL) have recently reported their findings of a pioneering expedition to examine the world's first measurements of blood oxygen levels in climbers near the summit of Everest.

The research team used a RAPIDLab® 348 Blood Gas Analyser from Siemens' blood gas portfolio. These are known for ease-of-use, superior data management and ability to meet needs of various testing volumes. The aim of the study was to investigate human adaptation to hypoxia and establish whether high altitude climbers have very low blood oxygen levels, which at sea-level would only be seen in patients close to death. The results were recently published in the New England Journal of Medicine (NEJM)*.

"We ran tests in a hypobaric chamber before the expedition to ascertain which blood gas analysers would be suitable for the intense conditions. The Siemens unit proved to be highly robust and delivered reliable and consistent results," said Dr. Mike Grocott, Caudwell Xtreme Everest expedition leader and a UCL Senior Lecturer in Critical Care Medicine.

The Caudwell Xtreme Everest team of climbing doctors made the measurements by taking blood from an artery in the leg when they were close to the summit of Mount Everest at 8,400 metres above sea-level. Blood collected from four team members was then carried back down the mountain to be analysed within two hours at a science laboratory set up at 6,400 metres.

The blood samples were analysed by the RAPIDLab unit to provide the partial pressures of arterial oxygen (PaO₂), carbon dioxide (PaCO₂) and the pH of the samples. The expedition found the average arterial oxygen level to be 3.28 kilopascals (kPa); the normal value in humans is 12-14 kPa and patients with a level below 8 kPa are considered critically ill. It is hoped that the findings will pave the way for the re-evaluation of treatment strategies in some long-term patients with similarly low levels of blood oxygen. By taking into account that some patients may have adapted to low levels of oxygen in the blood, ongoing research may lead to better treatments for patients with conditions such as cystic fibrosis, emphysema and septic shock.

“The beauty of the RAPIDLab machine is in its simplicity – it is easy to use and delivers accurate results quickly. We also received a high level of support from Siemens before and during the trip. For example, we were given training on how to take the unit apart and reconfigure it should we have needed onsite engineering, plus had a spare part delivered directly to us on Everest,” said Dr. Daniel Martin, UCL Research Fellow at The Centre for Altitude, Space and Extreme Environment Medicine.

“Siemens is delighted to have played a role in assisting scientific research and pushing the boundaries of medical knowledge,” said Hilda Crockett, Marketing Manager Point of Care at Siemens Healthcare Diagnostics. “The RAPIDLab unit is portable and robust. This made it ideal for the challenging conditions faced by the Everest team and we are looking forward to seeing the benefits this expedition will bring to the clinical field.”

The Siemens broad blood gas product portfolio provides rapid, reliable blood gas information across the entire spectrum of critical care settings - from central locations to multiple decentralised locations, even remote ones - all brought together by a connectivity solution for secure institution-wide communication. For more information, please visit www.siemens.co.uk/diagnostics.

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Notes to editors:

**‘Arterial Blood Gases and Oxygen Content in Climbers on Mount Everest’, The New England Journal of Medicine, January 8 2009. (N Engl J Med 2009;360:140-9.)

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Picture caption: Dr. Daniel Martin with the RAPIDLab 348 Blood Gas Analyser from Siemens Healthcare Diagnostics at 6,400 metres on Everest.

Picture credit to Caudwell Xtreme Everest



Picture caption: The Caudwell Xtreme Everest team at the tent in which blood sampling took place.

Picture credit to Caudwell Xtreme Everest

