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## Heat exchange performance of actual and upcoming adult oxygenators

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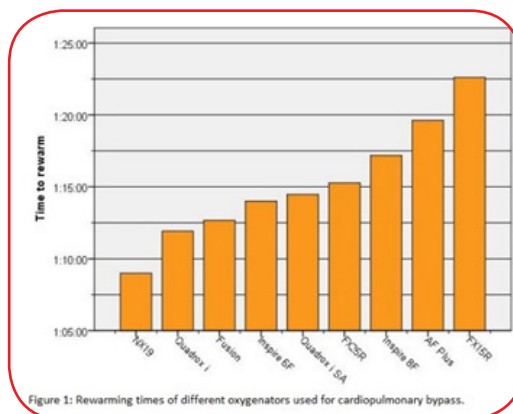
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**Statement of the Problem:** To standardize the tests for gas exchange capacity and heat exchange capacity of oxygenators used in a Cardio Pulmonary Bypass (CPB) circuit, the guidelines of the Association for the Advancement of Medical Instrumentation (AAMI) standards are used by manufacturers of CPB components (1, 2, 3, 4). Unfortunately, this standardized specification is not qualified at a consistent water flow rate (5). Actual Heater Cooler Units (HCU) use low pressure to achieve the water flow. Since the publication of mycobacterium chimaera prevention guidelines, different measures have been taken which results in a reduction of the water flow: location of the HCU outside the operating room with longer tubing as consequence, other type of tubing with a smaller internal diameter, connectors with shut-off valve. In combination with the difference in heater cooler unit water flow used by the different manufacturers, the benchmarking results might not be applicable in clinical setting. In order to get consistent results, the different oxygenators in this benchmark were tested under the same heater cooler conditions.

**Method:** All manufacturers on the Belgian market were contacted to provide a sample of their actual and/or upcoming oxygenator (s) with integrated arterial filter for testing purposes. The first part of the study was to quantify the water flow reduction through the heat exchange compartment of the oxygenator. The reference flow of the heater cooler unit was compared with the measured flow when the oxygenator was connected. The second part of the study was the time evaluation for rewarming 70 liters of tap water from 18 °C to 35 °C.

**Findings:** We observed a flow reduction between 0.97% and 61.17% and rewarming times between 1h 09' 00" and 1h 57' 12".

**Conclusion:** New guidelines to evaluate heat exchange performance of oxygenators have to be issued to get consistent, clinical reproducible benchmarks.



## Biography

Mathias Allegaert is a European Board Certified Clinical Perfusionist active in different Belgian hospitals. He has completed his post-graduation in Clinical Perfusionist at the University of Leuven. He has his expertise in cardiopulmonary bypass, VAD program, is ELSO-Coordinator for the University Hospital of Antwerp and Reference Person for testing perfusion components and techniques in animal lab settings at the University of Antwerp. He is Secretary and Webmaster of the BelSECT (Belgian Society of Extracorporeal Technology). In 2016 and 2018 he was part of the Steering Committee of the International Symposium on Perfusion organized by BelSECT.

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