PURPOSE & SUMMARY:
The objective was to measure the flow resistance of seven sizes of RAM Cannula.
The test procedure was based on the standard: BS EN 13544-2:2002+A1:2009
Respiratory therapy equipment – Part 2: Tubing and connectors, Appendix A.3
Method of test for resistance to gas flow of tubing, which sought to measure the
resistance of flow through 2,000 mm of tubing at 4 lpm, with a maximum allowable
flow resistance of 0.9 kPa/m (9.2 cmH2O). This test extended to test complete cannula
assemblies at multiple flow rates to fully characterize flow resistance vs. flow rate.

METHODS, PROCEDURES, AND STUDY ENDPOINTS:
Method of determining resistance to flow – Dry air is pumped at known flow rates
through the devices with air allowed to vent to atmosphere through the cannula
prongs. Resistance to flow is measured as the pressure difference between that
measured at the connector and atmospheric pressure.

Respiratory therapy equipment – Part 2: Tubing and connectors, Appendix A.3
Method of test for resistance to gas flow of tubing. This procedure was modified and
documented in ETP-018 Flow Test, where multiple flow rates are used to verify the
reading at 6 lpm. Further, the ISO standard is designed to test straight lengths of
tubing, this testing is conducted on cannula assemblies. Five samples of each part
number were tested. All samples were tested and data collected from 2 lpm to 15 lpm.

CONCLUSIONS:
Neotech Neonatal sizes: N4902 & N4903 and Neotech Child sizes: N4904, N4905,
and N4906 had between 0.083 – 0.597 kPa/m flow resistance at 4 lpm, below the
standard allowable flow resistance of 0.9 kPa/m.

Neotech Neonatal sizes: N4900 & N4901 had higher flow resistance with 1.025 and
1.137 kPa/m, respectively. These values were above the standard allowable flow
resistance of 0.9 kPa/m. A primary contributing factor for this is the standard is not
designed for a system test, rather gas flow through a straight tube as well, the ISO
standards for flow values during testing do not consider the size of the patient.

CALCULATING PRESSURE AT PRONG EXIT:

Source Pressure (at RAM connection) - Resistance = Pressure at prong exit
REFERENCES:
1. BS EN ISO 5367:2014 Anaesthetic and respiratory equipment, Breathing sets and connectors, Clause 5.5 Resistance to Flow.

2. Data was acquired through physical testing and verified through Computational Fluid Dynamics (CFD) analysis.

Scan QR code or visit http://www.neotechproducts.com/products/neotech-ram-cannula/ for more information about the RAM CANNULA

Visit http://www.zewskicorp.com for more information about product design and mechanical testing for medical devices.