Technical Note: DLP

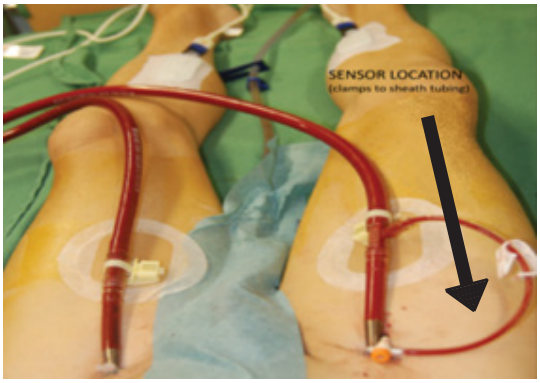
Transonic Flow Sensors in Distal Limb Perfusion

OVERVIEW

Complications of ECMO include distal limb ischemia (low flows) or compartment syndrome (high flows) either of which could result in limb amputation. The solution of choice is restoration of limb perfusion via 6-8 French distal perfusion catheters—target flow of 100 mL/min—per ELSO guidelines*. NIRS perfusion monitoring is also commonly recommended to detect tissue hypoxia and confirm flow restoration after distal perfusion catheterization, but NIRS can be prohibitively expensive. Since the only complete resolution to distal limb ischemia is rerouting flow at target volume, the clinical setting is necessarily lacking an imperative assessment; quantitative volume flow measurement on the distal perfusion catheter.

**Reference: ELSO Red Book, Chapter 4 'Cannulation', page 52*

SOLUTION



A non-invasive Transonic 2XL tubing Flowsensor can be easily clamped on to the distal perfusion cannula to confirm the delivery of adequate flow to the limb and to assist in avoiding ischemia.

FLOWSENSOR APPLICATION

Select the site for Flowsensor application. The Flowsensor may be applied on straight or curved tubing segments; ensure the Flowsensor is placed:

- away from any connections that may cause turbulent flows,
- below the highest elevation of the tubing where gas bubbles may lodge and interfere with the signal.
- in line with the direction of flow using the arrow on the sensor lid

Lubricate the tubing segment with an alcohol wipe and quickly insert the tubing into the Flowsensor's channel before the alcohol has dried; this will enable ultrasonic transmission. The tubing will fit snugly and will conform to the internal

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THE MEASURE OF BETTER RESULTS.

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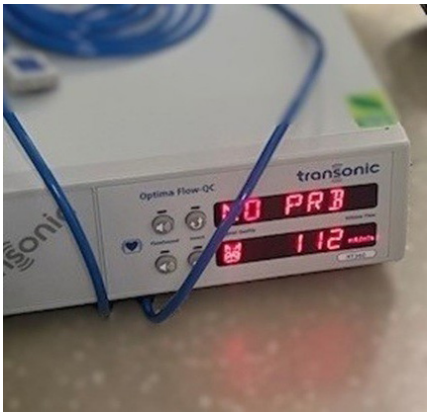
FLOWSENSOR APPLICATION, CONT.

profile of the sensor's rectangular window. Close the sensor lid and ensure adequate signal strength on the Flowmeter's display. The flow rate will display on the meter. Allow the flow reading to stabilize over 10-15 seconds before assessing the flow rate.



FLOWSENSOR USE

For complete information on Flowsensor use and application, refer to the manual; the information below highlights important considerations.

FLOWSENSOR CALIBRATION

- Always ensure the Flowsensor has been calibrated for the particular tubing type, temperature, and fluid. Flowsensor calibration can be found on the Calibration Certificate, or by contacting Transonic customer support with the Flowsensor serial number. Each transit-time flow Flowsensor is precisely calibrated to the tubing, temperature, and fluid to ensure the greatest accuracy; a correctly calibrated Flowsensor must be used for each

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FLOWSENSOR CALIBRATION, CONT.

tubing type for accurate measurement.

- It is recommended that each institution builds their own internal process for identifying Flowsensor tubing & calibration.

FLOWSENSOR INSPECTION

- Always inspect the Flowsensor to ensure head, cable and connector integrity (no cracks in the hinge, wear on the cable, etc.)
- Ensure the entire Flowsensor is clean and dry before use.

FLOWSENSOR CLEANING

- The Flowsensor head should be cleaned before and after every use.
- The Flowsensor head can be rinsed with clear water and cleaned with a soft brush. Flowsensors may be disinfected using 70% alcohol or the disinfectant solutions listed in the manual.
- Do not submerge the connector or allow liquid to contact the connector pins; connectors must remain dry. The outside of the connector can be wiped with the disinfecting solutions noted in the manual.

FLOWSENSOR BEST PRACTICES

- Tubing should fit very tightly within the Flowsensor window so that the Flowsensor will compresse the tubing slightly, conforming it to the Flowsensor's rectangular internal profile, which is desirable for accurate measurement.
- If the tubing becomes permanently reshaped by application of the Flowsensor, move the Flowsensor to a new location.
- To troubleshoot low signal strength, remove the tubing from the Flowsensor, wipe tubing with alcohol wipes again and reinsert tubing.

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