HEMODIALYSIS BUYER'S GUIDE

HD03

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THE MEASURE OF BETTER RESULTS.

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The well-being of your patients depends on a healthy vascular access, unfortunately, a host of unseen problems can loom. It all takes place beyond human sight, so how better to keep tabs on your patient's access than consistent, accurate, cutting-edge vascular surveillance?

About the Transonic HD03

The Transonic® HD03 Monitor uses Ultrasound Dilution Technology (UDT) and Transit Time Flow Measurement (TTFM) to alert you to patients at risk of underdialysis, stenosis formation, and potential risk of high-output cardic failure. With the HD03 surveillance program, patients experience less access dysfunction, less discomfort, and have fewer hospitalizations and missed dialysis treatments.

This buyer's guide offers you an in-depth comparison between the HD03 Monitor and similar products from Fresenius, Vasc-Alert and NephroFlow. It also will show you how the HD03 can help your clinic save time, effort and lives while cutting costs.

4 Benefits of Using the HD03

Quick and accurate results

Results take less than 10 minutes for a complete screening. The HD03 has pictorial directions on the intuitive and user-friendly touch screen to prompt you to check the access lines and will remind you to set flow levels.

Risk assessment

Safe resolution of a medical issue usually revolves around proper evaluation. The Transonic HD03 can be used to immediately evaluate a change in bruit or thrill to confirm the Access Flow and percentage of Recirculation. It can also be used to check the Delivered Flow and percentage of Recirculation in a hemodialysis catheter that is not achieving the prescribed blood flow rate or is experiencing frequent machine alarms. This use empowers the dialysis care team to fully evaluate the vascular access. Knowledge is power, and power control. The HD03 is your right hand in responsible patient care.

Portability

Thanks to a rechargeable battery, the HD03 does not need to be connected to an external power source. It can be easily moved from patient to patient.

The HD03 Monitor can help your clinic save time, money and even patient lives. Have additional questions about it? Debbie Brouwer-Maier, RN, our Product Manager as well as an experienced Vascular Access Coordinator, is ready to get you the information you need.

Set up a time to talk with Debbie today

HD03 vs. Vasc-Alert

Vasc-Alert uses a venous access pressure ratio test (VAPRT) to monitor for access failure. Pressure is used as a surrogate for flow and does not measure flow directly. A computer-based algorithm analyzes venous line pressure, blood pump flow and patient blood pressure gleaned from the hemodialysis machine. The hemodialysis machine first records the pressure inside the venous drip chamber (VDP). These VDP measurements are used to monitor venous access pressure (VAP). The venous access pressure ratio (VAPR) is then calculated by dividing the VAP by the mean arterial pressure (MAP).

When the ratio is greater than 0.55, the venous access pressure ratio is considered high. Once Vasc-Alert records three consecutive high readings, the system issues a warning for the patient. The system is web-based and requires the nephrologist to log in for alerts or data retrieval. While it seems beneficial to directly report results to the nephrologist, it eliminates access measurement visibility by the Dialysis Care Team. The Dialysis Care Team is the staff responsible for the daily care of the patient, and is integral in maintaining the access and often need to be involved in understanding the measurement trends.

BENEFITS	VASC-ALERT	TRANSONIC
Technology	Venous Access Pressure Ratio (VAPR)	Ultrasound Dilution
Accuracy	Inaccurate. No direct correlation between venous pressure and blood flow in vascular accesses. Produces false positives	Highly accurate and reproducible
Value	multiple studies report ineffectiveness of pressure in detecting stenosis	Recognized Gold Standard supported by > 300 publications
Measures Adequacy of Dialysis Treatment	✗	✓
Measures Catheter Recirculation to Optimize Dialysis Treatment	✗	✓
Stenosis Detection	✗	✓

HD03 vs. Fresenius Online Clearance

Fresenius' Online Clearance (OLC) monitor uses conductivity sensors to measure the pre- and post-dialyzer changes in a dialysate's concentration to determine the effective dialyzer urea clearance. OLC is then used as a surrogate for estimating the access flow in an AVF or AVG. It cannot be used with catheters.

Compared to Transonic, Fresenius' OLC has:

- An estimated access flow measurement
- Indirect recirculation measurement

Also, further device limitations are:

- No measurement for flows > 2000mL/min
- No way to identify patients at risk of STEAL syndrome or cardiac insufficiency

FEATURE	FRESENIUS	TRANSONIC
Monitoring Capability	Vascular access flow derived from online clearance of sodium in dialysate. Values questionable. Range is limited to 2000mL/min as maximum flow measurement. >2000mL/min is displayed and a manual math calculation is required to determine if the access flow is truly >2000 mL/min or is low and the measurement is an indication of recirculation with an access flow less than the blood pump speed.	Vascular Access Flow from 100 mL/min to 4L/min for AV graft & fistula surveillance and dialysis adequacy (delivered blood flow; recirculation) 0% Recirculation capability.
Technology	Conductance technology that measures sodium concentration of dialysate; limited publications	Precise ultrasound dilution technology – measures change in protein concentration after injection of saline. > 400 publications.
Time Req. for Measurement	25 - 34 minutes.	Less than 10 minutes for complete screening

HD03 vs. NephroFlow

Are the Measurements Interchangeable?

Nipro D. Med's NephroFlow uses ultrasound dilution technology to measure recirculation and access flow. Since the HD03 and NephroFlow use ultrasound dilution technology and both reference Transonic's historical reference papers, one can ask if the measurements from the two monitors are interchangeable. In fact, the HD03 technology was copied by NephroFlow during D. Med's time as a Transonic HD03 distributor so the measurements should be very similar. However, in a paper by Cornelis J. Drost and Nikolai Krivitski, D.Sc., Ph.D they found that the claims of device equality presented by Holger Böckler that compares Transonic's HD03 Monitor to the NephroFlow to be flawed and the measurements to not be interchangeable. The Transonic spec of +/- 15% accuracy which has been independently validated compared to this published data from the NephroFlow showing a +/- 40% accuracy shows how the NephroFlow measurement could lead to diagnostic mistakes. Böckler did not show evidence the NephroFlow is a safe and effective substitute for Transonic's HD03.

Problems with Böckler's claim about the NephroFlow's accuracy include the following points:

- The comparison includes a Bland Altman plot that obscures the large variability between the two devices
- No statistical data analysis is provided
- Böckler only provides a qualitative analysis to support his conclusion

Using the NephroFlow interchangeably with the HD03 could:

- Lead to mistakes in diagnosis, both false positives where NephroFlow could lead to studies and treatments in patients who may not need them
- Provide false negatives where NephroFlow would not flag conditions in patients who are indicated for further studies and treatments. Either instance is suboptimal treatment and could cause harm to the patient

Transonic staff observed during a side-by-side evaluation that the NephroFlow could not provide measurements in unstable conditions.

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Transonic Systems Inc. is a global manufacturer of innovative biomedical measurement equipment. Founded in 1983, Transonic sells "gold standard" transit-time ultrasound Flowmeters and Monitors for surgical, hemodialysis, pediatric critical care, perfusion, interventional radiology and research applications. Transonic® also provides pressure and pressure volume systems, laser Doppler Flowmeters and telemetry systems.

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