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## Nurse led AVF monitoring using a new device Bluedop™

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We have re-visited the use of Static Pressure Ratio developed by Anatole Besarab et al. Arterial needle pressure is monitored with dialysis pump switched off. Pressure will rise to abnormal levels in the presence of a blood flow limiting venous stenosis. The method is not widely used, possibly due to difficulties in compensating for hydrostatic height difference and the need to interrupt the dialysis routine. The Bluedop™ device is intended to measure mean blood pressure non-invasively, without the use of needles, is unaffected by pump speed and can be applied at any suitable part of the AVF without any requirement for hydrostatic height correction. We have named our new parameter Non Invasive Static Pressure Ratio SPRn and have studied its role in early detection of failing AVF. A Doppler Ultrasound probe is used to sample blood flow waveforms from the distal brachial artery. The same protocol is used for radio-cephalic and brachio-cephalic AVF. The range of SPRn values  $\pm 2SD$  in normally functioning AVF was established in 479 dialysis patients. Following this 340 prospective measurements were made on 73 patients over a 10 week period. SPRn in 27 AVF rose above the +2SD normal limit. Of these, 23 had 60% or greater focal stenosis shown on duplex scanning, 2 were maturing AVF and 2 had no significant stenosis. An earlier retrospective review of clinically identified failing AVF in the same unit showed that nearly half were found to be normal in duplex studies. This new Bluedop™ test has the potential to improve the care pathway for renal dialysis patients.

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