

VASCULAR ACCESS CATHETER *Tips*

SHARING INFORMATION TO IMPROVE LONG-TERM VASCULAR ACCESS

CATHETER BASICS - MATERIALS COMPARISON

Characteristics	Silicone	PolyUrethane	PolyEthylene	Teflon/PTFE
ID Ratio	Thicker Wall/ID Smaller	Thinner Wall/ID Larger	Thicker Wall	Thicker Wall
Biocompatibility	Excellent	Excellent	Fair	Fair
Compatibility	Possible Reactivity	Possible Reactivity	Inert	Possible Reactivity
Heat Sensitivity	Excellent	Poor	Excellent	Excellent
Stiffness	Soft	Softens in body	Stiffer	Stiff
Ease of Insertion	More Difficult	Moderately Easy	Easy	Easy
Ease of Modifying	Easy	Fair	Poor	Difficult
Memory	Excellent	Poor	Poor	Poor
Tensile Strength	Fair	Excellent	Excellent	Excellent
Flexibility	Excellent	Moderate	Poor-Rigid	Poor-Rigid
Coefficient of Friction	Fair	Excellent	Good	Excellent
Coating Option	n/a	Hydromer	n/a	n/a
Sterilization Method	Autoclave or EtO	EtO	Autoclave or EtO	Autoclave or EtO

Catheter Size / Measurement System(s) . . . there are 2 systems by which catheters are measured; French and Gauge.

Which should you use? It is more common to use the French scale for catheters and the Gauge scale for needles. It is important to exercise caution when considering catheter/needle and guidewire combinations to not mix up the measuring systems.

In the **French measurement scale**, each unit is equivalent to 0.33mm in outer diameter. For example, a 5Fr catheter will have an OD of 1.65mm (5x0.33). French size and OD are directly related, **the smaller the French size, the smaller the OD.**

Gauges are old measures of thickness. They originated in the British iron wire industry at a time when there was no universal unit of thickness. It was later adopted for hollow needles and catheters. It measures how many wires can be placed side by side in a given space and varies inversely with outside diameter, **the higher the gauge size, the smaller the outside diameter.** A 20 Ga needle for example is larger than a 25 Ga needle. Yes, a lower gauge indicates a bigger/thicker needle.

Table showing the French-Gauge Conversion of Tubing

French	Gauge	Inner Diameter	Outer Diameter
1	27	0.007"/0.2mm	0.16"/0.4mm
2	23	0.012"/0.3mm	0.25"/0.6mm
3	20	0.020"/0.5mm	0.37"/0.9mm
4	18	0.025"/0.6mm	0.47"/1.2mm
5	16	0.030"/0.7mm	0.65"/1.7mm
7	13	0.050"/1.3mm	0.95"/2.4mm
9	11	0.062"/1.6mm	0.125"/3.2mm

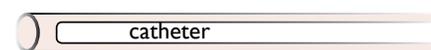
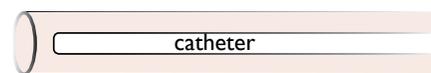
Catheter Size . . . what's best?



...it depends on the vessel size
as to how it fits into the vessel!

In smaller diameter vessel, the catheter takes up a larger percentage of the area compared with the space occupied by the catheter in the larger vessel. The catheter in the larger vessel is less likely to result in stasis of flow and is the same catheter in the smaller vessel. Remember, **Stasis of Flow** is one of the three broad categories of factors in Virchow's Triad that are thought to contribute to thrombosis.

In addition, catheters are much more likely to have direct contact with the intima in a smaller caliber vessel than in a larger vessel causing damage to the tunica intima. Remember, a **healthy endothelium** is your best defense against thrombosis.



The same size catheter in different sized vessels

Catheter Size...Bigger is Not always Better!!!

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