The start of a new year has always been a time for looking back to the past, and more importantly, forward to the coming year. It’s a time to reflect on the changes we want (or need) to make and the resolve to follow through on those changes.

Although I’m not big on New Year’s resolutions, I’ve always loved how January nudges us toward improvements and encourages fresh starts. The month, after all, is named for the two-faced Roman god, Janus, who is always depicted looking backwards and forwards; one face looking to the year departed and the other forward to the new and uncertain year ahead. Many of us view the start of a new year as a chance to reflect, to rearrange our priorities, and to become better organized and more productive. What about you?

If one of your New Year’s resolutions is to be more productive; to spend your valuable time doing what you do best, surgery, and not making catheters, give me a call.

Our 30 years of experience tells us that, often times, our standard catheter designs may not suit your needs. Thus, we have always offered custom catheters. We can design and manufacture custom catheters for all species, from mice to non-human primates, in a variety of materials and tubing diameters, with a wide choice of modifications, distal tip configurations, luers, connectors, and plugs. If you would like to make any modifications to an existing design or would like a unique custom design, we will provide prototypes and samples at no charge - we can help.

Cheers & best wishes for a happy, healthy & peaceful 2012. Pam

With a New Year comes new ideas, hope, enthusiasm and our new catalog. We have an ambitious release of new products planned for 2012 and are excited to share them with you - here is just a taste to wet your appetites.

A new range of ClearPorts in polysulfone, a brand new port; the SportPort, In-Line ports in titanium or polysulfone, a locking loop catheter, a new 2.5 French polyurethane catheter, and a tapered catheter.

Not to be left out, Norfolk Vet Products, our clinical veterinary division in collaboration with veterinarians at leading veterinary hospitals will begin offering an artificial urethral sphincter device as well as a subcutaneous ureteral bypass system.

on our bookshelf

Graham ML. et. al. (2011)

Aubert I. et. al. (2011)

Brooks A. et. al. (2011)

Berent A. et. al. (2011)

Ettrup KS. et. al. (2011)
Basic surgical techniques in the Göttingen Minipig: Intubation, bladder catheterization, femoral vessel catheterization and transcardial perfusion. JOVE 2011

Graham ML. et. al. (2010)
Every so often, and the start of a New Year seems an appropriate time, it is necessary to review the different vascular access ports that we offer because a question we continue to hear is...

**Which port should I choose? Which port will last the longest?**

For those of you unfamiliar with the Vascular-Access-Port, they are devices that consist of a port chamber fitted with a self-sealing septum that is connected to a silicone or polyurethane catheter. No part of the device exits the skin so there is little concern about the animal disturbing the device. This eliminates the need for a jacket or other protective apparatus and reduces the risks of infection. Infection risks associated with ports are considerably lower than with external catheters.

**Which is the best port for my study?**

Not all Vascular Access Ports are of the same material, design or for the same application. Access Technologies gives you all the options in port material and design you need: from the smallest port available for mice (Penny MousePort), to ports for large animals (ClearPort) such as swine and sheep, to ports that solve specific problems (GridLock & In-Line) such as needle walk-out.

**HINTS**

**helpful**

for choosing a port

A vascular access port is simply a biocompatible device that provides access to the venous system or an organ. It will not degrade over time and is functional in-vivo for as many punctures as the septum will accept: between 350 & 1500 depending on the model and gauge of the needle used.

A feature of a port that does affect its performance is the design of the port chamber. Flow dynamics are key and are impacted by the design of the chamber. This was shown when Millie Lawson R.N. (1986) looked at explanted ‘problem ports’ from oncology patients to investigate why infusion was possible but not aspiration in these ports. After septum removal, deposits of blood products/sludge was seen in the corners, or dead space of the chamber. It was likely that the tip of the Huber needle was positioned within this build-up of ‘sludge’ and that these deposits acted as a ball valve when aspiration was attempted. A paper by Stevens (2000) showed that sludge build-up in a port with a round chamber was less likely to occur due to more complete flushing that occurs compared with a cylindrical chamber.

Not all ports are created equal; there is science behind the technology!

**To make it easier for you to choose the most appropriate port, our new catalog contains a VAP cheat sheet that includes our existing ports as well as those that will be released this year.**

**THE ROLE OF THE LOCK SOLUTION**

**changing lock solutions**

The use of a dilute Heparin solution has been the most common method of “locking” a catheter since the early 1970’s.

*Did you know it was physicians at the Cleveland Clinic, caring for cystic fibrosis patients that needed repeated doses of IV antibiotics, that developed the original concept of the heparin lock?*

Numerous studies over the past 30 years have shown that although it appears that an anticoagulant is needed, there continues to be a lack of answers to the questions of heparin concentration, volume, and frequency of flushing. Catheter flushing techniques may be equally as important as the solution itself.

Recent concerns with catheter performance, biofilm development, high infection rates, drug incompatibilities, and heparin itself spurred the search for a substitute for heparin in lock solutions. Shanks et. al. (*Heparin Stimulates Staphylococcus aureus Biofilm Formation*). Infect Immun 2005; 73:4596-4606) reported that heparin actually stimulates the growth of biofilm.

TCS/Taurolidine-Citrate, a heparin replacement solution, eliminates many of the potentially dangerous complications associated with heparin. The sodium citrate component acts as an anticoagulant by binding to calcium and removing it from the coagulation cascade. Taurolidine, a derivative of the amino acid taurine, inhibits and kills a wide range of organisms. (Simon A. et. al. BMC Infect Dis. 2008;8:102).

Although the literature on choosing a lock solution is confusing, what is clear is...

**the chosen locking solution should keep the catheter lumen patent, minimize biofilm formation, reduce the incidence of CRBSI, produce minimal or no side effects, and be cost effective and easy to use.**

Perhaps it’s time to consider changing to Taurolidine-Citrate/TCS
**Why is the catheter tip location important?**
The preferred location for the catheter tip is in the vena cava, above its junction with the right atrium. This tip location allows the catheter to float freely within the vessel lumen and lie parallel to the vessel wall, resulting in a considerable reduction in thrombotic complications. It is most ideal that the catheter lie in the center of the blood flow parallel to the vein wall, and this is more likely to occur in a larger, straighter vessel. The curvatures of smaller vessels leads to impingement of the catheter tip on the vessel wall, causing mechanical irritation. Damage to the endothelium is known to cause clotting when the blood contacts the basement membrane under the endothelium.

**Why choose a catheter with a smaller diameter?**
It has been reported that a catheter of larger outer diameter, relative to the inner diameter of the vein in which it is placed, can cause irritation, inflammation, stenosis, thrombosis and occlusion. *It simply takes up too much space in the vessel as does this large fish in the small bowl.* We hypothesize that when a catheter is over 3% of the total area of the vessel, occlusion due to blood stasis is more likely to occur. Mechanical parameters relating to blood flow are as important as are vessel trauma and hypocoagulability.

**Why use a larger syringe (10ml) for flushing?**
Syringe size has a significant impact on the risk of catheter damage. The basic principle is that smaller syringes generate higher internal pressures than larger syringes when flushing a VAP. For example, exerting normal pressure on a 10ml syringe produces 11psi, while a 3ml syringe produces 19psi and a 1ml syringe produces >100psi. Proper flushing depends on flow and volume, and not necessarily on pressure.

**What is a vascular occluder?**
They are inflatable silicone cuffs that provide mechanical obstruction for reliable constriction and occlusion of blood vessels without traction on the vessel or displacement of surrounding tissue. The degree of resistance to flow is adjusted using a vascular access port that connects to the actuating tubing of the occluder for a completely subcutaneous system. *In clinical veterinary medicine they are very successfully used as an artificial urethral sphincter for the long-term relief of incontinence in dogs and cats.*

**Why a hollow trocar instead of forceps?**
When you use a hollow stainless steel trocar to tunnel from the port site to the venotomy rather than using a forceps you keep the catheter very ‘clean’ - free of any connective tissue particles. And, starting with a ‘clean catheter’ is a plus. Not to mention the mechanical damage the forceps can do!

**Here’s a safety tip for you?**
With the safety injection cap/site you can use a blunt needle rather than a hypodermic needle (avoids needle sticks) to access our ClearPorts. This injection cap has a slit in the rubber for the needle insertion which closes upon removal of the blunt needle...ensuring a closed system.

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**late arrivals on our bookshelf**

Zwijnenberg RJ. et. al. (2011)
*Evaluation of oscillometric and vascular access port blood pressure measurement techniques versus implanted telemetry in anesthetized cats.* *AJVR* 72(8):1015-21.

Niyyar VD. (2011)

Graham ML. (2011)
*Working on the 3R’s: Utilization of refinement to enhance the value of translational research in non-human primates.* *It is an informative thesis text that includes new methods for vascular access, animal modeling in translational research and diabetes modeling in non-human primates.*

*If you are interested in reading this extraordinary text, please give me a call and I would be happy to send you a copy.*
CUSTOM CATHETERS

let our catheters offer peace of mind for your long-term studies

still spending VALUABLE TIME making your own CATHETERS?

let us manufacture your CATHETERS after all it is WHAT WE DO best

homemade motorcycle from wooden planks

professionally made consistent from bike to bike

CONSISTENT QUALITY CATHETERS from STUDY TO STUDY -

Thirty years of catheter construction has given us the experience and expertise to design and manufacture dependable, consistent, superior quality custom catheters and to offer you excellent technical and customer support. If you have a design you are happy with, let us do the manufacturing. It is what we specialize in.

Rather than constructing catheters, why not spend your valuable time doing what you do best, research...and

Let us do for you what we do best... make high quality catheters that are consistent from order to order.

Our promise. We will deliver what you want when you need it - all at a reasonable cost.

Samples & prototypes are always available in a timely manner & at no charge - call 847-674-7131 to get started

If you would like to receive a copy of our new 30th Year Anniversary Catalog, please give me a call - 847-674-7131 or email me if you prefer at pwolf@norfolkmedical.com.