

## CORRESPONDENCE

Anesthesiology  
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*In Reply:*—We agree with the authors' comments that "... protective sheaths are a known source for damage to the (catheter) balloon . . ." and that "their potential for damaging the pulmonary artery catheter coating must be recognized."

Baxter salutes the authors' efforts to raise awareness of the potential for certain introducer systems with contamination shields to cause damage to a pulmonary artery catheter's thermal filament shield, balloon, or both.

Product literature for the Arrow Twist Lock Cath-Gard Catheter Contamination Shield Model ST-09875 (80 cm) includes precautionary statements relating to possible balloon flotation catheters. The contamination shield has a firm, plastic feed tube running through the center of the shield, which supplies a path for the catheter to be passed through. Given the possibility that contact between the catheter and edges of the feed tube may disrupt the thermal filament sheath on the catheter, we agree with the authors' suggestion to visually inspect the integrity of the catheter after it has been passed through a contamination shield, before insertion into the introducer.

We also wish to address the authors' comments that the thermal filament on a continuous cardiac output catheter is "an area less flexible and slightly thicker than the remaining part of the pulmonary artery catheter . . ." With respect to Baxter's Swan-Ganz Continuous Cardiac Output/Oximetry/Venous Infusion Port (CCO/SvO<sub>2</sub>/VIP) Thermodilution Catheters, the diameter at the thermal filament area is equal to or slightly smaller than the rest of the catheter and shows comparable flexibility characteristics at all temperatures.

Based on our experience and as indicated in the relevant portions

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*In Reply:*—In the case described in this letter to the editor, it was fortunate to have observant and knowledgeable professionals performing the procedure. Arrow International agrees with the conclusion of the practitioners: care must be used when handling and inserting all catheters through an introducer system.

The Arrow TwistLock Cath-Gard catheter contamination shield is designed to pass an 8-French catheter without resistance. Additionally, to accommodate variations in catheter outside diameters, which can vary among catheter manufacturers, the minimum inside diameter of the Arrow Cath-Gard is intentionally larger than 8 French. Arrow was not informed of this incident and unfortunately did not have the opportunity to inspect the sample of the catheter and introducer involved. Therefore, it is difficult to draw further conclusions without a physical inspection of the components. We encourage

of the product literature provided by Baxter and Arrow, certain steps should be taken to minimize the possibility of damage to pulmonary artery catheters that are inserted through contamination shields:

1. Prepare the catheter for insertion per the manufacturer's instructions.
2. Make sure both valves on the Arrow contamination shield at the proximal and distal hubs are in the widest open position.
3. Wet the catheter balloon and thermal filament sheath with flush solution to facilitate passage through the valves of the contamination shield.
4. Insert the catheter into the compressed shield and place the shield over the catheter so the distal flanged hub is beyond the 50-cm mark on the catheter.
5. Inspect the catheter balloon and thermal filament sheath (if a continuous cardiac output catheter) for damage.
6. If the catheter is not damaged, insert the catheter at least beyond the thermal filament into the introducer before moving the contamination shield, and then complete the catheter insertion following the manufacturer's instructions.
7. Position, expand, attach, lock, and maintain the sheath as outlined in the manufacturer's instructions.

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inspection of the catheter and introducer before and during use. The product instructions for both the catheter and the introducer system recommend ways for reducing the potential for catheter complications and for optimizing product performance. Should a problem occur, Arrow encourages prompt and accurate reporting of the incident to the manufacturer so that the cause may be investigated; this includes retaining and returning the involved product for analysis.

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