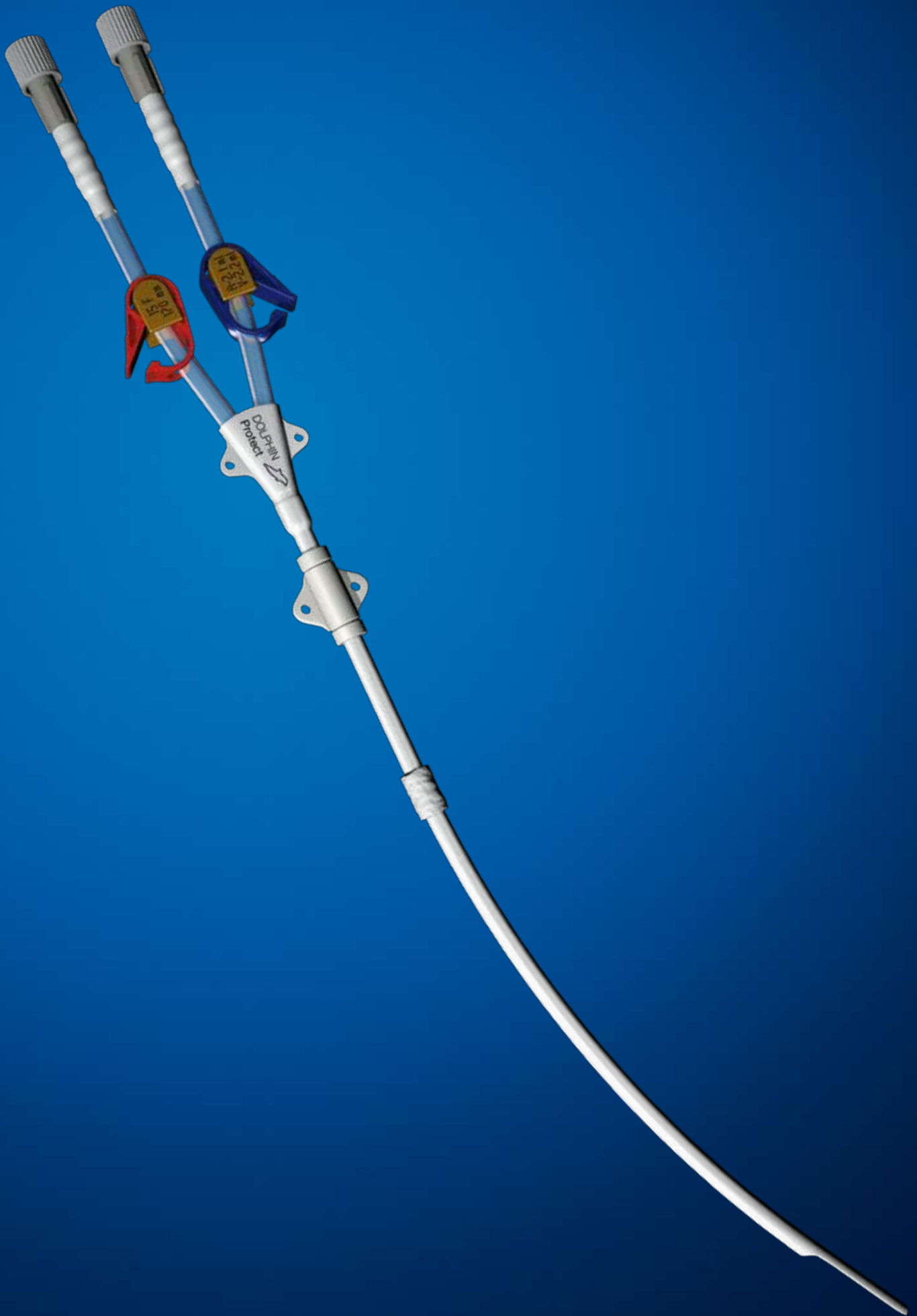


The freedom of  
perfect protection



EverFlow Dolphin Protect™  
hemodialysis catheter

 **GAMBRO®**



# Multifunctional surface for perfect protection

The EverFlow Dolphin Protect catheter has been prepared using a reactive copolymer coating technology with a microdomain surface structure that mimics the natural surface of cells or proteins. Hydrophilic and hydrophobic domains in nanometer range fail to interact with domains of cell membranes or proteins.<sup>1</sup>

This unique surface coating reduces blood activation, helps prevent the catheter's biodegradation<sup>2</sup> and provides significantly higher blood flow rates at the same time.

Integrating the Bismuth additive into the catheter's surface coating makes it the first coating system on the market to provide antimicrobial protection without the release of active agents.<sup>3</sup>

# Optimized flow for maximum performance

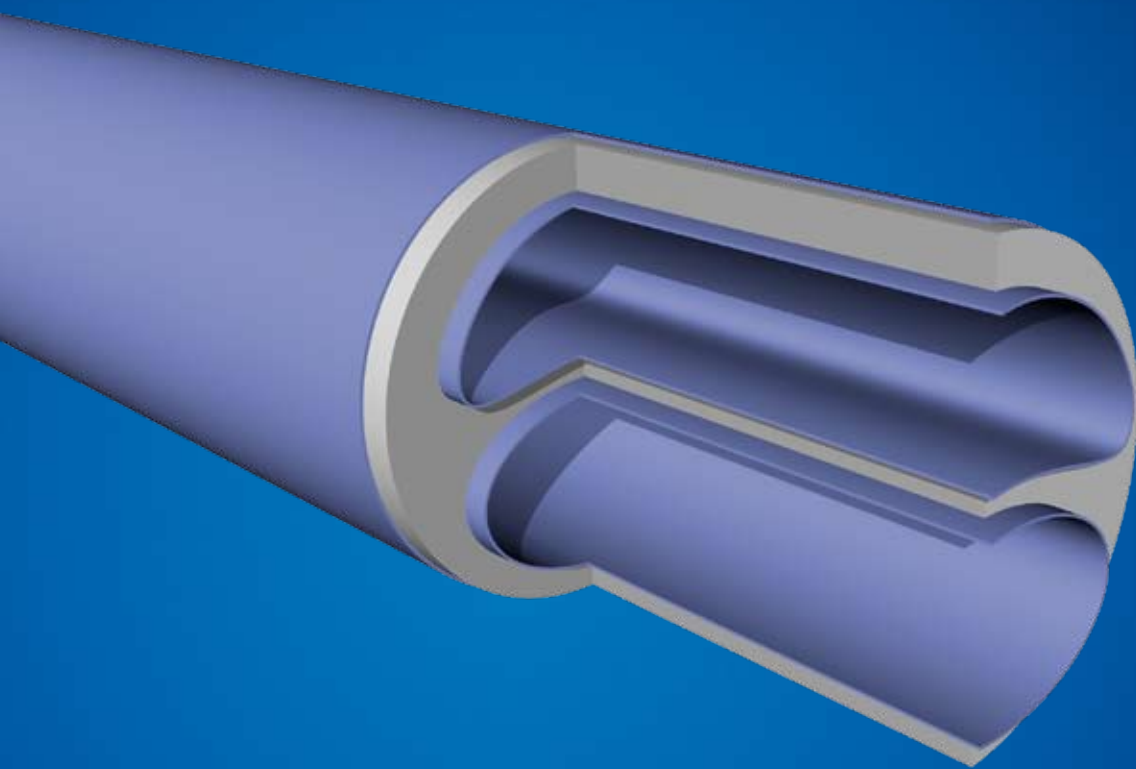
With its optimized lumen design, the EverFlow Dolphin Protect catheter allows best possible flow rates. The sidehole free tip design minimizes the clotting risk and prevents catheter suction to the vessel wall. Your benefits: prolonged catheterization time and better, safer performance throughout the entire treatment.

# Better treatment quality for your patients

EverFlow Dolphin Protect catheters offer improved conditions for long-term patient care, the result of a carefully selected combination of design and materials. Placement flexibility and safety are increased thanks to the softness of the material which enables tortuous vessel routes to the right atrium, and the smoothness of the material which minimizes vessel trauma and optimizes blood flow. The correct catheter position can be easily checked after implantation thanks to the catheter's MRI and X-ray safety. To securely keep the correct position until final ingrowth of the cuff, EverFlow Dolphin Protect catheters offer a second suture wing that can be positioned flexibly.

# Benefit from fewer catheter changes and thus reduced costs

Unique catheter surface for perfect protection



## The clinical proof.\* 4, 5

- Significantly prolonged catheter survival
- Significantly more treatments per catheter
- Higher efficiency with lower dysfunction rate
- Reduced clotting risk
- Reduced bacterial colonization

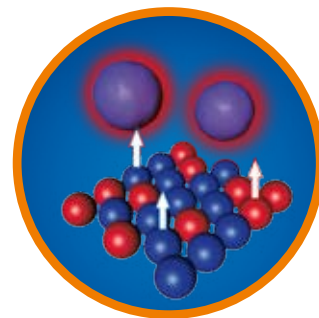
\* Clinical studies performed with Dolphin Protect™ surface modification.

# New ways of reducing infection risk

The unique Dolphin Protect technology, which integrates the antibacterial Bismuth additive into the catheter's surface coating, helps decrease the risk of catheter-related infection—one of the major complications associated with the use of indwelling catheters in hemodialysis patients. Dolphin Protect is, in fact, the first antibacterial coating system on the market to work without the release of pharmaceuticals, i.e. antibiotics, or other active components like silver.

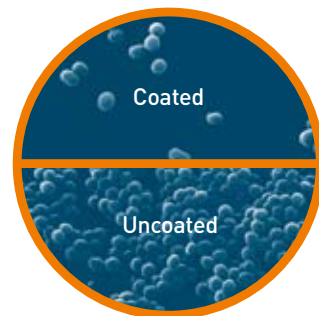
## Microdomain surface reduces interaction between cells, plasma proteins and the catheter surface

The presence of alternating hydrophilic and hydrophobic nano-segments leads to the unique improvement of biocompatibility.



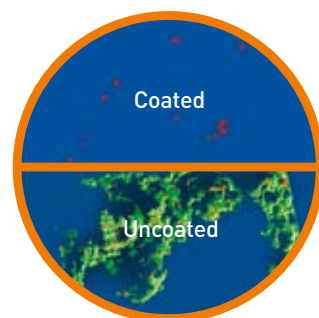
## Smooth surface reduces platelet activation and bacterial adhesion

Scanning electron microscopy of coated and uncoated material after 24-h incubation with *S. epidermidis* illustrates reduced adherence and inhibition of bacterial growth through the Dolphin Protect surface.



## Antibacterial Bismuth additive helps decrease the risk of catheter-related infection

Confocal laser scanning microscopy of coated and uncoated surfaces shows prevention of biofilm formation after 96-h incubation with *E. coli*.

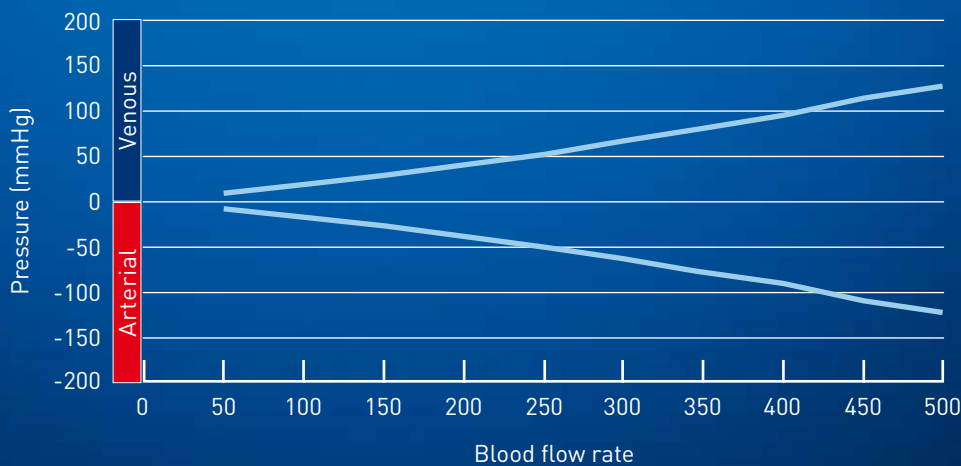


# Benefit from higher treatment quality

Unique lumen design for higher blood flow rates



## Blood flow rates



Method: in vitro testing

Pump system:  
double roll hose pump

Fluid: bovine blood

Protein: 60 +/- 5 g/l

Hematocrit value: 32 +/- 2%

Temperature: 37 +/- 2°C

— EverFlow Dolphin Protect™ (MC-GDPK-1521)

# Maximize the efficiency of your dialysis therapy

## Staggered tip design without sideholes

Clinical observations indicate that conventional catheters with sideholes have considerably lower blood flow rates than those without sideholes.<sup>5</sup> In line with this statement, the specially engineered EverFlow Dolphin Protect catheter has no sideholes—a significant advantage that helps prevent clotting, one of the most frequent complications in catheter application.

## Kidney-shaped lumen design

The EverFlow Dolphin Protect catheter is designed with an arterial lumen which is 20% larger than the venous lumen. In terms of absolute pressure, both arterial and venous pressure levels are the same. In a standard double D lumen design with equally distributed lumens, the arterial pressure is always greater than the venous pressure, causing reduced blood flow. With its improved lumen design for a better surface-to-volume ratio, the EverFlow Dolphin Protect catheter allows blood flow rates of up to 450 ml/min at an arterial pressure of only -110mmHg (see chart on p.6).



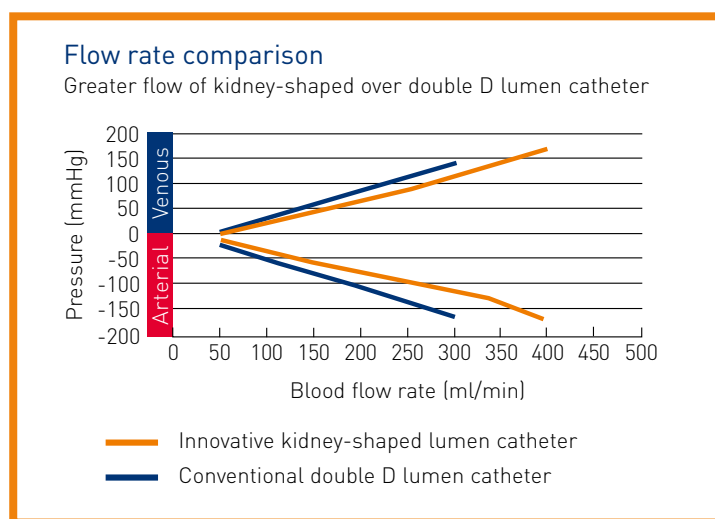
Innovative Gambro kidney-shaped lumen design

## You benefit from prolonged catheterization time and better, safer performance throughout the entire treatment.

In conventional catheters both lumens are the same size. The pressure placed on the catheter during dialysis can distort a straight septum, resulting in the arterial lumen becoming smaller than the venous lumen. This, in turn, causes the pressure to spike.



Conventional double D lumen design



# Ordering information

## EverFlow Dolphin Protect™ double lumen catheter

Product name	Product code	OD (F)	Implant length (mm)	Body length (mm)	Material	Units per box
MC-GDPK-1517	113375	15	170	240	PUR	5
MC-GDPK-1521	113376	15	210	280	PUR	5
MC-GDPK-1525	113385	15	250	320	PUR	5
MC-GDPK-1529	113384	15	290	360	PUR	5

**Kit contains:** catheter, introducer needle GPN-177, calibrated guidewire with "J" tip GGW-3870J, 2 x luer lock injection cap GIC-100, suture ring<sup>◊</sup>, tunneling trocar<sup>◊</sup>, vessel dilator 13F x 150 mm<sup>◊</sup>, split sheath dilator system 16F x 150 mm<sup>◊</sup>, wound dressing<sup>◊</sup>, scalpel<sup>◊</sup>

<sup>◊</sup> Not available as GamCath™ accessory.

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