VASCULAR ACCESS

Antibiotic Incorporated Catheters

multi**star**+

Antimicrobial catheter for
high risk patients

VYGON

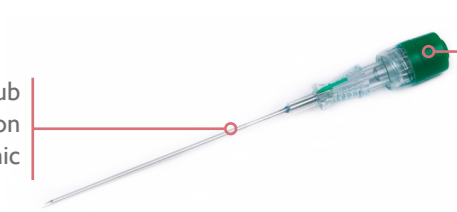
Value Life

Benefits of multistar+

multistar+

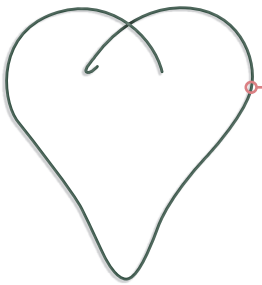
- Clinically proven to reduce colonisation and catheter-related infection (CRI) [10]
- Biocompatible and safe
- Effective broad spectrum activity against bacteria and fungi
- Long lasting protection for the life of the catheter

Echogenic Puncture Needle with Bloodless system (BLS valve)



- Ergonomic hub
- Smooth insertion
- Naturally echogenic
- Ergonomic, design, no change in placement technique.

Teflon-coated nitinol 'J' guidewire



Low friction, Anti-kink

Teflon coated Nitinol guidewire for trouble free insertion & removal

multistar+ safe range

seldisafe "Sharp Safe"

Protect yourself and others from the risk of accidental needle stick injury

Safety scalpel

VYGON

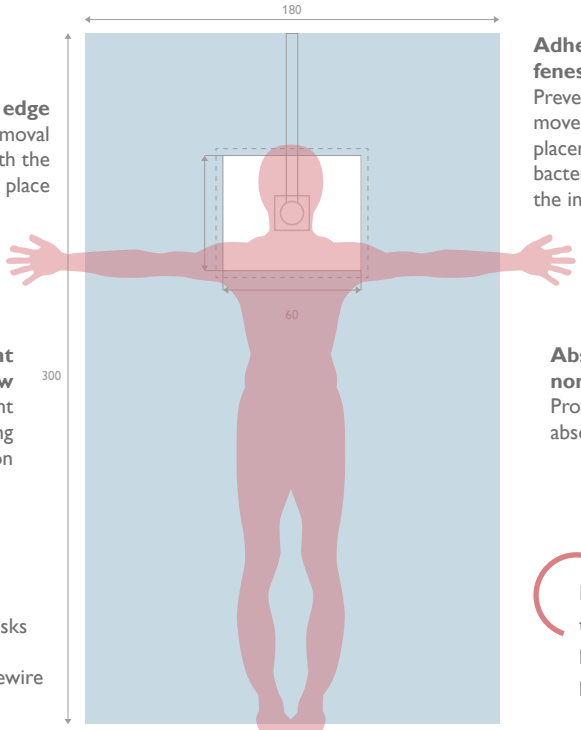
Pack advantages & Benefits

The Vygon CVC insertion pack fulfills the current CDC guidelines offering a large sterile base and patient drape to minimize the risk of accidental catheter contamination.

All the components you need in one convenient pack

► Reduces set up time and is cost effective

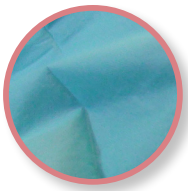
Peelable edge
Facilitates the removal of the drape with the CVC in place



Adhesive fenestrated window
Prevents drape movement during placement and risk of bacteria migration to the insertion site

Large transparent window
Allows patient observation during CVC insertion

Absorbent non-woven material
Provides great absorption of liquid



Full body drape
Maximum barrier to reduce risks of nosocomial infections
No desterilization of the guidewire

Polyethylene coating on the patient side
Protects the patient from liquids

Skin preparation

Ultrasound probe cover with gel

Pre-filled syringes with saline

Needles

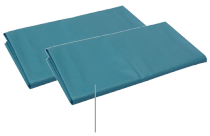
Disposafe – needle protector

Gown

Tray

5ml Luer slip syringe

Swabs 10 x 10 cm



Drape + table cover 75 x 90 cm

Ordering code: 80199.2213
Minimum order: 6 units

Quantity: 6 units per box
Pack size: 39 x 27 x 11 cm

Clinical Trial Results

• Objective

To determine the efficacy of catheters coated with Miconazole and Rifampicin in preventing catheter-related colonisation and bloodstream infections.

• Design

Multicentre, randomised prospective clinical trial.

• Setting

Two University Hospitals, Cologne and Aachen, Germany.

• Patients

223 hospitalised patients, age 18 to 80.

• Microbiological Methods

Catheters were removed aseptically, the catheter segments were semi-quantitatively cultivated by the roll plate method and then quantitatively cultured by using the sonication method. Modified Kirby-Bauer technique was used for determination of the antimicrobial activity of the incorporated catheters.

• Conclusion

In this multicentre, randomised trial, catheters incorporated on both the internal and external surfaces with Miconazole and Rifampicin were associated with lower rates of colonisation and and catheter-related infection (CRI).[10]

In vitro antimicrobial activity of coated catheters

Organism	Zone of Inhibition (mm)	
	Rifampicin-Miconazole	CSS Catheter
S. epidermidis (n = 106)	33.0 ± 6.0	16.1 ± 1.5
S. aureus (n = 15)	26.0 ± 3.1	13.0 ± 1.2
E. faecalis (n = 8)	17.0 ± 3.5	7.0 ± 3
P. aeruginosa (n = 8)	10.9 ± 4	3.0 ± 2
E. coli (n = 3)	14.5 ± 3.2	11.0 ± 3.1
Enterobacter sp. (n = 2)	11.0 ± 3	5.3 ± 1.2
C. albicans (n = 3)	14.0 ± 3.1	6.9 ± 2.1

The mean zones of inhibition were compared with catheters coated with chloarhexidine and silver sulphadiazine (CSS).

References

1. Guidelines for the prevention of intravascular catheter-related infections. O'Grady et al. Pediatrics, Nov 2002, Vol 110 No 5 pp.e51.
2. Silver coating of medical devices for catheter-associated infections. Schierholz JM, Beuth J, Pulverer G. The American Journal of Medicine, July 1999, Vol 107, No. 1.
3. Central venous catheters coated with miconazole and rifampin for the prevention of catheter-related colonization and blood-stream infections results of the pilot part of an ongoing clinical trial. Yücel N, Max M, Rossaint R, Schwarz R, Beuth J, Bach A, Schierholz JM, Pulverer G, Neugebauer E. 5th Annual Joint Conference on Surgical Research (Springer-Verlag 2001/Langenbeck's Arch Surg (2001) 386).
4. The Use of Rifampicin-Miconazole–Impregnated Catheters Reduces the Incidence of Femoral and Jugular Catheter-Related Bacteremia. Clin Infect Dis. 2008 Nov 1;47(9):1171-5.
5. New choices for central venous catheters. Potential financial implications. Chorr AF, Humpreys CW, Helman DL. Chest July 2002 vol 124 No 1 275-284.
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8. Department of Health. Saving Lives: High Impact Intervention No 1. Preventing the risk of microbial contamination. A delivery programme to reduce Healthcare Associated Infection including MRSA. 2005.
9. Antimicrobial Central Venous Catheters in Oncology : Efficacy of a Rifampicin-Micanozole-releasing Catheter. Jörg Michael Schierholz, Klaus Nagelschmidt, Manfred Nagelschmidt, Rolf Lefering, Nedim Yücel and Joseph Beuth – ANTICANCER RESEARCH 30 : 1353-1358 (2010)
10. Reduced colonization and infection with miconazole-rifampicin modified central venous catheters: a randomized controlled clinical trial. Nedim Yücel, Rolf Lefering, Marc Maegele, Martin Max, Rolf Rossaint, Andrea Koch, Rosemarie Schwarz, Michael Korenkov, Josef Beuth, Alfons Bach, Jörg Schierholz, Gerhard Pulverer and Edmund A. M. Neugebauer- Journal of Antimicrobial Chemotherapy (2004) 54, 1109–1115
11. Rump et al. Pharmacokinetics of antimicrobial agents rifampicin and miconazole released from a loaded central venous catheter. Journal of Hospital Infection. 53; 129-135, 2003.

VYGON

Antimicrobial catheters

Breakthrough in antimicrobial technology

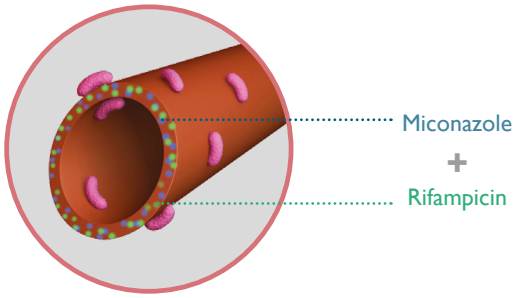
"Rifampicin-Miconazole supersaturated CVCs have demonstrated the potential to prevent catheter-associated colonization, local infection and bloodstream infection even in long-term application." [3]

The combination of Rifampicin and Miconazole leads to protection against a broad spectrum of microorganisms such as Staphylococci, Enterobacterial and Candida.

"The use of a rifampicin-miconazole-impregnated catheter (RM-C) has been suggested to have the greatest benefit in femoral access." [4]

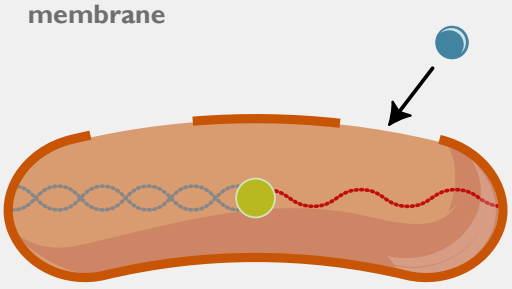
multistar is the innovative combination of two active ingredients: **Rifampicin** and **Miconazole**, chosen for their synergic properties:

- Efficacy on a large spectrum of microorganisms [9]
- Low risk of bacterial resistance development [9]
- High physico-chemical compatibility with polyurethanes [11]



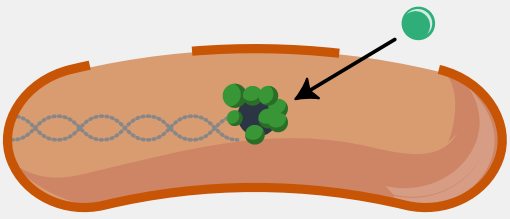
Miconazole

- Synthetic antifungal
- Wide spectrum of antimicrobial activity
- Low toxicity
- Mechanical action : **weakens the bacterial membrane**



Rifampicin

- Highly effective against gram-positive as well as gram-negative microorganisms
- Mechanical action : **inhibits RNA synthesis**



Bacterial resistance to antibiotics ?

A pharmacokinetic analysis conducted by Rump concluded that "Maximal concentrations of Rifampicin or Miconazole resulting from the insertion of a polyurethane catheter loaded with these antibiotics are therefore, far below the concentrations resulting from a systemic therapy with the same antimicrobial agents. Even in the worst case, the danger of selecting resistant bacterial strains seems remote because the systemic drug levels are magnitudes of order below subinhibitory concentrations." [5]

To order

multistar+

Code	Catheter				Lumen (gauge)					Flow rate (ml/min) Priming volume (ml)					Guidewire		Quantity box/ case
	Lumen	Length (cm)	Fr Ø	Ext. Ø (mm)	Dist.	Med 1	Med 2	Med 3	Prox	Dist.	Med 1	Med 2	Med 3	Prox.	Length (cm)	Ø (mm)	
6155.167	3	16	7.5	2.7	14	18	-	-	18	63 0.38	34 0.33	-	-	36 0.38	60	0.88	5/45
6155.207		20	7.5	2.7	14	18	-	-	18	60 0.45	30 0.34	-	-	30 0.36	60	0.88	5/45
6155.307		30	7.5	2.7	14	18	-	-	18	50 0.49	18 0.40	-	-	20 0.50	70	0.88	5/45
6158.167	4	16	8.5	2.8	16	14	18	-	18	61 0.38	100 0.49	17 0.29	-	22 0.33	60	0.88	5/45
6158.207		20	8.5	2.8	16	14	18	-	18	56 0.38	100 0.54	15 0.53	-	14 0.36	60	0.88	5/45
6158.307		30	8.5	2.8	16	14	18	-	18	43 0.50	80 0.70	12 0.30	-	10 0.30	70	0.88	5/45
6159.167	5	16	9.5	3.15	16	14	18	18	18	57 0.43	84 0.57	15 0.36	16 0.36	18 0.42	60	0.88	5/45
6159.207		20	9.5	3.15	16	14	18	18	18	55 0.47	80 0.60	15 0.39	12 0.38	17 0.43	60	0.88	5/45
6159.307		30	9.5	3.15	16	14	18	18	18	38 0.51	68 0.65	7.8 0.40	8.4 0.42	9.4 0.45	70	0.88	5/45

multistar+ safe

Code	Catheter				Lumen (gauge)					Flow rate (ml/min) Priming volume (ml)					Guidewire		Quantity box/ case
	Lumen	Length (cm)	Fr Ø	Ext. Ø (mm)	Dist.	Med 1	Med 2	Med 3	Prox	Dist.	Med 1	Med 2	Med 3	Prox.	Length (cm)	Ø (mm)	
6155.270	3	20	7.5	2.7	14	18	-	-	18	60 0.45	30 0.34	-	-	30 0.36	60	0.88	5/45
6155.370		30	7.5	2.7	14	18	-	-	18	50 0.49	18 0.40	-	-	20 0.50	70	0.88	5/45
6158.270	4	20	8.5	2.8	16	14	18	-	18	56 0.38	100 0.54	15 0.53	-	14 0.36	60	0.88	5/45
6158.370		30	8.5	2.8	16	14	18	-	18	43 0.50	80 0.70	12 0.30	-	10 0.30	70	0.88	5/45
6159.270	5	20	9.5	3.15	16	14	18	18	18	55 0.47	80 0.60	15 0.39	12 0.38	17 0.43	60	0.88	5/45
6159.370		30	9.5	3.15	16	14	18	18	18	38 0.51	68 0.65	7.8 0.40	8.4 0.42	9.4 0.45	70	0.88	5/45

CRITICAL CARE

For further information, please contact: questions@vygon.com

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