



# Intergard Synergy

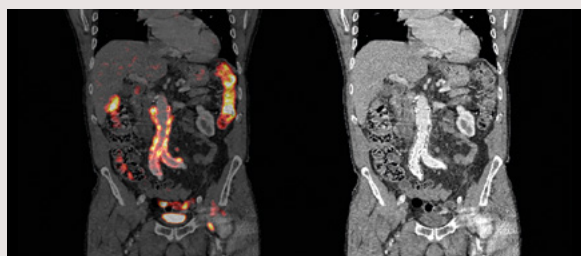
Antimicrobial Collagen Coated  
Vascular Grafts

# The impact of infections

## Facts and global trends

### About graft infections<sup>2,8</sup>

- Overall reported graft infection rate: 0.5 - 6%
- Overall reported endovascular aortic repair (EVAR) infection rate: 0.2 - 5%
- Greater than 90% of patients have one or more risk factors for the development of graft infection.



Vascular graft infection, PET CT (left), classic CT (right)

### Mortality and morbidity

Graft infections are associated with high mortality rate between 15% to 75% with a rate of major amputation, which may reach 70%.<sup>1</sup>

### Challenges

- The microbiological cause of graft infections has evolved over the years resulting in a more diverse microbiological spectrum of infection, which includes **multidrug resistant strains, polymicrobial infection,** and *Candida* species.<sup>4</sup>
- In the recent years the presence of **gram-negative species have emerged** as the most common cause of infection.<sup>4</sup>

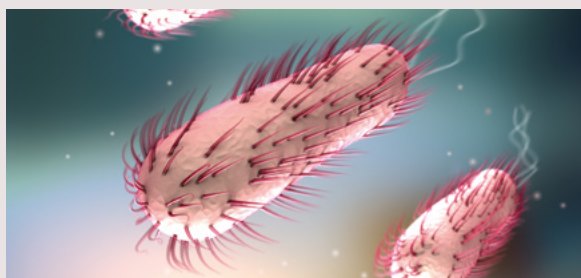
### Cost of the infection

Infected surgical implants are generally more difficult to manage because they require a longer period of antibiotic therapy and related surgical procedures. In 2004 the estimated cost of combined medical and surgical treatment of infections associated with vascular grafts was \$40,000.<sup>3</sup>

- **Antimicrobial resistance** is a global concern threatening the ability to treat common diseases, accelerated by misuse and overuse of antibiotics.<sup>5</sup>
- **Fungi are frequently implicated** in aortic graft infections complicated by secondary aorto-enteric fistulae, ranging from 28% to 42%.<sup>6,7</sup>
- The majority of vascular graft infections occur at the time of implant or in the immediate postoperative period.<sup>8</sup>

### Antimicrobial graft

Adding an antimicrobial graft to the protocol of care, with the ability to inhibit the microbial colonization on the device and in the surrounding tissues in the acute post-operative phase, could help to reduce the risk of infection.<sup>11</sup>



*Escherichia coli*

# Intergard Synergy

May be preferential in patients for which there is an increased risk for infection

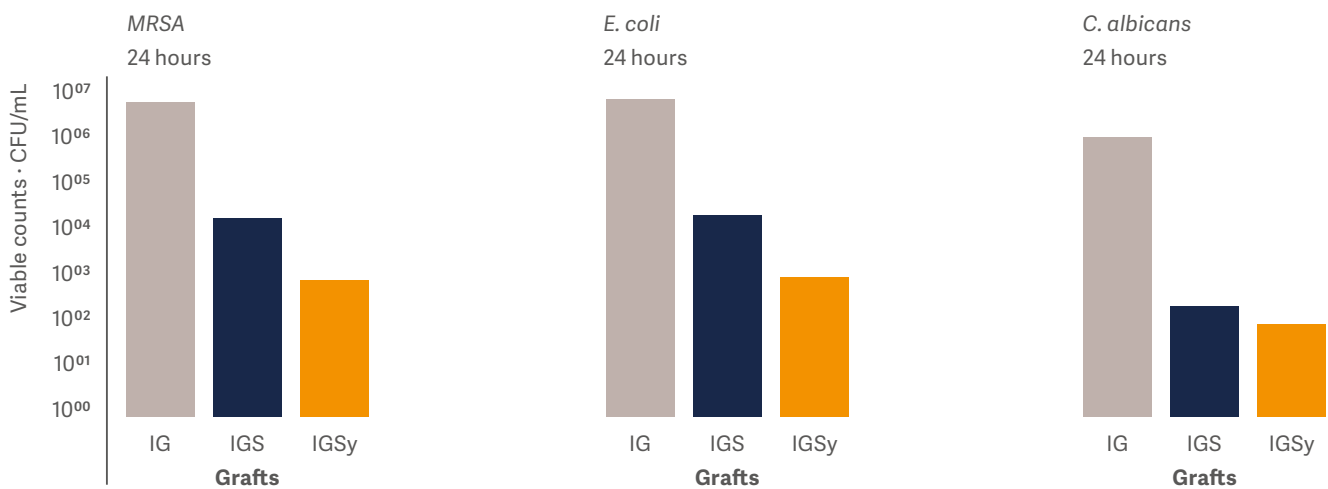
- For **prophylactic use**, Intergard Synergy is designed to inhibit the microbial colonization on the device and in the surrounding tissues in the acute post-operative phase.<sup>9,12</sup>
- In an *in-vitro* study, Intergard Synergy demonstrated a **bactericidal and antifungal activity**, including: Methicillin resistant *Staphylococcus aureus* (MRSA), Extended spectrum beta-lactamases (ESBLs) and *Candida albicans*.<sup>11</sup>
- Combines **two antimicrobials**: silver acetate and triclosan
  - enlarges the spectrum of activity<sup>11</sup>
  - reduces the risk of resistance<sup>11</sup>
- Available in different configurations<sup>12</sup>



# The right graft...

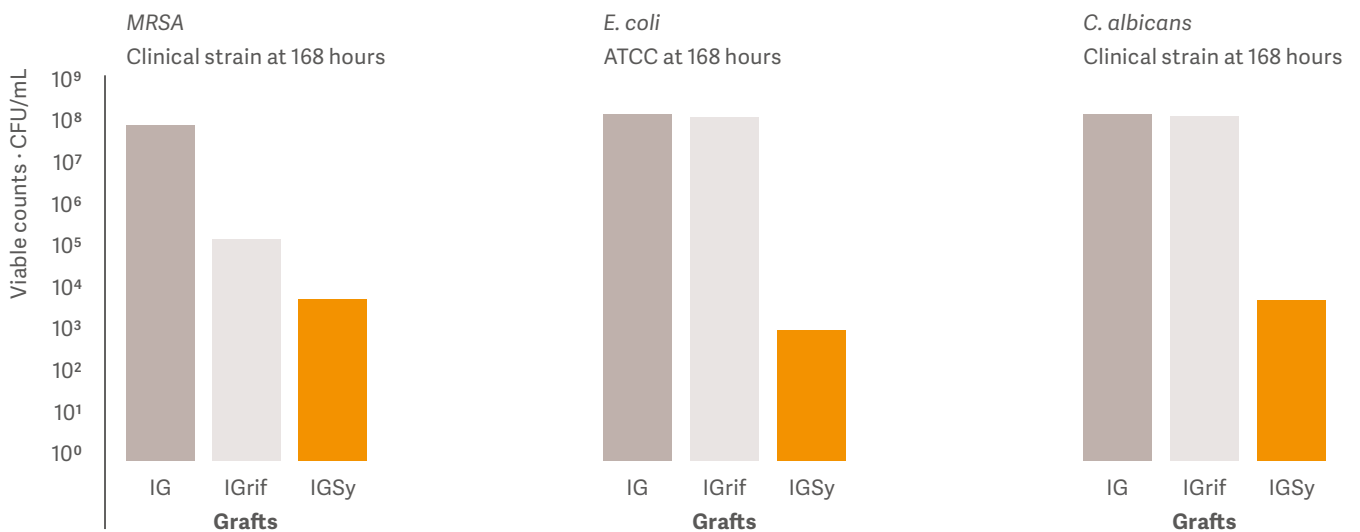
## Intergard Synergy antimicrobial efficacy

**Intergard Synergy has a faster in-vitro bactericidal and antifungal effect compared to Intergard Silver. <sup>9,10</sup>**



*In-vitro* antimicrobial efficacies evaluated by time kill assays at 24 hours<sup>11</sup>  
 IG = Intergard, IGS = Intergard Silver, IGSy = Intergard Synergy

**Intergard Synergy has demonstrated a more sustainable and efficient seven day antimicrobial activity than rifampicin soaked grafts.<sup>11</sup>**



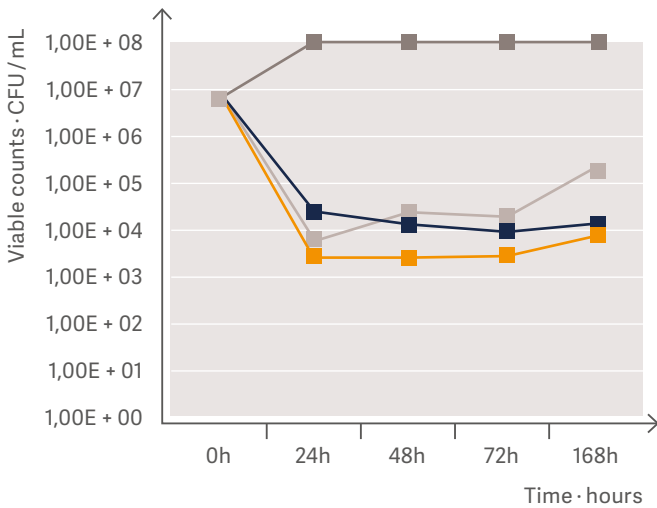
*In-vitro* antimicrobial efficacies evaluated by time kill assays at 168 hours<sup>11</sup>  
 IG = Intergard, IGrif = Intergard Rifampicin, IGSy = Intergard Synergy

# ... can make a difference

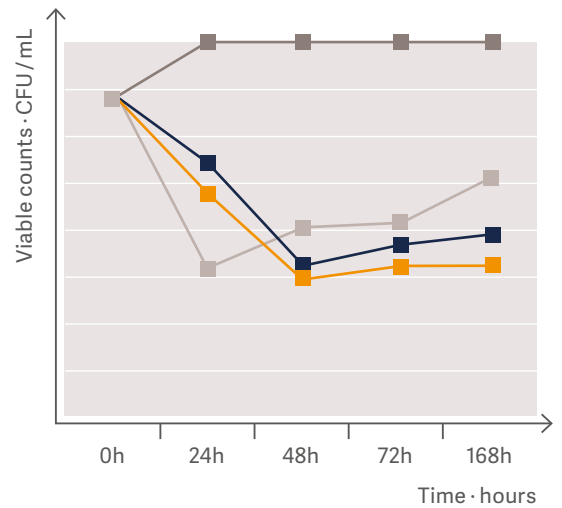
## Intergard Synergy antimicrobial efficacy

**In in-vitro studies, there is proven rapid resistance against rifampicin, where rifampicin loses efficacy over time.<sup>11</sup>**

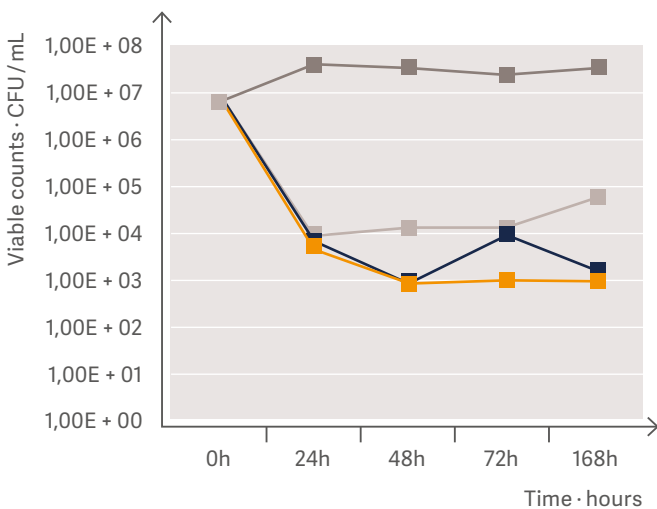
MRSA  
Clinical strain



*E. coli*  
Clinical strain



*S. epidermidis*  
ATCC



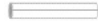
- IG Intergard Graft
- IGrif Intergard Rifampicin
- IGS Intergard Silver Graft
- IGSy Intergard Synergy Graft

*In-vitro* antimicrobial efficacies evaluated by time kill assays at 168 hours showing that rifampicin is losing its efficacy against clinical MRSA, clinical *E. coli* and ATCC *S. epidermidis* at 7 days due to emergence of rifampicin-resistant mutants<sup>11</sup>

# Intergard Synergy

## Product information

### Intergard Synergy Knitted – Straight



20 cm length		40 cm length		70 cm length	
Diameter	Reference	Diameter	Reference	Diameter	Reference
6 mm	IGK0006-20SG	6 mm	IGK0006-40SG	6 mm	IGK0006-70SG
8 mm	IGK0008-20SG	7 mm	IGK0007-40SG	7 mm	IGK0007-70SG
12 mm	IGK0012-20SG	8 mm	IGK0008-40SG	8 mm	IGK0008-70SG
14 mm	IGK0014-20SG	10 mm	IGK0010-40SG	10 mm	IGK0010-70SG
16 mm	IGK0016-20SG	12 mm	IGK0012-40SG		
18 mm	IGK0018-20SG	14 mm	IGK0014-40SG		
20 mm	IGK0020-20SG	16 mm	IGK0016-40SG		
22 mm	IGK0022-20SG	18 mm	IGK0018-40SG		
24 mm	IGK0024-20SG	20 mm	IGK0020-40SG		
		22 mm	IGK0022-40SG		
		24 mm	IGK0024-40SG		

### Intergard Synergy Knitted – Radially supported



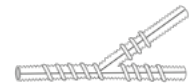
Diameter	Proximal length	Supported length	Distal length	Total length	Reference
6 mm	35 cm	20 cm	15 cm	70 cm	IGK0006RS20SG
6 mm	25 cm	30 cm	15 cm	70 cm	IGK0006RS30SG
6 mm	20 cm	45 cm	20 cm	85 cm	IGK0006RS45SG
8 mm	12.5 cm	15 cm	12.5 cm	40 cm	IGK0008RS15-40SG
8 mm	40 cm	15 cm	15 cm	70 cm	IGK0008RS15SG
8 mm	35 cm	20 cm	15 cm	70 cm	IGK0008RS20SG
8 mm	25 cm	30 cm	15 cm	70 cm	IGK0008RS30SG
8 mm	20 cm	45 cm	20 cm	85 cm	IGK0008RS45SG
8 mm	20 cm	60 cm	20 cm	100 cm	IGK0008RS60SG
10 mm	15 cm	10 cm	15 cm	40 cm	IGK0010RS10-40SG

## Intergard Synergy Knitted Ultrathin – Radially supported



Diameter	Proximal length	Supported length	Distal length	Total length	Reference
6 mm	35 cm	20 cm	15 cm	70 cm	IGKUT0006RS20SG
6 mm	25 cm	30 cm	15 cm	70 cm	IGKUT0006RS30SG
7 mm	35 cm	20 cm	15 cm	70 cm	IGKUT0007RS20SG
7 mm	25 cm	30 cm	15 cm	70 cm	IGKUT0007RS30SG
8 mm	15 cm	10 cm	15 cm	40 cm	IGKUT0008RS10-40SG
8 mm	12.5 cm	15 cm	12.5 cm	40 cm	IGKUT0008RS15-40SG
8 mm	40 cm	15 cm	15 cm	70 cm	IGKUT0008RS15SG
8 mm	35 cm	20 cm	15 cm	70 cm	IGKUT0008RS20SG
8 mm	25 cm	30 cm	15 cm	70 cm	IGKUT0008RS30SG

## Intergard Synergy Knitted – Axillo-Bifemoral



Diameter	Supported length	Total length (body / branch)	Reference
8 x 8 mm	(not supported)	100 x 60 cm	IGKAX0808SG
8 x 8 mm	45 x 20 cm	85 x 55 cm	IGKAX0808RS45/20SG
8 x 8 mm	45 x 30 cm	85 x 55 cm	IGKAX0808RS45/30SG
8 x 8 mm	60 x 30 cm	100 x 55 cm	IGKAX0808RS60/30SG

## Intergard Synergy Knitted Ultrathin – Straight



40 cm length		70 cm length	
Diameter	Reference	Diameter	Reference
6 mm	IGKUT0006-40SG	6 mm	IGKUT0006-70SG
7 mm	IGKUT0007-40SG	7 mm	IGKUT0007-70SG
8 mm	IGKUT0008-40SG	8 mm	IGKUT0008-70SG

## Intergard Synergy Knitted – Bifurcated



50 cm length	
Diameter	Reference
12 x 6 mm	IGK1206SG
14 x 7 mm	IGK1407SG
16 x 8 mm	IGK1608SG
18 x 9 mm	IGK1809SG
20 x 10 mm	IGK2010SG
22 x 11 mm	IGK2211SG
24 x 12 mm	IGK2412SG

## References

1. Legout L, et al. Diagnosis and Management of Prosthetic Vascular Graft Infections. *Médecine et Maladies Infectieuses*; 42 (2012): 102-109
2. Smeds m, et al. Treatment and Outcomes of Aortic Endograft Infection. *Journal of Vascular Surgery*, February 2016; 332 - 340
3. Darouiche R O. Treatment of Infections Associated with Surgical Implants. *New England Journal of Medicine* 2004; 350:1422-1429
4. Wilson W, et al. Vascular Graft Infections, Mycotic Aneurysms, and Endovascular Infections. A Scientific Statement from the American Heart Association. *American Heart Association Journals* 2016;134: e412 - e460
5. Antimicrobial Resistance. World Health Organization website (<http://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance>). February 2018. Downloaded May 29, 2019
6. Delva JC, et al. In-situ Revascularisation for Secondary Aorto-enteric Fistulae: The Success of Silver-Coated Dacron is Closely Linked to a Suitable Bowel Repair. *European Journal of Vascular and Endovascular Surgery*, 44, 2012; 417 - 424
7. Batt M, et al. Early and Late Results of Contemporary Management of 37 Secondary Aortoenteric Fistulae. *European Journal of Vascular and Endovascular Surgery*, 41, 2011; 748 - 757
8. Ricco JB, et al. In Vitro Evaluation of the Antimicrobial Efficacy of a New Silvertriclosan vs a Silver Collagen-Coated Polyester Vascular Graft Against Methicillin-Resistant *Staphylococcus Aureus*. *Journal of Vascular Surgery*, March 2012; 55(3):823-829
9. Ricco JB, Assadian O. Antimicrobial Silver Grafts for Prevention and Treatment of Vascular Graft Infection. *Seminars in Vascular Surgery* 24, 2011; 234 - 241
10. Berard X, et al. Comparison of the Antimicrobial Properties of Silver Impregnated Vascular Grafts With and Without Triclosan. *European Journal of Vascular and Endovascular Surgery* 51, 2016; 285 - 293
11. Berard X, et al. In vitro Evidence of Improved Antimicrobial Efficacy of Silver and Triclosan Containing Vascular Grafts Compared with Rifampicin Soaked Grafts. *European Journal of Vascular and Endovascular Surgery* 57, March 2019; 424 - 432
12. Data on file



Refer to Instructions For Use for current indications, warnings, contraindications, and precautions. Products may not be available in all markets. Product availability is subject to the regulatory or medical practices that govern individual markets. Certain products may not be licensed or available in certain countries or in stock. Please check with your local distributor for availability.

Getinge, **GETINGE** \*, Synergy, and Intervascular, are trademarks or registered trademarks of Getinge AB, its subsidiaries or affiliates in the United States or other countries. · Getinge is registered with the U.S. Patent and Trademark Office. · Copyright 2021 Getinge or its affiliates. All rights not expressly granted are reserved.

With a firm belief that every person and community should have access to the best possible care, Getinge provides hospitals and life science institutions with products and solutions aiming to improve clinical results and optimize workflows. The offering includes products and solutions for intensive care, cardiovascular procedures, operating rooms, sterile reprocessing and life science. Getinge employs over 10,000 people worldwide and the products are sold in more than 135 countries.

Intergard vascular products are manufactured by Intervascular SAS/Z.I. Athélie 1 · 13705 La Ciotat · Cedex · France · +33 (0)4 42 08 46 46