

# SILVER ION DRESSING FOR HEMODIALYSIS TCVC

## ADDED VALUE TO DISINFECTION

AUTHORS: Gunella P., Bortoli P., Cannizzo G., De Gasperi R., Di Pietro R., Falcioni F., Gioirà S., Malatino O., Mancini V., Pettirossi L., Proletti B., Saggese G., Uzzo M.

ASL VCO - SOC Nephrology and Dialysis - Director Borzumati M

### INTRODUCTION

The average age of incident dialysis patients currently exceeds 70 years of age. The number of patients affected by vascular disease is constantly increasing.

This has in turn led to an increased use of tunneled CVC for definitive vascular access. Currently, in the Piedmont Region, the average percentage of TCVCs used for definitive access for hemodialysis is around 28%.

TCVC management is a critical element for hemodialysis patients. The main clinical problem related to TCVCs is infection, CRBSI in particular, which affects hospitalisation and patient survival.

Silver ion dressings are useful for TCVC patients and have essentially two advantages: they are broad-spectrum antiseptics and stimulate skin regeneration. This metal inhibits the growth of Gram-positive and negative bacteria already at low concentrations.

### METHOD

Since 2010, our facility manages TCVCs using a well-codified procedure developed in collaboration with the Unità Prevenzione Rischio Infettivo (UPRI - Infectious Risk Prevention Unit) to uniform methodology. A monitoring form for infectious events was created for this exact purpose. Inflammatory events of the exit-site can be reported as well as their extent according to a well-codified gradient (fig 1).

An internal survey was conducted in 2011 and led to a review of the protocol and the refreshing of nursing procedures:

- Change in TCVC disinfectant with chlorhexidine 2% instead of Povidone-iodine 10% in line with the most recent literature (CDC Atlanta 2011)
- Use of antimicrobials in selected cases (Taurolidine)
- Verification of the compliance with protocols (identification of tutorial figures)

This method had a significant repercussion on the incidence ratio of TCVC-related bacteremia (fig 2).

The purpose of this study is to assess if using silver ion dressing (exit-pad ag) on a group of hemodialysis patients with TCVC could constitute an independent element in the prevention of inflammatory events related to the use of TCVC for hemodialysis. We compared two six-month periods in which the same patient pool used silver-based dressings first and then went without during the second period.

Ten patients with an average age of 75 and an average dialytic age of 50.5 months were chosen. 80% were affected by a vascular disease and 3 patients died during the study for non-infectious causes. All patients had a well-performing TCVC (QB 250-300ml/min ). Dressings were tolerated well by all patients, were performed with polyurethane film and were replaced at each dialysis.

### RESULTS

During the first six months in which the exit-pad ag was used, no TCVC-related bacteremia was observed nor exit-site infections. No TCVC-related bacteremia were observed also during the second period, when no exit-pad ag was used, though 2 patients developed an exit-site infection with negative tampons, which was resolved using the exit-pad ag again (fig 3 - 4).

### CONCLUSIONS

At our facility, **EXIT-PAD<sup>®</sup> SILVER** showed an effectiveness similar to standard dressings.

Data shows that the correct application of the procedures and a suitable choice of the antiseptics to be used have significantly reduced the incidence of TCVC-related infectious complications. Using silver-based dressings, especially for prevention purposes, significantly reduces the incidence of inflammations and relative skin lesions that often precede the onset of systemic inflammatory events in higher-risk patients.

The nursing staff reported that Exit Pad-Ag is easy to apply and comfortable for patients. Monitoring and preventing infectious complications is now an essential indication of quality. By using codified procedures and actively taking part in the monitoring of infections, nurses contribute to improving health assistance and patient quality of life.

PIEDMONT REGION  
LOCAL HEALTH SERVICE - ASL VCO  
S.O.C. Nephrology and Dialysis  
Director f.f. Dr. M. Borzumati  
Phone no. 0324/491220 - Fax no. 0324/491405

CENTRAL VENOUS CATHETER MONITORING FORM

SURNAME:TYPE:PLACEMENTDATE

NAME:

MONTH2013

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Intact Medic.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Tunnel	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Exit site DEGREE																															
CVC integrity	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
ART. priming remov.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
ART. Lumen wash	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
VEN. priming remov.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
VEN. Lumen wash	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Correct lumen flow	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
TROMBOLISIS	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Monthly prolapse																															
Systemic therapy	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Lock-therapy	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Exit-site pad																															
Blood culture																															
SIGNATURE initials																															

LEGEND:

GRADE 11Healthy skin, intact, no sign of inflammation

GRADE 22Hyperemia >1 cm from the exit-site; +/- fibrin

GRADE 33Hyperemia >1 cm < 2 cm from the exit-site; +/- fibrin

GRADE 44Hyperemia, secretions, pus; +/- fibrin

D: Difficult

I: Systemic therapy / lock-therapy for infection

T: Systemic therapy / lock-therapy for thrombosis

TUNNEL

OK

TUMOR

RUBOR

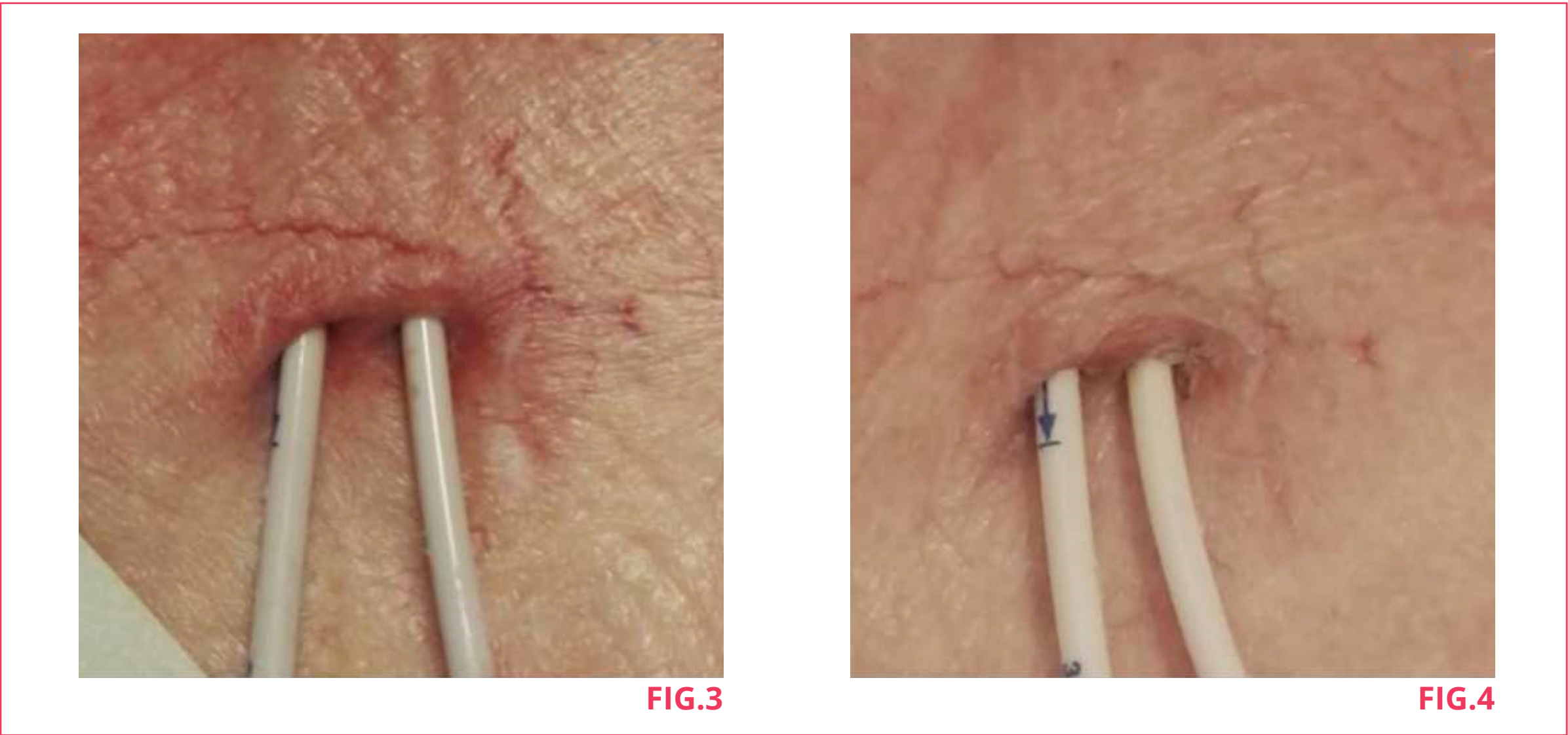
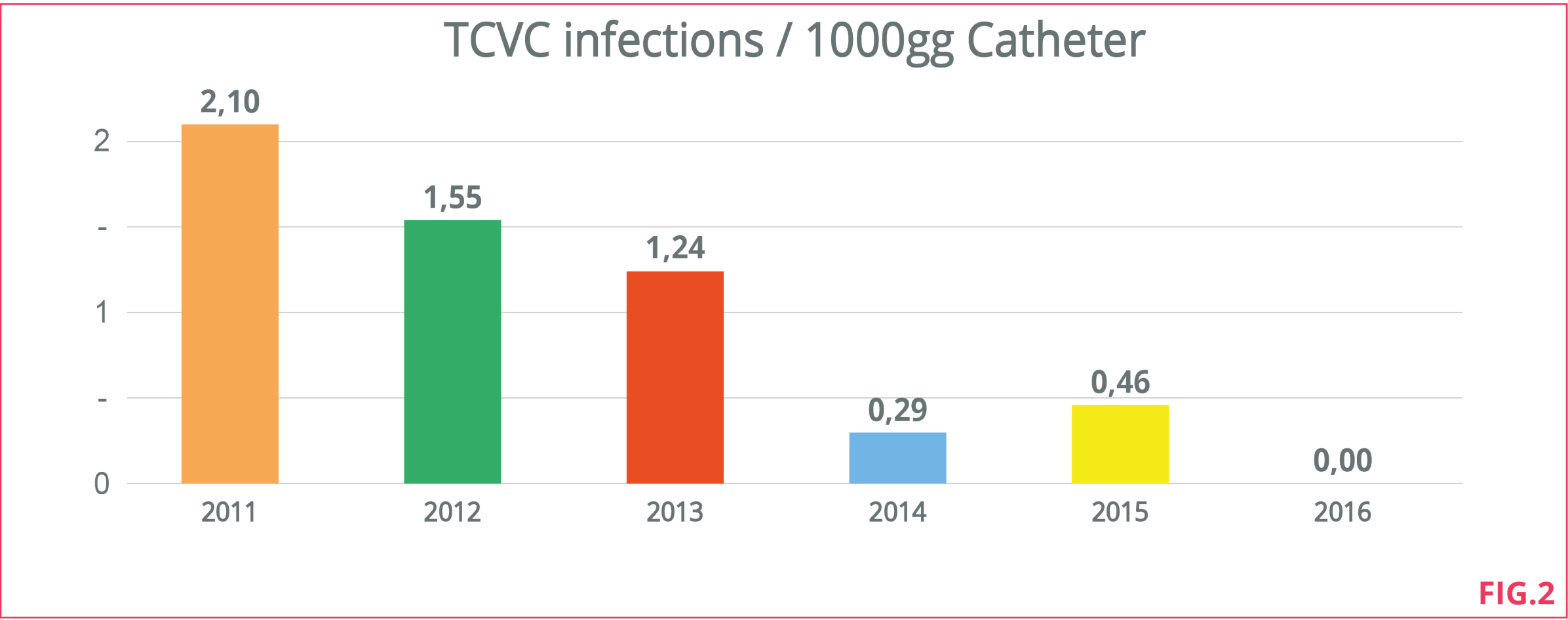
CALOR

DOLOR

LESA

no alteration swelling redness heat pain skin lesion

FIG.1



**Bibliography:**

- Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011 CDC Atlanta (<http://www.cdc.gov/hicpac/pdf/guidelines/bsi-guidelines-2011.pdf>)
- La centralità dell'infermiere nella prevenzione delle infezioni in Emodialisi (Rosa Grimaldi ) G Ital Nefrologia Vol. 3 Year 31 May/June 2014 Specialità e professioni a colloquio
- Valutazione clinica dell'Exit-pad Ag, XXX Congresso Nazionale EDTNA ERCA Workshop Accessi vascolari e governo clinico. Dr. Romano Musacchio U.O.C. Nefrologia e Dialisi ASP Cosenza Milano Marittima 2012.
- The spectrum of infections in catheter-dependent hemodialysis patients. Al-Solaiman Y, Estrada E, Allon M et al. Clinical journal of the American Society of Nephrology : CJASN 2011 Sep;6(9):2247-52
- Brunori G. L' infezione dell'accesso vascolare nell'emodializzato. G Ital Nefrol 2012; 29: 49-55
- NKF-KDOQI Clinical Practice Guidelines for Vascular Access. Am. J Kidney Dis 2006;48 : (Suppl 1): S176-257. ([http://www.kidney.org/professionals/kdoqi/pdf/12-50-0210\\_JAG\\_DCP\\_Guidelines-VA\\_Oct06\\_SectionC\\_of\\_c.pdf](http://www.kidney.org/professionals/kdoqi/pdf/12-50-0210_JAG_DCP_Guidelines-VA_Oct06_SectionC_of_c.pdf))

