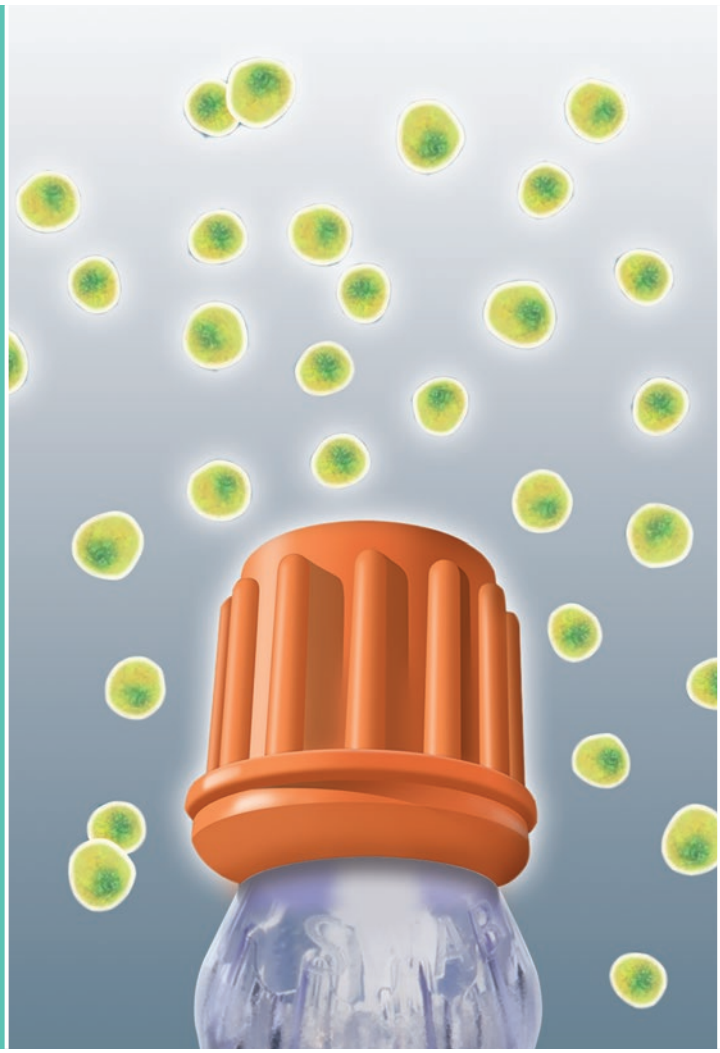
SwabCap®
Omniflush® with SwabCap®

A barrier to contamination in IV access



NEW
Passive disinfection of needleless swabbable valves

B BRAUN
SHARING EXPERTISE

Catheter-related Infections

Clinical environment

The contamination of a catheter hub with intraluminal colonization is the most common origin of catheter infections after the first week of catheter placement.[1,2]

Deficiencies in manual disinfection of intravenous connectors increase the bloodstream infection risk because it enables microorganisms to gain entry to the intraluminal surfaces of the IV system and form infection-causing biofilm, which in turn promotes infections.[3]

Infections can occur locally (e. g. catheter entry site infections) or systemically, with pathogens reaching the systemic circulation (e. g. septicemia, sepsis and septic shock may be the result), or with pathogens being transported to organs or extremities causing organ infection and failure as well as endocarditis or osteomyelitis which could result in amputation.[4,5]

The mortality rate for bloodstream infections was found to be 10-25 %, that of septic shock was even higher with 40-60 %.[6] Thus, bloodstream infection is attributable to death and high infection costs. In their study evaluating the outcome of intravenous catheter related infections in critically ill patients, Rello et al. found that among the survivors, the hospital stay was increased by 19.6 days. This added cost of € 3.124 per episode of catheter related infection based on the additional days only, not taking diagnostic and treatment expenses into account.[7]

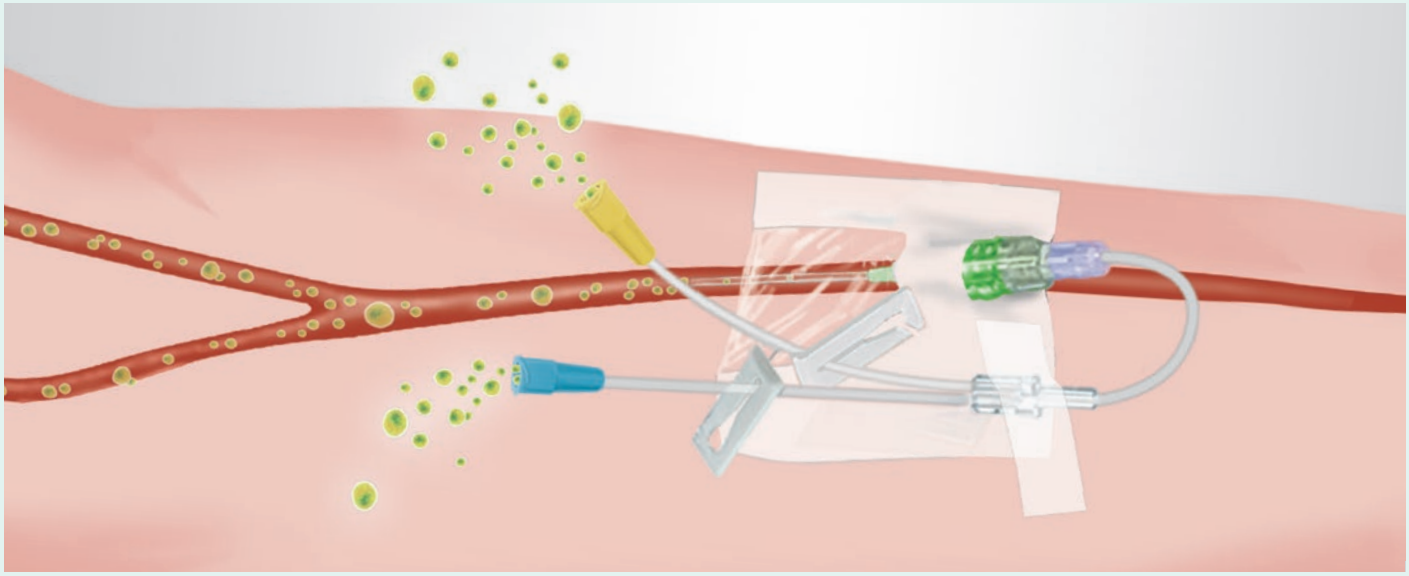
Clinical outcomes and costs of catheter-related bloodstream infections (CRBSIs) in intensive care units of four European countries (France, Germany, Italy and the UK):[8]

- 1.12 - 4.2 CRBSI per 1,000 catheter days
- 1,000 - 1,584 deaths per year
- 15,960 - 201,600 ICU days caused by CRBSIs
- € 35.9 to € 163.9 million associated costs

Prolonged stay not only increases direct costs to patients or payers but also indirect costs due to lost work. The need for isolation and the use of additional laboratory and other diagnostic studies also contributes to the costs.

A systematic literature review covering 1990-2000 calculated the following average attributable cost to the hospital for bloodstream infection, mean cost = $ 36,441 (cost calculated with a control group of patients and including only cost directly resultant from bloodstream infection).[9]

CRBSI is a serious health issue that creates a significant medical and economic burden to the healthcare systems.



Pathogens on contaminated hubs can enter the bloodstream and develop a CRBSI

SwabCap® – your patient protector

Passive disinfection and physical barrier to cross contamination

SwabCap®

Luer Access Valve Cap with a sponge prefilled with 70 % Isopropyl alcohol (IPA) as a disinfectant

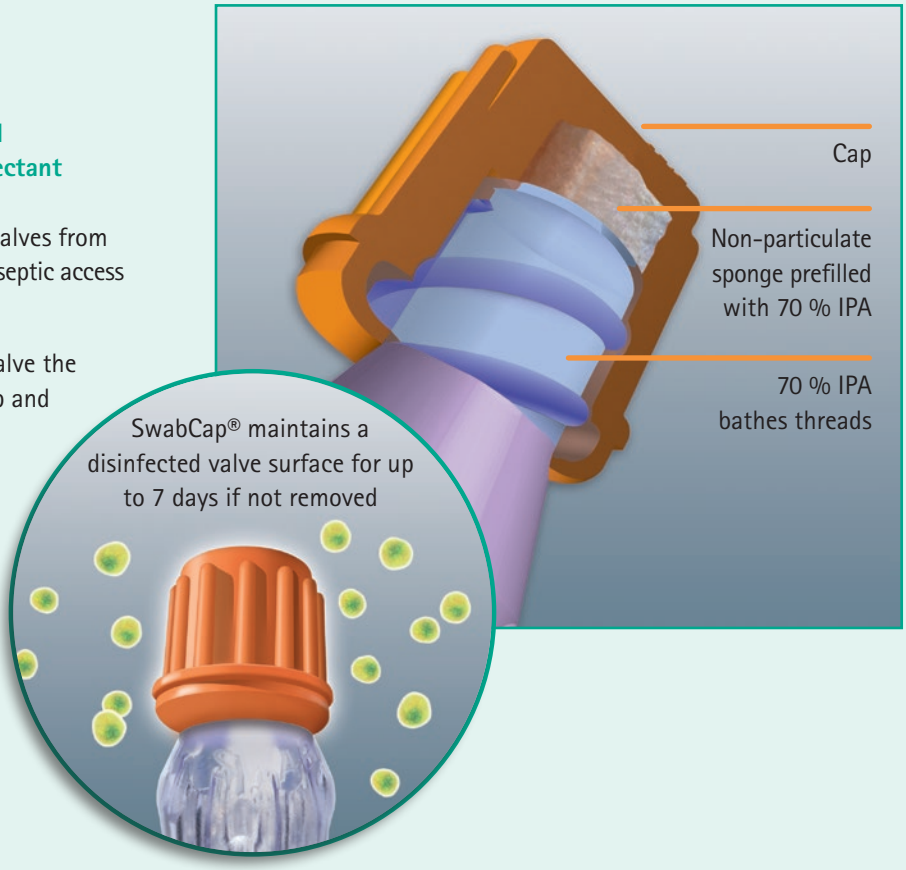
SwabCap® helps protect needleless swabbable valves from pathogens that can cause infection by providing aseptic access and passive disinfection.[17]

When twisting the sterile SwabCap® onto the valve the sponge gets compressed, bathing the valve´s top and threads in 70 % IPA. Within 5 minutes the cap achieves a near-complete kill of pathogens.[17]

The cap remains in place until the next catheter access to protect the valve from touch and airborne contamination. SwabCap® is gentle on patient´s skin.

After cap removal the valve is ready for access. Additional disinfection is not necessary!

SwabCap® is for single use only.



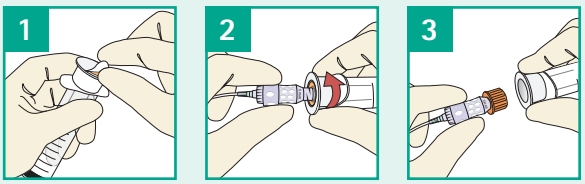
Omniflush® with SwabCap®

The only prefilled flush syringe with an integrated disinfection cap

The best of both technologies: Omniflush® with SwabCap®, 2 in 1!

The flush syringe-SwabCap® combination improves compliance with cap use as it places the product at the point of care.[21] This offers clinicians the convenience of having SwabCap® ready when they need it.

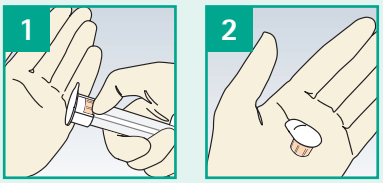
Thanks to its sterile packaging the SwabCap® can be applied to the valve by using aseptic non-touch technique. Cross contamination is avoided!



Benefits for the patient, nurse and hospital

- Passive, continuous disinfection of valve´s top and threads
- Protection from touch and airborne contamination
- Simplified and standardized disinfection technique saves nursing time
- Easier compliance with disinfection guidelines
- Disinfection compliance is visual and measureable

A special design allows that SwabCap® may be removed and saved for later use in case it is not immediately needed.



Various studies have confirmed that SwabCap® increased the compliance to the hospitals disinfection protocol, improved key quality indicators, and decreased associated costs. The studies conclude that disinfection caps should be considered as part of best practice protocols and added to the hospitals maintenance bundles.[18,19,20,21,22,23,24]

In the 2014 update of the 'Strategies to Prevent CLABIs in Acute Care Hospitals' the Society for Healthcare Epidemiology of America (SHEA) has included the recommendation to use an antiseptic-containing hub/connector cap/port protector to cover connectors. It has graded the quality of evidence for this statement with I (= high quality evidence).[25]

Manual disinfection errors & Infection rate increase

Salgado et al. reported that infection rates increased following the introduction of a needleless mechanical valve device and that intense staff re-education on proper disinfection and use failed to improve the infection rate to the preneedleless device baseline.[10]

Potential risk factors for bloodstream infections associated with needleless swabbable valves are:[11]

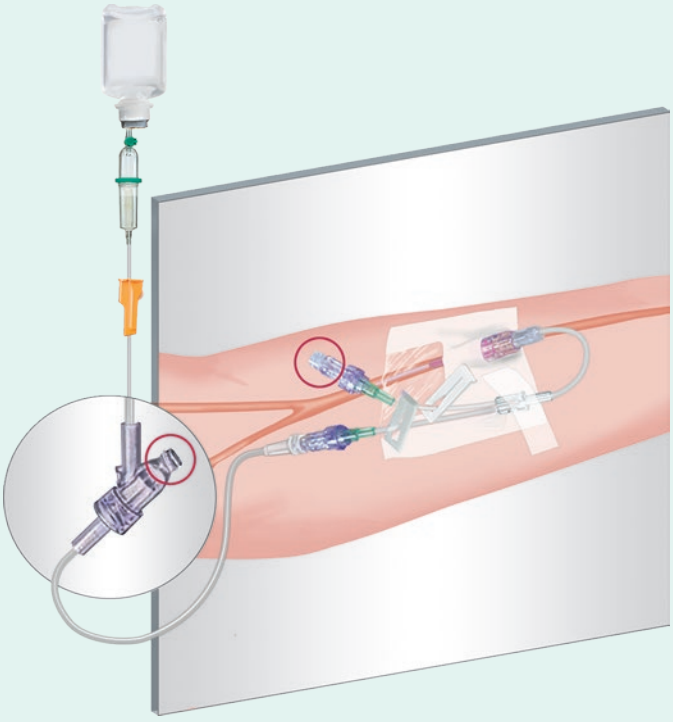
- During normal manipulation, small amounts of bacteria and media-like fluids contaminate the valve. If these organisms proliferate, then they can be infused with subsequent manipulations
- Health care workers may not adequately clean the intricate surface details before access, leading to fluid path contamination
- Gap around valve plunger cannot be accessed for disinfection and can lead to fluid path contamination

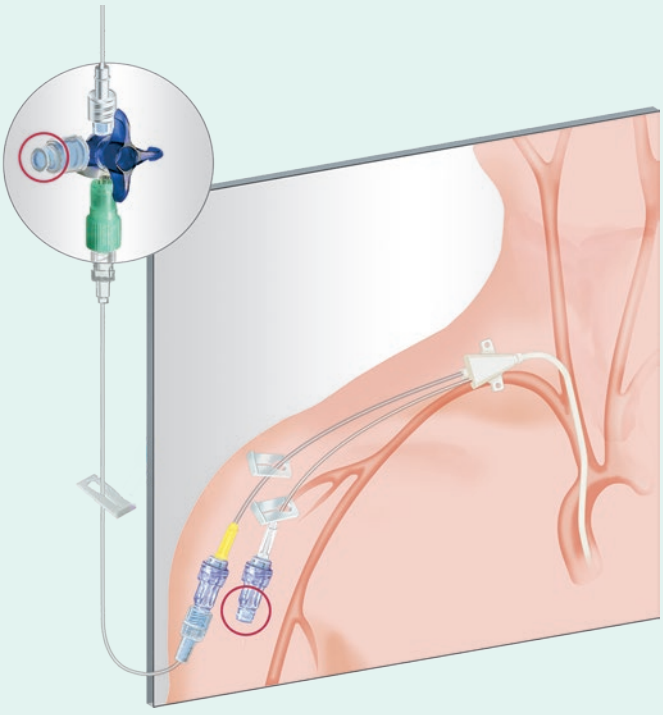
To avoid infections, typical hospital protocols require manual wiping the hub, using downward twisting pressure, with a disinfectant such as isopropyl alcohol for 15 seconds and then waiting another 15 seconds for the alcohol to dry before accessing the valve.

Compliance with hub/connector/port disinfection guidelines is essential since approximately half of such catheter components are colonized under conditions of standard practice.[12,13] However, noncompliance and variation from proper valve disinfection technique are widely recognized.[14]

Studies that have assessed actual nursing practice have found that up to 56 % of nurses did not feel the need to disinfect the catheter hub prior to connection.[15] A 2014 study of the Alliance for Vascular Access Teaching and Research (AVATAR) Group on compliance with aseptic PIV flushing protocols measured the hub disinfection compliance (prescribed no. of seconds scrub) to be 0 %![16]

- **Manual scrubbing is error-prone!**
- **Errors in hub disinfection increase the bloodstream infection risk!**
- **There is no way to measure compliance with manual hub disinfection!**





Product Description		Units / Box	Volume	Article Code
	SwabCap® Valve Cap with 70 % IPA	200	-	EM-SCXT3
	Omniflush® with SwabCap® 10 ml in 10 ml	100	10 ml 0.9 % Sodium Chloride (NaCl)	EM-3513576SC
	Omniflush® with SwabCap® 5 ml in 10 ml	100	5 ml 0.9 % Sodium Chloride (NaCl)	EM-3513575SC
	Omniflush® with SwabCap® 3 ml in 10 ml	100	3 ml 0.9 % Sodium Chloride (NaCl)	EM-3513572SC

References

1. Raad I, Costerton W, Sabharwal U, Sacilowski M, Anaissie E, Bodey GP. Ultra-structural analysis of indwelling vascular catheters: a quantitative relationship between luminal colonization and duration of placement. *J Infect Dis 1993; 168:400-407*
2. Safdar N, Maki DG. The pathogenesis of catheter-related bloodstream infection with noncuffed short-term central venous catheters. *Intensive Care Med 2004; 30:62-67*
3. Ryder MA. Catheter-related infections: it's all about biofilm. *Top Advanced Pract Nurs eJ. 2005; 3*
4. Uslusoy E, Mete S. Predisposing factors to phlebitis in patients with peripheral intravenous catheters: a descriptive study. *J Am Acad Nurse Pract. 2008; 20(4):172-80*
5. Bouchoucha et al., Deep venous thrombosis associated with acute hematogenous osteomyelitis in children. *Orthop Traumatol Surg Res. 2010 Dec; 96(8):890-3, Boucher 2010*
6. Hanberger H, Walther S, Leone M, Barie PS, Rello J, Lipman J, Marshall JC, Anzueto A, Sakr Y, Pickkers P, Felleiter P, Engoren M, Vincent JL. EPIC II Group of Investigators. Increased mortality associated with meticillin-resistant Staphylococcus aureus (MRSA) infection in the Intensive Care Unit: results from the EPIC II study. *Int J Antimicrob Agents, 2011 Oct; 38(4):331-5*
7. Rello J, Ochagavia A, Sabanes E, Roque M, Mariscal D, Reynaga E, Valles J. Evaluation of outcome of intravenous catheter-related infections in critically ill patients. *Am J Respir Crit Care Med 2000; (162):1027–1030*
8. Tacconelli E et al., Epidemiology, medical outcomes and costs of catheter-related bloodstream infections in intensive care units of four European countries: literature- and registry-based estimates. *J Hosp Infect (2009), doi:10.1016/j.jhin.2008.12.012*
9. Stone PW, Larson E, Kawar LN. A systematic audit of economic evidence linking nosocomial infections and infection control interventions: 1990-2000. *Am J Infect Control 2002; 30:145-52*
10. Salgado CD, Chinnes L, Paczesny TH, Cantey JR. Increased rate of catheter related bloodstream infection associated with use of a needleless mechanical valve device at a long-term acute care hospital. *Infect Control Hosp Epidemiol 2007; 28:684-8*
11. W Jarvis, M D. Increased central venous catheter-associated bloodstream infection rates temporally associated with changing from a split septum to a luer access mechanical valve needleless device: a nation-wide outbreak? CHCA Meeting, Chicago, IL Sept. 24, 2005
12. Casey AL, Worthington T, Lambert PA, Quinn D, Faroqui MH, Elliott TS. A randomized, prospective clinical trial to assess the potential infection risk associated with the PosiFlow needleless connector. *J Hosp Infect 2003; 54(4):288–293*
13. Rupp ME, Yu S, Huerta T, et al., Adequate disinfection of a split-septum needleless intravascular connector with a 5-second alcohol scrub. *Infect Control Hosp Epidemiol 2012; 33(7):661–665*
14. Moureau N, Dawson RB. Keeping needleless connectors clean, part 1. *Nursing. 2010; 40(5):18-19*
15. Hadaway L. Intermittent intravenous administration sets: survey of current practices. *J Vasc Access. 2007; 12(3):143-147*
16. Samantha Keogh et al., A time and motion study of peripheral venous catheter flushing practice using manually prepared and pre-filled flush syringes. *Journal of Infusion Nursing, Volume 37, No. 2: 96-101, 2014*
17. Moureau N. Passive disinfection / protection cap effectively disinfects swabbable luer access valves / needleless connectors. Poster session presented at the 2010 annual meeting of the Association for Vascular Access (AVA), National Harbor, MD
18. Michelle DeVries et al., Reducing bloodstream infection risk in central and peripheral intravenous lines: initial data on passive intravenous connector disinfection. *Journal of Vascular Access, Volume 19, No. 2: 87-93, 2014*
19. Marc-Oliver Wright MT (ASCP) et al., Continuous passive disinfection of catheter hubs prevents contamination and bloodstream infection. *American Journal of Infection Control, Volume 41, No. 1: 33-38, 2013*
20. Cap the Connector: Save the Patient by Dr. Gregory Schears. Poster presented at AVA 2011, 25th Annual Scientific Meeting
21. Use of disinfectin cap / flush syringe combination to address bloodstream infection and related issues by Hector Contreras. Poster presented at AVA 2012, Annual Scientific Meeting
22. Integrated delivery system of disinfection cap and flush syringe, plus staff education, reduce bloodstream infections and treatment costs by Saungi McCalla Poster presented at AVA 2012, Annual Scientific Meeting
23. It takes a village to prevent central venous catheter infections and promote safety of patients by Barbara Bor. Poster presented at AVA 2012, Annual Scientific Meeting
24. Improving IV connector disinfection by using human factors engineering to identify effective, nurse-friendly solutions by Patricia Rosa. Poster presented at APIC, 40th Annual Conference
25. Strategies to prevent central line–associated bloodstream infections in acute care hospitals: 2014 Update by Jonas Marschall, MD. *Infection Control and Hospital Epidemiology July 2014, Vol. 35, No. 7: 753-771*

Detailed information for healthcare professionals

For more information about risk prevention in infusion therapy, visit:

www.safeinfusiontherapy.com

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