



Tegaderm™

Chlorhexidine Gluconate (CHG)
I.V. Securement Dressing

The evidence is clear:

**3M™ Tegaderm™ CHG Dressings
are the only transparent dressings
proven to reduce catheter-related
bloodstream infection.**



*Catheter-related bloodstream infection (CRBSI)

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Should Tegaderm™ CHG Chlorhexidine Gluconate IV Securement Dressing be included in the bundle of care?

Tegaderm™ CHG Dressing for Central Venous and Arterial Catheter Insertions Sites: A NICE Medical Technology Guidance

Authors:

Jenks M, Craig J; Green W, Hewitt N, Arber M; Sims A, Appl Health Econ Health Policy 2016: Apr;14(2):135-49

Methods:

Systematic review and health economic model

Objectives:

Assessment of the clinical and economic evidence of a Chlorhexidine Dressing by an independent External Assessment Centre (EAC) followed by review of the Medical Technologies Advisory Committee (MTAC).

Key Findings:

- Adoption of Tegaderm™ CHG Dressings for central venous and arterial catheter insertion sites, in intensive care or high dependency units, is supported by the evidence.
- It allows observation and provides antiseptic coverage of the catheter insertion site, reducing CRBSI and local site infections compared with semipermeable transparent (standard) dressings.
- It can be used with existing care bundles.

Conclusion:

The MTAC judged that the evidence demonstrated sufficient potential benefit, and made a positive recommendation to the NHS.

Reducing bloodstream infection with a Tegaderm™ CHG Chlorhexidine Gluconate IV Securement Dressing

Authors:

Jeanes A and Bitmead J, Br J Nurs. 2015:Oct 22-Nov 11:24(19):S14-9

Methods:

Review of consultant and specialist nurses for Infection Prevention and Control of University College Hospital London

Objectives:

Discussion on issues around CRBSI, interventions to reduce the risk of CRBSI, and the use of Tegaderm™ CHG Dressing

Key Findings:

Vascular access devices, particularly CVCs, increase the risk of acquiring an infection.

Conclusion:

Bundles of evidence-based interventions are used to reduce the risk of infection. The National Institute for Health and Care Excellence (NICE) recommends Tegaderm™ CHG Dressing to be considered for use as part of bundle of interventions to reduce the risk of bacteraemia and sepsis.

Should Tegaderm™ CHG Dressing be considered for routine use in the management of central venous and arterial catheters?

Chlorhexidine-impregnated dressing for prevention of CRBSIs: A meta-analysis

Authors:

Safdar N, O'Horo J C, Ghufuran A, Bearden A, Didier M E, Chateau D, Maki D G, Critical Care Medicine 2014;Jul:42(7):1703-13

Methods:

Meta-Analysis

Objectives:

To assess the efficacy of a chlorhexidine impregnated dressing for prevention of central venous and arterial catheter-related colonisation and CRBSI using meta-analysis.

Key Findings:

- Use of chlorhexidine-impregnated dressing resulted in a reduced prevalence of CRBSI.
- The prevalence of catheter colonization was also markedly reduced in the impregnated dressing group.
- There was significant benefit for prevention of catheter colonization and catheter-related bloodstream infection, including arterial catheters used for hemodynamic monitoring.

Conclusion:

A chlorhexidine-impregnated dressing is beneficial in preventing catheter colonization and, more importantly, CRBSI and warrants routine use in high-risk patients groups.

Is Tegaderm™ CHG Dressing proven to reduce CRBSIs?

Randomised controlled trial of chlorhexidine dressing and highly adhesive dressing for preventing CRBSIs in critically ill adults

Authors:

Timsit JF, Mimoz O, Mourvillier B, Souweine B, Garrouste-Orgeas M et al, American Journal of Respiratory and Critical Care Medicine 2012;186(12):1272-1278

Methods:

Randomised controlled trial comparing chlorhexidine vs. non-chlorhexidine dressings.

Objectives:

To determine if chlorhexidine-impregnated and strongly adherent dressings decrease catheter colonisation and CRBSI rates.

Key Findings:

- With chlorhexidine dressings the CRBSI rate was 60% lower (0.5 per 1,000 vs. 1.3 per 1,000 catheter-days; HR, 0.402; 95% CI, 0.186-0.868; $p = 0.02$) than with non-chlorhexidine dressings.
- Catheter colonisation incidence was 9.6/1,000 catheter days for the standard dressing and 4.3/1,000 catheter days for the chlorhexidine impregnated dressing.
- Decreased the number of dressings per catheter to two (one to four) versus three (one to five).

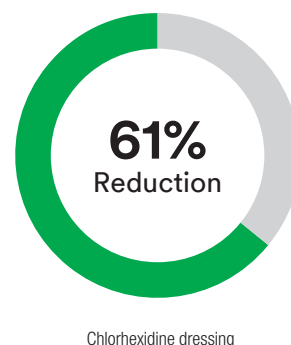
Conclusion:

Chlorhexidine gel-impregnated dressings decreased the CRBSI rate in patients in the ICU with intravascular catheters.

Figure 1: Catheter CRBSIs



Figure 2: Catheter Colonisation



Does Tegaderm™ CHG Dressing bring any benefit to patients outside of the ICU?

Tegaderm™ CHG Dressing significantly improves CRBSI rate in hemodialysis patients

Authors:

Righetti M, Palmieri N, Bracchi O, Prencipe M, Bruschetta E, Colombo F, Brenna I, Stefani F, Amar K, Scalia A, Conte F, J Vasc Access 2016;Sep 21:17(5):417-422

Methods:

Prospective randomised cross-over study

Objectives:

Study compares a scheme of two treatments, Tegaderm™ CHG Dressing versus standard dressing, and two periods of six months.

Key Findings:

CRBSI reduction of 86% was shown with chlorhexidine dressing (0.65 vs. 0.09 per 1,000 catheter days).

Conclusion:

First prospective study to show that Tegaderm™ CHG Dressing significantly reduces CRBSI rates in hemodialysis patients

A randomised trial on chlorhexidine dressings for the prevention of CRBSIs in neutropenic patients

Authors:

Biehl L M, Huth A, Panse J, Krämer C, Hentrich M, Engelhardt M, Schäfer-Eckart K, Kofia G, Kiehl M, Wendtner C-M, Karthaus M, Ulmann A J, Hellmich M, Christ H, Vehreschild Maria J.G.T., Ann Oncol 2016 Oct;27(10):1916-22

Methods:

Open-label, randomised, multicenter trial in 10 German hematological departments.

613 patients were assessed.

307 were in the CHG group and 306 in the control group (non antimicrobial film dressing).

Objectives:

Prevent CRBSIs within vulnerable group of neutropenic patients who receive a long-term catheter for administration of intensive chemotherapy

Key Findings:

- The antimicrobial benefit of Tegaderm™ CHG Dressing was demonstrated during the complete long-term catheter therapy.
- Tegaderm™ CHG Dressing is safe for application on oncology patients.
- Tegaderm™ CHG Dressing does not reveal a positive selection of Gram-negative bacteria and Candida species.

Conclusion:

Neutropenic patients with a long-term catheter might benefit from using Tegaderm™ CHG Dressing to prevent CRBSIs.

Are the results of the randomised control trial relevant in real-life situations?

Reduction of CLABSI rates by using a chlorhexidine-containing dressing

Authors:

Scheithauer S, Lewalter K, Schröder J, Koch A, Häfner H, Krizanovic V, Nowicki K, Hilgers RD, Lemmen SW, Infection 2013;August:1-5

Methods:

The number of CLABSIs and the infection rates were documented with regard to the kind of dressing used (standard vs. chlorhexidine-containing) from November 2010 to May 2012 at two intensive care units and compared to historical data.

Objectives:

To assess a chlorhexidine-containing dressing for its potential for infection reduction.

Key Findings:

Forty CLABSIs occurred in 34 patients. The CLABSI rates in patients with the new dressing were lower at 1.5/1,000 Central Venous Line (CVL) days (95% CI 0.75–2.70 compared to both historical controls at 6.2/1,000 CVL days and patients cared for at the same time with the standard dressing during the observational study at 5.9/1,000 CVL days (95% CI 3.93–8.43).

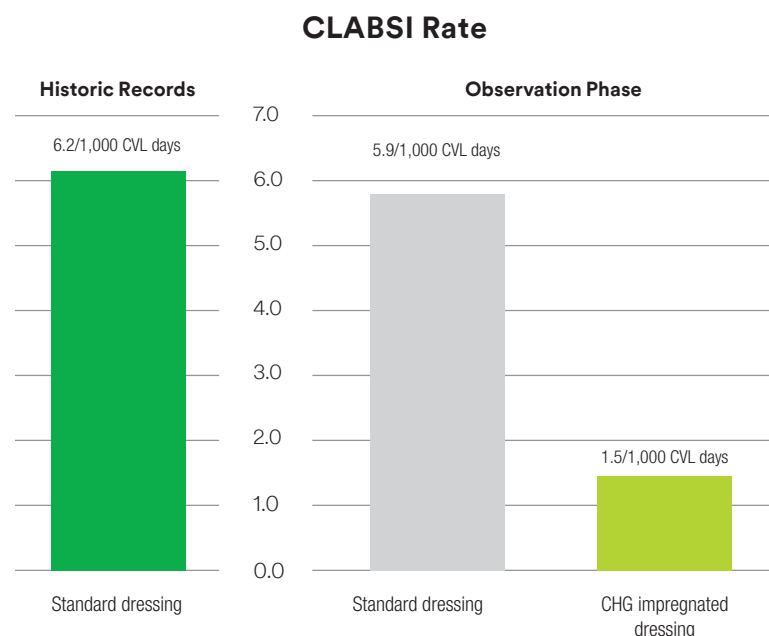
Conclusion:

In case of high CLABSI rates despite the implementation of standard recommendations, our findings suggest that a chlorhexidine-containing dressing safely decreases CLABSI rates.

- Standard dressing (historical records)
- Standard dressing
- CHG-impregnated dressing

Note:

1,298 patients with 12,220 CVL days were enrolled during the observational phase. 59% of those were treated with chlorhexidine-containing dressings while 41% were treated with non-antimicrobial standard dressings. The decision whether to use CHG dressing or not was made by the clinicians at the study site according to the local patient management protocol.



How are users rating the performance of Tegaderm™ CHG Dressing?

Transparent Film Intravenous Line Dressing Incorporating a Chlorhexidine Gluconate Gel Pad: A Clinical Staff Evaluation

Authors:

Karpanen T J, Casey A L, Das I, Whitehouse T, Nightingale P, Elliott T S J, Journal of the Association for Vascular Access 2016;September:21(3):133-138

Methods:

Critical Care unit, patients with short term CVC or VAC for dialysis. Study divided into two phases: seven months before and six months after introduction of Tegaderm™ CHG Dressing. Comparator a standard transparent IV dressing

Objective:

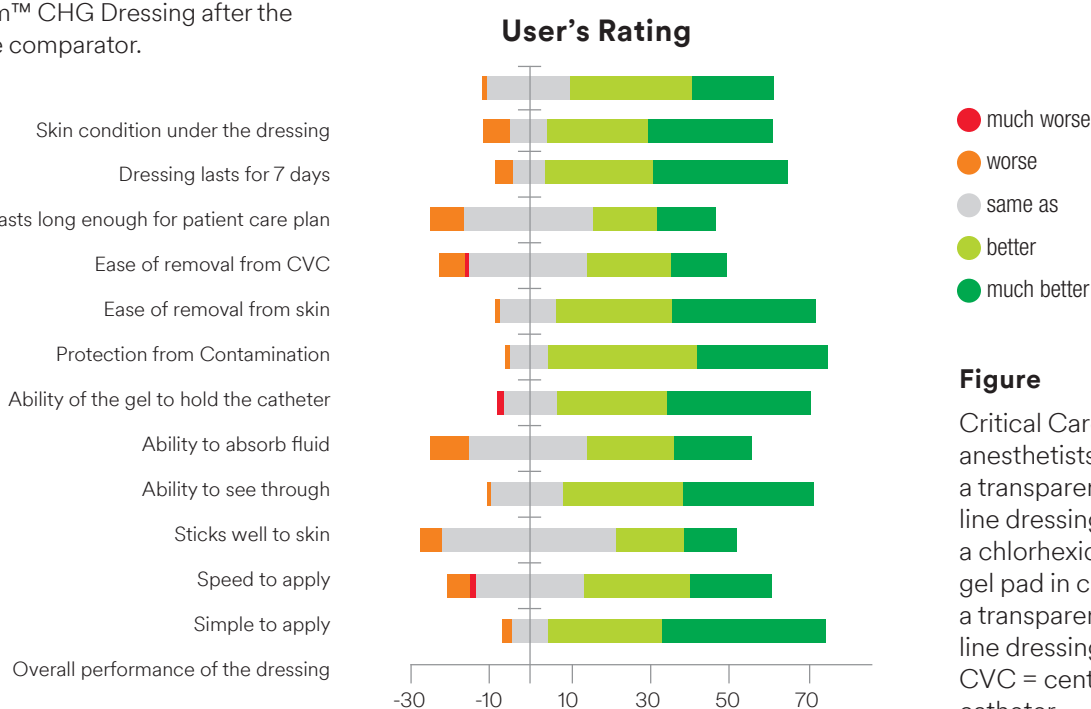
To evaluate clinical staff experience following the implementation of Tegaderm™ CHG Dressing after the use of the comparator.

Key Findings:

- Majority of the clinical staff considered Tegaderm™ CHG Dressing better or much better than the comparator.
- 99% of the respondents recommended continuing the use of Tegaderm™ CHG Dressing.

Conclusion:

Staff satisfaction with the I.V. dressings incorporating a CHG gel pad was rated good, and the dressing performed well in a diverse group of critical care patients.



Figure

Critical Care nurses' and anesthetists' perception of a transparent intravascular line dressing incorporating a chlorhexidine gluconate gel pad in comparison with a transparent intravascular line dressing (N=81). CVC = central venous catheter.

Is Tegaderm™ CHG Dressing cost-effective for using in the ICU environment?

Cost-effectiveness analysis of a 3M™ Tegaderm™ CHG Chlorhexidine Gluconate IV Securement Dressing for Managing Central Venous and Arterial Catheters in Intensive Care Units

Authors:

Maunoury F, Motrunich A, Palka-Santini M, Bernatchez S F, Ruckly S, Timsit J-F, PLoS One 2015;Jun 18;10(6):e0130439

Methods:

A novel health economic model (30-day time non-homogenous Markov model).

Objectives:

Study used to estimate cost-effectiveness of using chlorhexidine vs. non chlorhexidine dressings in a French intensive care unit scenario.

Key Findings:

- The Tegaderm™ CHG Dressing prevents 11.8 infections/1000 patients
- The incremental cost-effectiveness ratio is €12,046 per CRBSI prevented
- The incremental net monetary benefit per patient is €344.88

Conclusion:

According to the base case scenario, the chlorexidine gluconate dressing is more cost-effective than the reference dressing.

Cost-effectiveness analysis of an antimicrobial transparent dressing for catheter insertion sites on intensive care units

Authors:

Trautmann M, Saatkamp J, Hyg Med 2016;41(5):D65-70

Methods:

Based on the multi-center study in France, it is assumed that the reduction rate by 1,0 episodes per 1000 catheter days for venous catheter associated BSI could be achieved for the 29-bed surgical ICU.

Objectives:

Cost calculation whether the use of the antimicrobial dressing would be cost-effective in the 29- bed surgical ICU of a tertiary care community hospital.

Key Findings:

The use of the Tegaderm™ CHG Dressing resulted in net savings of 32.195€ per year.

Conclusion:

In the setting of surgical ICU patients used for the calculation, the general use of the Tegaderm™ CHG dressing was highly cost effective.

Economic Impact of Tegaderm™ CHG Chlorhexidine Gluconate IV Securement Dressing in critically ill patients

Authors:
Thokala P, Arrowsmith M, Poku E, Martyn-St. James M, Anderson J, Foster S, Elliott T, Whitehouse T, Journal of Infection Prevention 2016;Sep:17(5):216-223

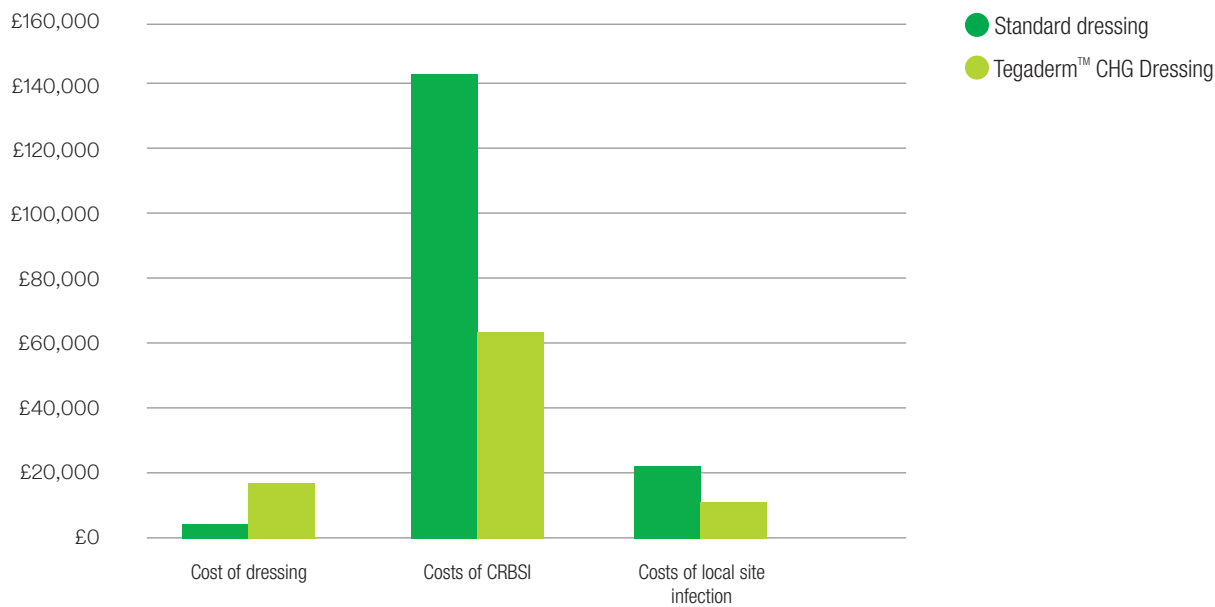
Methods:
Cost-consequence model populated with data from published sources.

Objectives:
Estimate the economic impact of a Tegaderm™ CHG Dressings compared with a standard intravenous dressing.

Key Findings:
Tegaderm™ CHG Dressing results in an overall savings of £77,427 per 1000 adult patients, i.e. an average cost saving of £77 per patient compared to standard care with a 98.5% probability of being cost-saving compared to standard I.V. dressings.

Conclusion:
The analysis suggest that Tegaderm™ CHG Dressing is a cost-saving strategy to reduce CRBSI.

Breakdown of different costs for standard and Tegaderm™ CHG Dressings
(for a cohort of 10,000 patients)



Clinical Risk	Standard I.V. dressing	Tegaderm™ CHG
CRBSI risk	1.48 per 1,000 catheter days	0.6 per 1,000 catheter days
Local site infection risk (per patient)	10%	4.25%

Is Tegaderm™ CHG Dressing effective against a broad range of pathogens and is it clinically relevant?

Growth inhibition of microorganisms involved in CRBSIs by an antimicrobial transparent I.V. dressing containing chlorhexidine gluconate (CHG)

Authors:

Hensler JP, Schwab DL, Olson LK, Palka-Santini M, Poster session presented at 19th Annual Conference of the European Society of Clinical Microbiology and Infectious Diseases 2009:May 16-19

Methods:

In vitro study. The antimicrobial activity of the Tegaderm™ CHG Dressing gel pad was tested against a panel of 37 microorganism strains, comprised of 21 Gram-positive and 14 Gram-negative bacteria and two yeasts.

Objectives:

To evaluate the antimicrobial activity of Tegaderm™ CHG Dressing against microorganisms commonly associated with CRBSIs using *in vitro* zone of inhibition.

Key Findings:

Susceptibility to Tegaderm™ CHG Dressing was observed for all 37 microorganism strains tested, including Gram-positive and Gram-negative bacteria and yeasts.

Conclusion:

The Tegaderm™ CHG Dressing demonstrated broad-spectrum antimicrobial activity against all 37 strains of microorganisms tested. Tegaderm™ CHG Dressing retains its antimicrobial properties as demonstrated by the aged dressing's ability to produce similar zones of inhibition compared to unaged dressings.

Tegaderm™ CHG Dressing demonstrates *in vitro* efficacy against



Enterococcus
(5 strains)



Pseudomonas aeruginosa
(5 strains)



Candida
(2 strains)



Staphylococcus aureus (8 strains)



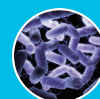
Escherichia coli (1 strain)



Coag Neg Staph (7 strains)



Klebsiella
(2 strains)



Enterobacter
(1 strain)



Other
(6 strains)

37 strains of microorganisms
including gram positive bacteria, gram negative bacteria and yeast.

What is the impact of Tegaderm™ CHG Dressing on the asepsis of the insertion site incl. sutures?

Clinical Evaluation of a Tegaderm™ CHG Chlorhexidine Gluconate IV Securement Dressing on Short-term Central Venous Catheters

Authors:

Karpanen T J, Casey A L, Whitehouse T, Nightingale P, Das I, Elliott T S J, Am J Infect Control 2016;44(1):54-60

Methods:

Prospective, cross-over, comparative, non-blinded single-center clinical study. Comparator was a non-antimicrobial impregnated catheter.

Objectives:

Assess the antimicrobial efficacy of Tegaderm™ CHG Dressings in patients with a CVC

Key Findings:

- There was a significant reduction in the number of microorganisms recovered from the CVC insertion site, suture site, sutures, and catheter surface in the Tegaderm™ CHG Dressing group compared with the non-antimicrobial dressing group.
- There was no significant difference in susceptibility to CHG between the microorganisms isolated from the Tegaderm™ CHG Dressing and standard dressing study patients.

Conclusion:

Tegaderm™ CHG Dressing is a powerful solution to control skin flora regrowth and bioburden around sutures

	all CVCs All values expressed as Median CFU/cm2				Internal Jugular CVCs with Tracheostomy All values expressed as Median CFU/cm2			
	n Values	Insertion site	Suture site	Suture	n Value	Insertion site	Suture site	Suture
Tegaderm™ CHG Dressing	n=136	0	0.6	2	n=15	16.6	11.5	348.0
Standard	n=136	10.2	22.3	56	n=17	6.7 x10 ⁴	4.9 × 10 ³	7.2 × 10 ⁴

Overview of Additional Evidence

Authors	Title of paper	Publication/Date	Objectives	Key Findings
Bashir MH, Olson L, Walters S-A	Suppression of regrowth of normal skin flora under chlorhexidine gluconate dressings applied to chlorhexidine gluconate prepped	American Journal of Infection Control 2012; 40(4): 344-348.	After prepping the back of 32 healthy subjects with 2% chlorhexidine gluconate (CHG)/70% isopropyl alcohol antiseptic 3 dressings (2 containing CHG) was placed on top in a randomised design. Using the cup scrub method samples of aerobic bacteria were collected and relative suppression of regrowth was compared using an adjusted paired t test.	“Skin flora was not completely eradicated during antiseptics, and bacterial regrowth occurred postantiseptics. The use of CHG dressings helped sustain a reduced bacterial count on the skin. The continuously releasing CHG gel maintained suppression to a greater extent than the CHG disk at 7 days (P = 0.01).”
Madeo M, Lowry L	Infection rates associated with total parenteral nutrition	Journal of Hospital Infection 2011; 79(4): 373-374.	A prospective 12 month audit involving 175 patients (1,174 catheter days) performed on the use of 2% chlorhexidine gluconate dressing on patients receiving total parenteral nutrition.	“The results showed a decrease in CRBSI from eight cases to zero (P=0.057), making this film dressing a possible useful addition in the goal of zero avoidable CRBSIs within this high risk group of patients.”
Madeo M, Lowry L, Cutler L	Product evaluation of a new chlorhexidine gluconate transparent intravenous line dressing.	Journal of Hospital Infection 2010; 75(2): 143-144.	An evaluation at a 22 bed critical care unit running over a two-month period from August to October 2009 involving 25 patients.	“The results of the product evaluation suggest the use of the Tegaderm™ CHG Dressing is well tolerated by the patient and shows a good level of adhesiveness and longevity compared to the baseline dressing. The dressing also appears to offer antimicrobial protection.”
Pfaff B, Heithaus T, Emanuelsen M	Use of a 1-piece chlorhexidine gluconate transparent dressing on critically ill patients.	Critical Care Nurse 2012; 32(4): 35-40.	A quality improvement observational study was done in an adult medical-surgical intensive care unit.	“During the study period of 1881 device days, the infection rate was 0.051 per 1000 device days, compared with a rate of 0.052 in 2008. Nurses preferred the new dressing. Cost savings were \$3807.”
Olson C, Heilman JM	Clinical Performance of a New Transparent Chlorhexidine Gluconate Central Venous Catheter Dressing.	Journal of the Association for Vascular Access 2008; 13(1): 13-19.	In-hospital clinical study. Prospective, single site, controlled randomised clinical trial. Evaluating the ease-of-use and the performance characteristics of a new transparent catheter dressing with 63 patients.	“As easy to use in central venous catheter care clinical practice as the standard of care nonantimicrobial transparent adhesive dressing. No additional training or education was required to properly use it.” “Advantages include that it is antimicrobial, handles moderate bleeding, remains transparent and appears to offer greater catheter securement..”

Authors	Title of paper	Publication/Date	Objectives	Key Findings
Eyberg CI, Pyrek J	A Controlled Randomised Prospective Comparative Pilot Study to Evaluate the Ease of Use of a Transparent Chlorhexidine Gluconate Gel Dressing Versus A Chlorhexidine Gluconate Disk in Healthy Volunteers.	Journal of the Association for Vascular Access 2008; 13(3): 112-117.	Prospective, single-site, controlled, randomised, clinical trial comparing Tegaderm™ CHG Dressing to a CHG-impregnated sponge (BIOPATCH®)	“The clinicians concluded,... that the CHG gel dressing is better in regard to ease of application, ease of applying correctly, ease of removal, ability to visualise the insertion site, ease of training another clinician to apply the dressing, and more intuitive application. Twelve out of 12 clinicians favored the CHG gel dressing over the CHG disk in overall performance”
Apata IW, Hanfelt J, Bailey JL, Niyyar VD	Chlorhexidine-impregnated transparent dressings decrease catheter-related infections in hemodialysis patients: a quality improvement project.	J Vasc Access. 2017 Feb 4:0. doi: 10.5301/jva.5000658.	Quality improvement project to compare CRBSI rates in two dressing regimens - CHG-transparent dressings and adhesive dry gauze dressing in hemodialysis patients with tunneled CVCs.	Replacing adhesive dry gauze dressing with CHG-transparent dressing for hemodialysis patients with tunneled CVC was associated with decreased CRI rates.
Scoppettuolo et al	Multi-centre Randomised Trial on the Efficacy of Chlorhexidine-releasing Transparent Dressing in Reducing CRBSIs	2013 AVA Conference	randomised controlled trial	Tegaderm™ CHG Dressing may play a role in reducing CRBSI in ICU and non-ICU patients. Although RCT stopped at Interim Analysis it shows a strong trend for reduction for CRBSI (64% reduction).
Scheithauer S, Schulze-Steinen H, Höllig A, Lopez-Gonzalez [?], Hilgers R-D, Reinges M H T, Marx G, Lemmen S	Significant Reduction of External Ventricular Drainage–Associated Meningoventriculitis by Chlorhexidine-Containing Dressings: A Before-After Trial.	Clin Infect Dis 2016; 62 (3): 404-405. doi: 10.1093/cid/civ887	Before-After Trial. Aimed to decrease meningoventriculitis infection by use CHG transparent dressings for external ventricular drainage.	Successful use of Tegaderm™ CHG Dressing for percutaneous devices, namely External Ventricular Drains, other than vascular catheters.
Kerwat K, Eberhart L, Kerwat M, Hörth D, Wulf H, Steinfeldt T, Wiesmann T	Chlorhexidine Gluconate Dressings Reduce Bacterial Colonisation Rates in Epidural and Peripheral Regional Catheters.	BioMed Research International Volume 2015 (2015), Article ID 149785	Prospective Study of regional anesthesia CRBSI rates. Two groups of patients with epidural and peripheral regional catheters were examined.	CHG dressings significantly reduce bacterial colonisation of the tip and the insertion site of epidural and peripheral regional catheters



3M ישראל

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