**Table 1. Study characteristics of included articles**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author, year, country** | **Study period** | **Study design** | **No. hospitals included** | **Setting**  | **Study groups****(intervention vs control)** | **Catheter type** | **Antimicrobial-impregnated catheter** | **Skin antiseptic used** | **Maximal sterile barrier precautions during catheter insertion** | **Frequency of dressing change**  |
| Arpa, 2013, Turkey1 | April to December 2011 | Possible RCT | 1 | Post-operative cardiac surgery ICU (pediatrics) | CHG 2% impregnated transparent dressing vs standard transparent dressing | Short-term CVC (jugular, subclavian) | No | Povidone-iodine | Yes | Every 7 days or as needed |
| Arvaniti, 2012, Greece2 | June 2006- May 2008 | RCT |  5 hospitals | ICU (adults) | CHG sponge disc dressing (Biopatch®)vspolyurethane occlusive dressing | Short-term CVC (jugular, subclavian, femoral) | Yes(there is a group with silver-impregnated catheters, which has not been included in the meta-analysis) | 10% Povidone-iodine | Yes | Every 3 days or as needed |
| Biehl, 2016,Germany3 | February 2012- September 2014 | RCT |  10 hematological departments | Hematologic patients undergoing chemotherapy and expected neutropenia ≥ 5 days(adults) | CHG gel dressing (3M Tegaderm IV securement dressing)vspolyurethane dressing (3M Tegaderm IV advanced) | Short-term CVC(jugular, subclavian) | Yes (~70% of patients in both groups with silver/CHG coated CVC) | NR | NR | Every 3 (± 1) days |
| Chambers, 2005, New Zealand4 | August 1998- December 2001 | RCT | 1 | Hematologic patients undergoing chemotherapy or bone marrow transplant (adults) | CHG sponge disc dressing (Biopatch®)vsNo dressing | Long-term CVC (hickman, hemocath) | No | Alcoholic-povidone iodine 10% | NR | CHG group: every 7 days or as neededControl group: N/A |
| Chan, 2017, Australia5 | March 2014-March 2015 | RCT | 1 | Non-ICU patients (medical, surgical, onco-hematological patients)(adults) |  CHG sponge disc dressing (Biopatch®)plus 3 different securement methods: SPU+SSD, PAL+ tape, CSD)avsTissue adhesive + standard polyurethane dressing | PICC line | No | 2% CHG in 70% alcohol(if allergy, 10% povidone-iodine was used) | NR | Every 7 days or as needed |
| Düzkaya, 2016, Turkey6 | December 2012– January 2014 | RCT | 1 | ICU(pediatrics) | CHG dressingvs sterilized pad | Short-term CVC (jugular, subclavian, femoral) | No | 10% povidone-iodine | Yes | CHG group: every 7 days or as neededControl group: every 48 hours or as needed |
| Ergul, 2018, Turkey7 | October 2014-March 2017 | Quasi-experimental (before-after study) | 1 | ICU(pediatrics) | CHG dressing (3M Tegaderm IV securement dressing)vs standard polyurethane dressing (3M Tegaderm transparent film dressing) | Short-term (jugular) | No | > 0.5% CHG-alcohol preparation | NR | CHG group: every 7 days or as neededControl group: every 48h or as needed |
| Garland, 2001, US8 | June 1994–August 1997 | RCT | 6 hospitals | ICU (neonates) | CHG sponge disc dressing (Biopatch®)vs polyurethane dressing (biocclusive transparent dressing) | Short-term CVC (not specified)Long-term CVC (broviac) | No | CHG group: 70% alcoholControl group: 10% povidone-iodine | Yes | Every 7 days(except surgically placed Broviac catheters: twice weekly in control group) |
| Gerçeker, 2017, Turkey9 | October 2014- May 2015 | RCT | 1 | Hemato-oncological patients (pediatrics, older than 2 months) | CHG dressing (3M Tegaderm IV securement dressing)vs standard polyurethane dressing (3M Tegaderm IV advanced securement dressing) | Long-term CVC (hickman, port catheters) | No | NR | Yes | Every 7 days or as needed |
| Levy, 2005, Israel10 | Jan 2002-March 2003 | RCT | 1 | ICU (neonates and pediatric population) | CHG sponge disc dressing (Biopatch®)vsstandard polyurethane dressing | Short-term CVC(jugular) | No | CHG solution | Yes | As needed |
| Maki, 2000, US11[Conference abstract] | NR | RCT | Multicentric study(number not specified) | NR(probably adults) | CHG sponge disc dressing (Biopatch®)vs transparent film dressing | Short-term CVC (not specified), arterial, pulmonary artery catheters |  No | NR | NR | CHG group: every 7 daysControl group: every 2 days |
| Margatho, 2018, Brazil12 | April-December 2014 | RCT | 1 | ICU and cardiothoracic ICU(adults) | CHG dressing (3M Tegaderm CHG IV securement dressing) vs standard polyurethane dressing (3M Tegaderm transparent film dressing) | Short-term CVC (jugular, subclavian, femoral) | No | 0.5% CHG-alcohol preparation | Yes + Daily CHG bathing performed in all patients | Every 7 days or as needed  |
| O’Horo, 2013, US13[Conference abstract] | December 2008– August 2012 | Quasi-experimental (before-after study) | 1 | NR(probably adults) | CHG sponge disc dressing (Biopatch®)vsNR  | Long-term CVC (tunneled, cuffed CVC) | No | NR | NR | NR |
| Pedrolo, 2014, Brazil14 | October 2011–May 2012 | RCT | 1 | ICU and semi-ICU (adults) | CHG dressingvsgauze and tape | Short-term CVC (jugular, subclavian) | No | NR | Yes | CHG group: every 7 days or before if dressing edges detachedControl group: every 48h or before if dressings edges detached  |
| Pivkina, 2018, Russia15 | August 2014–December 2014 | RCT | 1 | Medical ICU (patients with infectious/septic complications(adults) | CHG dressing (3M TegadermCHG dressing) and skin protective acrylic terpolymer barrier filmvs standard polyurethane dressing | Short-term CVC (jugular, subclavian) | No | 0.5% CHG-70% alcohol preparation | Yes | Every 7 days or as needed |
| Roberts, 1998, Australia16 | NR | RCT | 1 | ICU (adults) | CHG sponge disc dressing (Biopatch®)vsocclusive dressing | CVC (not specified) | No | 0.5% CHG-70% alcohol preparation | Yes | Every 5 days or as needed |
| Ruschulte, 2009, Germany17 | January 2004–January 2006 | RCT | 1 | Hemato-oncological patients (adults) | CHG sponge disc dressing (Biopatch®)vsstandard sterile transparent dressing | Short-term CVC (jugular, subclavian) | Yes (CHG and silver sulfadiazine-impregnated CVC) | Alcohol | Yes | Every 7 days or after lifted up for inspection controls |
| Timsit, 2009, France18 | December 2006- May 2008 | RCT |  5 hospitals | ICU (adults) | CHG sponge disc dressing (Biopatch®)vsstandard polyurethane dressing (3M Tegaderm transparent film dressing) | Short-term CVC (jugular, subclavian, femoral)+Long-term CVC (tunneled CVC)+Arterial catheters | No | 5% povidone iodine-70% alcohol | Yes | Every 3 or 7 days. It could be changed before if needed.  |
| Timsit, 2012, France19 | May 2010-July 2011 | RCT |  11 hospitals | ICU (adults) | CHG dressing (Tegaderm CHG dressing) vs standard polyurethane dressing (3M Tegaderm transparent film dressing) OR highly adhesive dressing (3M Tegaderm HP transparent film dressing) | Short-term CVC (jugular, subclavian, femoral)+Long-term CVC (tunneled CVC)+Arterial catheters | No | 5% povidone iodine-70% alcohol OR 67% ethanol-0.5% chlorhexidine solution OR 0.25% CHG-0.025% benzalkonium chloride-4% benzyl alcohol(if alcoholic solution not available: 2% CHG) | Yes | Every 3 or 7 days. It could be changed before if needed |
| Yu, 2019, China20 | January 2014–September 2015  | RCT | 1 | Medical ICU (adults) | CHG transparent dressing (3M Tegaderm transparent dressing)vsstandard transparent dressing | Short-term CVC (jugular, subclavian, femoral) | No | 2% CHG alcohol | Yes | CHG groupb: every 7 days or if neededControl groupb: every 3 or if needed |

Abbreviations: CHG, chlorhexidine; CVC, central venous catheter; ICU, intensive care unit; PICC: peripherally inserted central catheters; N/A, non-applicable; NR: not reported;

aSPU+SSD: standard polyurethane dressing plus sutureless securement device, PAL + tape: polyurethane with absorbent lattice pad plus non-woven tape, CSD: combination securement dressing

bInformation obtained from preliminary results of the same study published in a previous article21

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