

**AQUACEL<sup>®</sup>**  
*Surgical***AQUACEL<sup>®</sup> Ag.**  
*Surgical***Hydrofiber<sup>®</sup> Technology Post-Operative Dressing Portfolio****Prevention is better than cure:**

The first step in the treatment of Surgical Site Complications is their prevention.

**Orthopaedic  
Surgery****Surgical Solutions**  
From ConvaTec

# ORTHOPAEDIC Surgical Site Complications come with high costs

Prosthetic Joint Infection (PJI) is a serious complication of joint replacement surgery, resulting in a significant medical and financial burden on the patient and society. Treatment often requires multiple revision surgeries with a course of intravenous antibiotics and does not guarantee eradication of infection.

Surgical wound complications as a result of Surgical Site Infections (SSI), Surgical Wound Dehiscence (SWD) and blistering are one of the major sources of morbidity after hip and knee arthroplasty procedures and can prolong inpatient stay or increase readmissions.




## Policies placing increasing pressure

New reimbursement and reporting policies place increasing pressure on hospitals to avoid SSIs.<sup>6</sup>


**So it's more important than ever to implement SSC prevention strategies.**

### Burden of Wound Closure in Hip and Knee Arthroplasty






Wound complications are one of the major sources of morbidity after hip and knee arthroplasty procedures and can prolong inpatient stay or lead to re-admissions.

 Meta-analyses have reported that the rate of wound dehiscence and infections ranges from 3% to 20.9%, respectively.<sup>7</sup>

**Surgical site infections (SSIs) occur in up to 19% and 28% of knee and hip arthroplasties respectively, with *Staphylococcus aureus* as one of the leading causes.<sup>8</sup>**

 SSIs are associated with a substantial burden, such as extended length of stay, excess mortality, reduced quality of life, increased readmissions, and a 3-fold increase in hospital costs.<sup>8</sup>

## Burden of SSIs in Hip and Knee Arthroplasty<sup>8</sup>

|  |   |
|--|---|
|  Extended Length of Stays | <i>2 to 3 fold increase in LOS</i>        |
|  Re-admissions            | <i>2 fold increased re-admission rate</i> |
|  Mortality                | <i>1.2% to 56% mortality over 1 year</i>  |
|  Total Costs              | <i>3 fold increase in hospital costs</i>  |
|  Patient Experience       | <i>Decreased quality of life</i>          |

*Surgical site infections are reported to occur in up to **19% and 28%** of knee and hip arthroplasties respectively.<sup>8</sup>*

## Not all post-op dressings are created equal The only post-op dressing powered by Hydrofiber® Technology

AQUACEL® Surgical and AQUACEL® Ag Surgical has a critical difference: **The Hydrofiber® Difference.**

Hydrofiber® Technology is an interactive wound contact layer specially engineered to optimise moist wound healing, Tried, Tested and Trusted.



### Locks in

wound exudate and traps bacteria<sup>39,41-45</sup>



### Contours

to the wound bed which reduces dead space between the dressing and the incision<sup>46-48</sup>



### Responds

to wound conditions by forming cohesive gel<sup>49-51</sup>



### Extends

along the incision line during movement

*The right post-op dressing at the right time reduces complication and plays an integral role in successful recovery.*

# Why you need AQUACEL® Surgical and AQUACEL® Ag Surgical

The right dressing can make all the difference **AQUACEL® Surgical and AQUACEL® Ag Surgical** dressings form part of a range of ConvaTec dressings that have been clinically proven to improve surgical outcomes. Combining flexible, skin-friendly hydrocolloid technology; patented, micro-contouring Hydrofiber® technology and waterproof polyurethane film.

AQUACEL® Ag Surgical helps improve outcomes by creating an optimum healing environment and providing fast broad-spectrum antimicrobial activity against SSI causing pathogens by utilising ionic silver.

## Protect your patients

Enhance patient satisfaction and comfort through:

- Easier self-care
- Less pain at removal<sup>19</sup>
- Less frequent need for dressing changes<sup>20</sup>
- Shower immediately after a procedure, if directed by their healthcare practitioner

### IONIC SILVER provides:

- **Reduction of bacteria**<sup>21</sup>
- Broad spectrum efficacy<sup>22-24</sup>
- Sustained antimicrobial activity against SSI causing pathogens<sup>22-24</sup>



**Antimicrobial Efficacy**

### Clinically Proven and Trusted:

- Reduced SSI<sup>19, 25</sup>
- Reduced PJI<sup>26, 27</sup>
- Reduced blistering<sup>20, 28</sup>
- Reduced costs<sup>7,19-21,23-31</sup>
- Improved patient satisfaction<sup>7,19-21,23-31</sup>

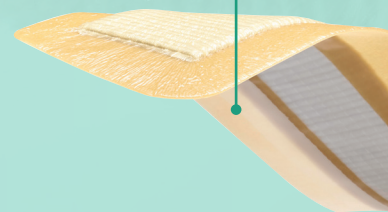
**Clinical Heritage**

- Improved wear time<sup>7,19-21,23-31</sup>
- Effective total fluid management reducing dressing changes vs Standard Of Care<sup>28</sup>
- Durable and reliable hydrocolloid adhesive<sup>30</sup>
- Reduced nursing time<sup>28</sup>

**Improve Costs & Efficiency**

**AQUACEL® S**  
**AQUACEL® A**  
**Post-Op D**

Hydrocolloid Adhesive



## Your post-op dressing selection can be the difference between healthy healing and an infected surgical site.<sup>7</sup>

### Protect the incision site

Optimum management of the incision environment promotes healing with fewer complications.

- Managing bacterial balance is essential for decreasing SSI risk and SWD.
- Prophylactic antibiotics can effectively decrease bacterial load and infection risk. However, they need to be used responsibly against the rise of antibiotic-resistant bacteria such as MRSA and VISA/VRSA.

Preventing bacteria from entering and critically<sup>32-36</sup> colonising incision tissue in the first instance is key. This is where advanced wound products have an advantage over wet gauze dressings, which don't prevent bacterial penetration of the wound as well.<sup>37</sup>



### Improve Quality of Life

- **Hydrocolloid** moves with the skin – matches the range of motion of the joint<sup>38</sup>
- Aids in patient rehabilitation regime protocol
- Reduces risk of dehiscence through design
- **Minimises peri-wound blistering** and allows patients to undergo physiotherapy programs to aid recovery
- **Extends** along the incision line when required to reduce risk of dehiscence and aid skin movement

### Promote Healing

- **Hydrofiber® Technology** locks in bacteria, micro-contours and gels creating a moist wound environment for healing
- Proven to optimise healing environment<sup>39,40</sup>
- Clinically proven wound interface for over 20 years
- Exudate is managed through vertical wicking which enables monitoring of the incision

### Occlusive Barrier

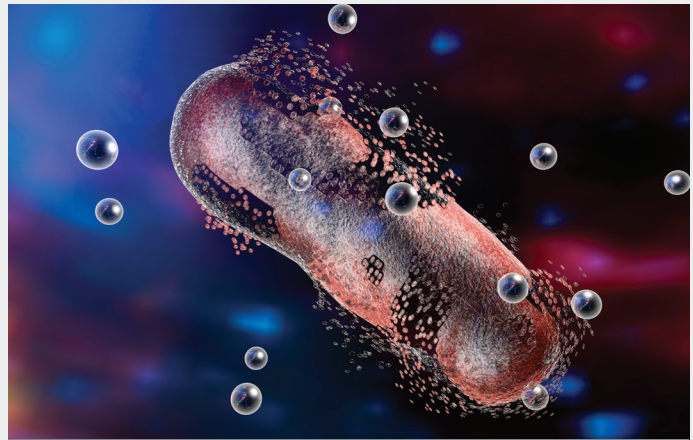
- **Bacterial, viral and waterproof construct**
- Polyurethane film is bacterial-proof, viral-proof and water-proof which prevents contamination and improves patient satisfaction



### The power of ionic silver

Clinicians have taken advantage of the antimicrobial and antifungal properties of inorganic silver compounds throughout history.<sup>28-30</sup> The microbiocidal efficacy of silver can be accounted for by two primary mechanisms of action:

- Bind to the bacterial cell wall, disrupting polysaccharide integrity and membrane fluidity.<sup>31</sup>
- Bind directly to DNA, interfering with cell replication and transcription.



Ionic Silver destroying bacteria

### Effective against SSI-associated pathogens

AQUACEL® Ag Surgical is highly effective against the most common SSI-associated pathogens, including:

- ✓ *Staphylococcus aureus* (*S. aureus*)
- ✓ Methicillin-resistant *S. epidermidis* (MRSE)
- ✓ Methicillin-resistant *S. aureus* (MRSA)
- ✓ *Escherichia coli* (*E. coli*)
- ✓ *Staphylococcus epidermidis* (*S. epidermidis*)
- ✓ *Enterbacteriaceae*
- ✓ *Klebsiella pneumoniae* (*K. pneumoniae*)

### Stopping SSIs at the source

#### Did you know?

Polymicrobial biofilms are found to be present in surgical incision wounds within 4-6 hours.

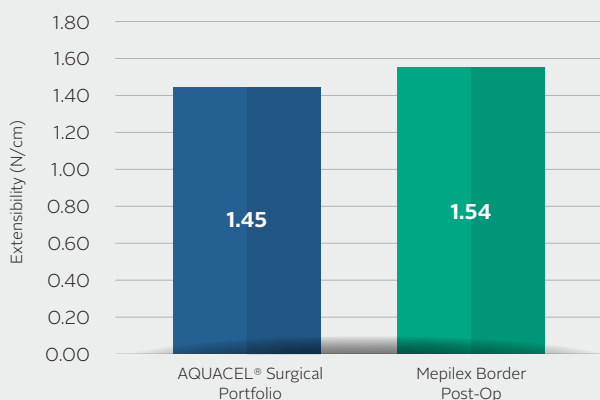
Antibiotics alone will rarely be successful against biofilms, 39-51% of SSI pathogens are resistant to standard prophylactic antibiotics.<sup>32</sup>

**The majority of SSIs in are caused by the normal skin flora** – *Staphylococcus aureus* has been consistently shown as the leading cause of SSIs associated with orthopaedic surgery.<sup>33</sup>

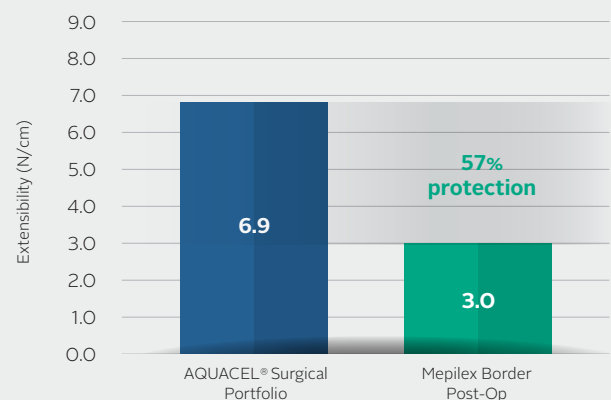
## Engineered to reduce risk of mechanical force - related SWD



Conformability across the length of dressing



Conformability across the width of dressing



*PROVEN combination of Hydrocolliod adhesive and Hydrofiber Technology wound contact layer results in a post-op dressing engineered to reduce the rate of blistering and surgical wound dehiscence*

# 2nd International Consensus on Periprosthetic Joint Infection. Philadelphia, 2018.<sup>35</sup>

890 delegates from 98 countries represented 200+ societies with 98 presidents reviewed clinically important topics and research to provide published consensus.

## Ionic silver helps prevent Surgical Site Infections

Silver-based dressings have been proven time and again to reduce wound complication, SSI and PJI compared with standard gauze. They should therefore be considered for routine use after surgery.

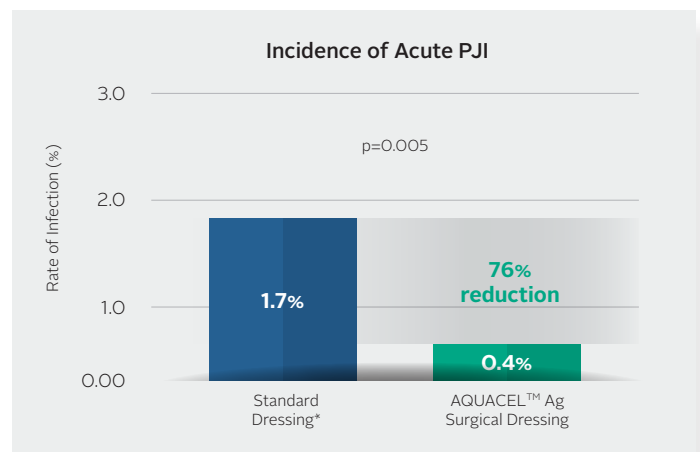
**3 out of 4 clinical studies that support silver dressings were conducted with AQUACEL® Ag Surgical.**



## Rothman Institute comparative dressing study of patients undergoing TJA<sup>36</sup>

A retrospective study of 1778 patients was conducted at the Rothman Institute by performing chart reviews to compare the overall incidence of Periprosthetic Joint Infection in 2 groups of patients who had undergone Total Joint Arthroplasty (TJA).

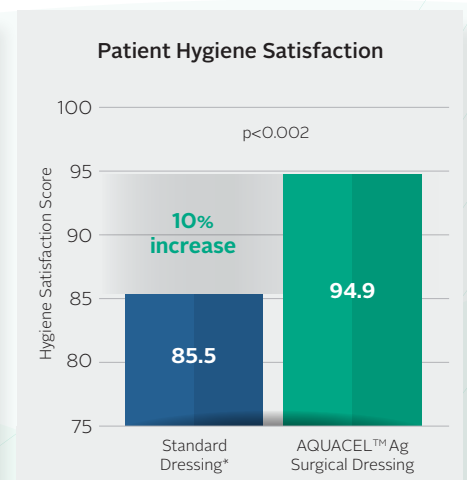
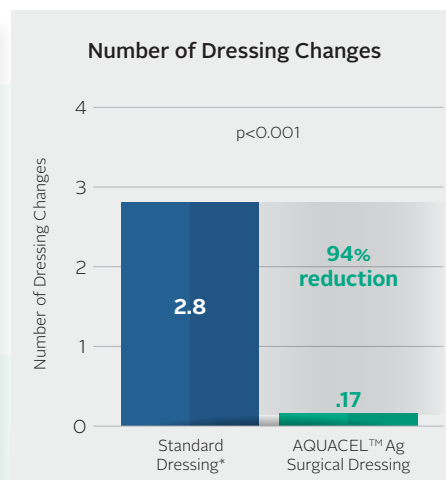
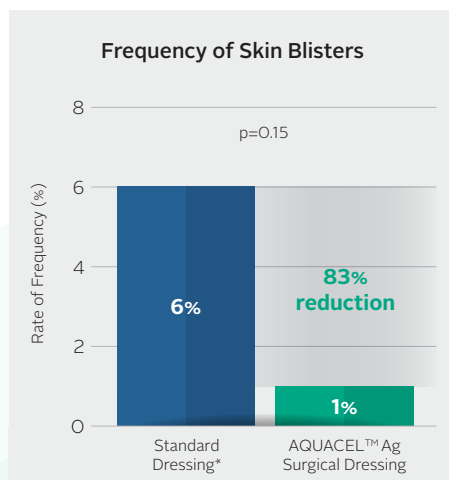
903 patients who received the AQUACEL® Ag Surgical dressing were compared to 875 patients who received the standard dressing.\*



\*The standard dressing consisted of sterile gauze secured with adhesive tape

## OrthoCarolina comparative dressing study of patients undergoing TKA<sup>37</sup>

150 total knee arthroplasty patients at the OrthoCarolina Hip & Knee Center were randomized to receive either the AQUACEL® Ag Surgical dressing or a standard surgical dressing.\*



\*The standard surgical dressing used was Primapore, Smith and Nephew, Memphis, TN.

# Ordering information



AQUACEL® Ag Surgical

| Dressing Size           | Incisions Length | Total Fluid Management<br>In-vitro (g/24hr) | Dressings<br>Per box | Product Code | NHSCode |
|-------------------------|------------------|---|----------------------|--------------|---------|
| 3.5" x 4" (9cm x 10cm)  | 1.5" (4cm)       | 21.7  | 10                   | 412009       | ELY341  |
| 3.5" x 6" (9cm x 15cm)  | 3.5" (9cm)       | 37.2  | 10                   | 412010       | ELY342  |
| 3.5" x 10" (9cm x 25cm) | 6.5" (17cm)      | 62.0  | 10                   | 412011       | ELY343  |
| 3.5" x 12" (9cm x 30cm) | 8.5" (22cm)      | 77.5  | 10                   | 420670       | ELY403  |
| 3.5" x 14" (9cm x 35cm) | 10.5" (27cm)     | 93.0  | 10                   | 412012       | ELY344  |



AQUACEL® Surgical

| Dressing Size           | Incisions Length | Total Fluid Management<br>In-vitro (g/24hr) | Dressings<br>Per box | Product Code | NHS Code |
|-------------------------|------------------|---|----------------------|--------------|----------|
| 3.5" x 4" (9cm x 10cm)  | 1.5" (4cm)       | 22.4  | 10                   | 412017       | ELY323   |
| 3.5" x 6" (9cm x 15cm)  | 3.5" (9cm)       | 38.4  | 10                   | 412018       | ELY324   |
| 3.5" x 10" (9cm x 25cm) | 6.5" (17cm)      | 64.0  | 10                   | 412019       | ELY325   |
| 3.5" x 12" (9cm x 30cm) | 8.5" (22cm)      | 80.0  | 10                   | 420669       | ELY402   |
| 3.5" x 14" (9cm x 35cm) | 10.5" (27cm)     | 96.0  | 10                   | 412020       | ELY326   |

To find out more about the ConvaTec portfolio  
or to arrange a visit from your local ConvaTec representative:  
Call **0800 289 738 (UK)** or **1800 946 938 (ROI)** [www.convatec.co.uk](http://www.convatec.co.uk)

## References

- World Health Organization. Global Guidelines for the Prevention of Surgical Site Infections [Internet]. WHO; 2016 [cited 2020 Feb 27]. Available from: <https://apps.who.int/iris/bitstream/handle/10665/250680/9789241549882-eng.pdf?sequence=8>.
- Centers for Disease Control and Prevention (CDC). Surgical Site Infection (SSI) Event: Procedure-associated Module [Internet]. CDC; 2020 [cited 2020 Feb 26]. Available from: [www.cdc.gov/nhsn/pdfs/pscmanual/9pscscscurrrent.pdf](http://www.cdc.gov/nhsn/pdfs/pscmanual/9pscscscurrrent.pdf).
- Woelber E, Schrick EJ, Gessner BD, Evans HL. Proportion of Surgical Site Infections Occurring after Hospital Discharge: A Systematic Review. *Surg Infect (Larchmt)*. 2016 Oct;17(5):510-9.
- de Lissovoy G, Fraeman K, Hutchins V, Murphy D, Song D, Vaughn BB. Surgical site infection: incidence and impact on hospital utilization and treatment costs. *Am J Infect Control*. 2009 Jun;37(5):387-97.
- Anderson DJ, Podgorny K, Berrios-Torres SI, Bratzler DW, Dellinger EP, Greene L, et al. Strategies to prevent surgical site infections in acute care hospitals: 2014 update. *Infect Control Hosp Epidemiol*. 2014 Jun;35(6):605-27.
- Orsted HL, McNaughton V, Whitehead C, Krasner DL, Rodeheaver GT, Sibbald RG. Management and care of clients with surgical wounds in the community. *Chronic Wound Care (4th edition)*. 2007:701-10.
- Krishnan R, MacNeil SD, Malvankar-Mehta MS. Comparing sutures associated with skin closure after orthopaedic surgery: systematic review and meta-analysis. *BMJ Open*. 2016 Jan;6(1):e009257.
- Patel H, Khoury H, Girgenti D, Welner S, Yu H. Burden of Surgical Site Infections Associated with Arthroplasty and the Contribution of *Staphylococcus aureus*. *Surg Infect (Larchmt)*. 2016 Feb;17(1):78-88.
- Costerton JW, Stewart PS, Greenberg EP. Bacterial biofilms: a common cause of persistent infections. *Science*. 1999 May 21;284(5418):1318-22.
- Centers for Disease Control and Prevention (CDC). Surgical Site Infection (SSI) Event: Procedure-associated Module [Internet]. CDC; 2020 [cited 2020 Feb 26]. Available from: [www.cdc.gov/nhsn/pdfs/pscmanual/9pscscscurrrent.pdf](http://www.cdc.gov/nhsn/pdfs/pscmanual/9pscscscurrrent.pdf).
- Bowler PG, Parsons D. Combatting wound biofilm and recalcitrance with a novel anti-biofilm Hydrofiber® wound dressing. *Wound Medicine*. 2016;14:6-11.
- Jenks PJ, Laurent M, McQuarry S, Watkins R. Clinical and economic burden of surgical site infection (SSI) and predicted financial consequences of elimination of SSI from an English hospital. *J Hosp Infect*. 2014 Jan;86(1):24-33.
- Antimicrobial activity and prevention of biofilm reformation by AQUACELR Ag+ Extra™ dressing. Scientific Background Report. WHRI3857 MA236, 2013, Data on file, ConvaTec Inc.
- Antimicrobial activity against CA-MRSA and prevention of biofilm reformation by AQUACELR Ag+ Extra™ dressing. Scientific Background Report. WHRI3875 MA239, 2013, Data on file, ConvaTec Inc.
- Kuo FC, Chen B, Lee MS, Yen SH, Wang JW. AQUACEL® Ag Surgical Dressing Reduces Surgical Site Infection and Improves Patient Satisfaction in Minimally Invasive Total Knee Arthroplasty: A Prospective, Randomized, Controlled Study. *Biomed Res Int*. 2017;2017:1262108.
- Struik GM, Vrijland WW, Birnie E, Klem TMAL. A randomized controlled trial on the effect of a silver carboxymethylcellulose dressing on surgical site infections after breast cancer surgery. *PLoS One*. 2018 May 23;13(5):e0195715.
- Cai J, Karam JA, Parvizi J, Smith EB, Sharkey PF. Aquacel surgical dressing reduces the rate of acute PJI following total joint arthroplasty: a case-control study. *J Arthroplasty*. 2014 Jun;29(6):1098-100.
- Grosso MJ, Berg A, LaRussa S, Murtaugh T, Trofa DP, Geller JA. Silver-impregnated Occlusive Dressing Reduces Rates of Acute Periprosthetic Joint Infection After Total Joint Arthroplasty. *J Arthroplasty*. 2017 Mar; 32(3):929-932.
- Springer BD, Beaver WB, Griffin WL, Mason JB, Odum SM. Role of Surgical Dressings in Total Joint Arthroplasty: A Randomized Controlled Trial. *Am J Orthop (Belle Mead NJ)*. 2015 Sep;44(9):415-20.
- Hopper GP, Deakin AH, Crane EO, Clarke JV. Enhancing patient recovery following lower limb arthroplasty with a modern wound dressing: a prospective, comparative audit. *J Wound Care*. 2012 Apr; 21(4):200-3.
- National Institute for Health and Clinical Excellence (NICE). Surgical Site Infection: Evidence Update June 2013. Available from: [www.nice.org.uk/guidance/cg74/evidence/evidenceupdate-241969645](http://www.nice.org.uk/guidance/cg74/evidence/evidenceupdate-241969645).
- Schubach S, Montecalvo JA, et al. Aquacel Ag dressing reduces deep sternal wound infection after cardiac surgery. *International Society for Minimally Invasive Cardiac Surgery*. 2015. Lippincott Williams and Wilkins.
- Bocchioni MA, Baglioni EA, Spaziante L, Frenello A, Ruka E. Aquacel Surgical Dressing after Thigh Lift: A Case-Control Study. *Plast Reconstr Surg Glob Open*. 2016 Sep;4(9):e863.
- Parsons D. Composition comprising antimicrobial metal ions and a quaternary cationic surfactant [Internet]. World Intellectual Property Organisation; 2012 Oct [cited 2020 Feb 27]. Available from: <https://patentimages.storage.googleapis.com/3e/76/a9/bdb48938fa0afe/WO2012136968A1.pdf>.
- Dillon JM, Clarke JV, Deakin AH, Nicol AC, Kinninmonth AWG. Correlation of total knee replacement wound dynamic morphology and dressing material properties. *Journal of Biomechanics*. 2007;40(Suppl 2):S61.
- Walker M, Bowler PG, Cochrane CA. In-vitro studies to show sequestration of matrix metalloproteinases by silver-containing wound care products. *Ostomy Wound Manage*. 2007 Sep;53(9):18-25.
- Armstrong SH, Brown DA, Hill E, Ruckley CV. A randomized trial of a new Hydrofiber dressing, AQUACEL, and an alginate in the treatment of exuding leg ulcers. Presented at: 5th European Conference on Advances in Wound Management; Harrogate, UK; November 1995.
- Lansdown AB. Silver: I. Its antibacterial properties and mechanism of action. *J Wound Care*. 2002 Apr;11(4):125-30.
- Lansdown AB. Silver 2: toxicity in mammals and how its products aid wound repair. *J Wound Care*. 2002 May;11(5):173-7.
- Dowsett C. The use of silver-based dressings in wound care. *Nurs Stand*. 2004 Oct-Nov;19(7):56-60.
- Markowitz SM, Smith SM, Williams DS. Retrospective analysis of plasmid patterns in a study of burn unit outbreaks of infections due to *Enterobacter cloacae*. *J Infect Dis*. 1983 Jul;148(1):18-23.
- Anderson DJ, Kirkland KB, Kaye KS, Thacker PA 2nd, Kanafani ZA, Auten G, et al. Underresourced hospital infection control and prevention programs: penny wise, pound foolish? *Infect Control Hosp Epidemiol*. 2007 Jul;28(7):767-73.
- Rood KM, Buhimschi IA, Jurcisek JA, Summerfield TL, Zhao G, Ackerman WE, et al. Skin Microbiota in Obese Women at Risk for Surgical Site Infection After Cesarean Delivery. *J Clin Rep*. 2018 Jun;8:8756.
- ConvaTec data on file.
- Al-Hourai, Reema K, et al. General Assembly, Prevention, Wound Management: Proceedings of International Consensus on Orthopedic Infections. *The Journal of Arthroplasty*, Volume 34, Issue 2, S157 - S168.
- American College of Healthcare Executives. The healthcare executive's role in ensuring quality and patient safety [Internet]. *ACHE*; 2017 [cited 2020 Feb 26]. Available from: <https://www.ache.org/about-ache/our-story/our-commitments/policy-statements/healthcare-executives-role-in-ensuring-quality-and-safety>.
- Centers for Disease Control and Prevention. The Role of Policy in HAI Reporting and Prevention. CDC; [cited 2019 Jan 31]. Available from: <https://www.cdc.gov/hai/pdfs/toolkits/hai-policy-case-studieslessons-learned.pdf>.
- Under the Knife Report, 2011: Taking a zero tolerance approach to preventable surgical site infections in UK hospitals.

®/™ 2020. Hydrofiber® and AQUACEL® are trademarks of ConvaTec Inc.

All other trademarks are the property of their respective owners.

©2020 ConvaTec Inc. AP-O3O382-MRL-GB

