Antibacterial foot washing – is it effective?

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Welcome to another diabetic foot digest commentary. The study I want to bring to your attention examines foot cleaning and ulcer relapse focusing upon the potential of the skin's microflora infecting minor breaches leading to diabetic foot ulcer (DFU) formation.

This was a randomised, double-blind, placebo-controlled study conducted on US veterans between January 2019 and January 2023. The aim was to evaluate efficacy of daily foot cleaning using 2% chlorhexidine versus soap-and-water wipes for 1 year on the risk of developing new foot complications (new DFU, infection or amputation). Study eligibility included: diabetes, previous DFU, ambulatory, bipedal, no current foot infection. Exclusion criteria included present infection, active DFU or planned surgery.

Subjects were randomised to either soap-and-water wipes (control group, CG) or 2% chlorhexidine wipes (chlorhexidine group, ChG) used daily on their feet for 1 year. The wipes were similar in colour, size, shape, thickness, feel, scent and packaging; all study investigators were blind to allocation. Both groups received a moisturiser for post-wipe use. All feet were swabbed 4 weeks after their completion date. The primary outcome was time in days from randomisation to new foot complications. The secondary outcome was chlorhexidine resistance to common DFU pathogens 4 weeks post-study completion.

A total of 175 participants were recruited, with 87 allocated to CG and 88 ChG. There were 170 men (97%); mean age 68 years (± 9 SD); and 67% of subjects were black (*n*=117), 30% white (*n*=53) and 3% other(n=5). DFUs occurred in 14% (*n*=12) in ChG and in 16% (*n*=14) in CG during the study, with a median (IQR) time of 232 (115–315) days to development of DFU. There was no significant difference between ChG and CG for DFU relapse (hazard ratio 0.83; 95% CI [0.39–1.80]).

Adherence with daily use of foot wipes and moisturising was very good and well tolerated, with 145 participants (83%) applying daily over the study period. The CG foot swabs tested for chlorhexidine presence were negative and for ChG 47% were positive at 4 weeks post completion. Skin colonisation (*Staphylococcus aureus, Streptococcus* spp, *Escherichia coli*, *Klebsiella pneumoniae*, *Enterococcus* spp, *Pseudomonas* spp) were seen in both ChG (38%) and CG (40%), with no bacterial resistance to chlorhexidine seen.

The investigators conclude that using the medicated wipes does not impact upon DFU relapse prevention. The rationale for using such wipes is that possibly antiseptic wipes/soap prevent skin flora invading minor cuts etc, which may lead to DFU formation. However, this appears not to be likely in this case. The study does have flaws, notably that the subjects were predominately male and black.

The expected DFU relapse rate was lower than one would expect in both ChG and CG 14% and 16%, but this may be because selection was biased with recruitment of subjects with DFUs within 36 months. It is possible a different outcome may have been seen if subject recruitment was narrowed to within 3 months to 1 year post-healing. Additionally, the impact of daily moisturising could bias the results significantly. ■

Lydecker AD, Kim JJ, Robinson GL et al (2025) Chlorhexidine vs routine foot washing to prevent diabetic foot ulcers: a randomized clinical trial. *JAMA Netw Open* 8(2): e2460087

J Diabetes Sci Technol

Sensor-assisted wound therapy in plantar diabetic foot ulcer treatment

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! Factor	✓✓✓

1 Offloading is key in the treatment of diabetic foot ulcers (DFUs). The researchers aimed to examine the impact of sensor-assisted wound therapy (SAWT) on the healing of DFUs.

2 The developed three non-removable techniques with inbuilt sensors – multilayer felt sole, felt-fibreglass sole and total contact casts with ventral windows. Smartwatch and web apps displayed pressure, temperature, humidity, and steps, and these alerted patients, staff and a telemedicine centre when pressure limits were exceeded. They enrolled 20 ambulatory patients in a randomised clinical trial. The control group used the same offloading and monitoring system, but neither patients nor therapists received any information or warnings.

3 Three patients withdrew. The median time to ulcer healing was significantly shorter in the intervention group compared with control, 40.5 versus 266.0 days. The median time to 50% ulcer area reduction was shorter in the intervention group compared with controls (10.2 versus 19.1 days).

4 The authors concluded that sensor-assisted wound therapy may allow rapid closure of patients' plantar foot ulcers while maintaining their mobility during ulcer therapy.

Hochlenert D, Bogoclu C, Cremanns K et al (2025) Sensor-assisted wound therapy in plantar diabetic foot ulcer treatment: a randomized clinical trial. *J Diabetes Sci Technol* 19(3): 692–98

J Foot Ankle Res

The association of sarcopenia and frailty in diabetes-related foot disease: A 3-year prospective evaluation

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! Factor	✓✓✓✓

1 The authors examined the association of various markers of sarcopenia and frailty with clinical outcomes in diabetic foot disease (DFD) over a 3-year period.

2 This was an observational study of 100 patients with DFD at a quaternary multidisciplinary diabetic foot service. Subjects had a median age of 71 years and most were men (75%). Initial assessment included classification of DFDs, assessment of frailty and measurement of handgrip strength (HGS). Patients were followed up for 3 years and primary outcomes were wound healing, amputation-free survival and death.

3 Almost half (47%) were considered frail, with 37 having low HGS. Patients with high HGS had significantly better wound healing (3.83 times) when compared to those with low HGS. Patients with low muscle mass and low HGS had a higher risk of death.

4 The authors point out that this research highlights the need for more precise tests and future studies of the links between sarcopenia, frailty and outcomes in DFD.

Hon KY, Bain M, Edwards S et al (2025) The association of sarcopenia and frailty in diabetes-related foot disease: a 3-year prospective evaluation. *J Foot Ankle Res* 18(1): e70038

BMJ Open Diabetes Res Care

Effect of flexor tendon tenotomy of the diabetic hammertoe on plantar pressure

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! Factor	✓✓✓

1 The authors conducted this study to evaluate the effects of flexor tendon tenotomy treatment of diabetic hammertoe on plantar pressure.

2 Participants were randomised to tenotomy and standard non-surgical treatment or standard non-surgical treatment alone. The primary outcome was change in peak plantar pressure (PPP) post tenotomy treatment.

3 There were 45 subjects (57.8% male), 22 were randomised to intervention. The average age of participants was 65.6 years and 30 (66.7%) had type 2 diabetes. The average PPP in toe regions of the intervention group was significantly reduced from 205.6 kPa pre-intervention to 61.3 kPa post-intervention. The average reduction in PPP of toe regions for participants in the intervention group was significantly higher than for participants in the control group.

4 The authors concluded that tenotomies of the diabetic hammertoe reduces plantar pressure affecting the treated toes. It is likely that this explains the positive effects of tenotomy treatment on diabetic foot ulcers.

Askø Andersen J, Rasmussen A, Engberg S et al (2024) Effect of flexor tendon tenotomy of the diabetic hammertoe on plantar pressure: a randomized controlled trial. *BMJ Open Diabetes Res Care* 12(6): e004398

Sci Rep

Negative pressure wound therapy promotes wound healing by down-regulating miR-155 expression in granulation tissue of diabetic foot ulcers

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! Factor	✓✓✓✓

1 This study investigated the effect of negative pressure wound therapy (NPWT) on microRNA-155 (miR-155) in the granulation tissue of patients with diabetic foot ulcers (DFUs).

2 Sixty patients with DFUs were randomly assigned in a 2:1 ratio to either the NPWT (n=40) or non-NPWT (n=20) in a 2:1 ratio. After debridement, the intervention group received NPWT treatment for 1 week, while the non-NPWT group had routine dressings. The expression of miR-155 in DFU granulation tissues was evaluated by qRT-PCR before and after treatment for 1 week.

3 The NPWT group had a decrease in miR-155 expression in granulation tissue, but there was no difference in the non-NPWT group. There was a positive correlation between miR-155 and wound healing rate in the NPWT group.

4 The authors concluded that NPWT promotes DFU healing by reducing the expression of miR-155 in granulation tissue and the efficacy of NPWT correlates with altered miR-155 expression in wound tissue.

Huang Y, Yu Z, Xu M et al (2025) Negative pressure wound therapy promotes wound healing by down-regulating miR-155 expression in granulation tissue of diabetic foot ulcers. *Sci Rep* 15(1): 6733

"It is possible a different outcome may have been seen if subject recruitment was narrowed."