

# Arjo Sara Plus - results of low level disinfection testing of sling attachment cords

## INTRODUCTION AND BACKGROUND

Healthcare-associated infections (HAIs) cause untold suffering to those affected and are a significant source of complications across the continuum of care while being associated with a substantial cost to healthcare<sup>1,2</sup>.

Some 300,000 healthcare-associated infections every year cost the NHS in excess of £1 billion annually<sup>3</sup>. In the European Union, the estimated annual incidence of HAIs is 4,544,100, leading to approximately 37,000 deaths and 16 million extra days of hospitalisation<sup>4</sup>.

Within healthcare, contaminated non-critical medical devices and equipment can play a role in the transmission of potentially harmful microorganisms. Whilst hand hygiene is the single most effective means of decreasing healthcare associated infections<sup>5</sup>, the Centre for Disease Control states that people receiving care in hospitals and living in care homes often come into contact with a communally used environment and shared equipment<sup>6</sup>. Cleaning and disinfecting environmental surfaces and equipment as appropriate is therefore fundamental in reducing their potential contribution to the incidence of healthcare-associated infections. Such communal equipment may include lifts as well as lift slings. The need for easy, effective cleaning and disinfection of non-critical medical devices such as patient lifts is an important measure for reducing and disrupting transmission to the caregiver and patient/resident by decreasing the amount of viable microorganisms present. This in turn decreases the risk of infection.

## PATIENT LIFT AND LIFT SLINGS

Patient lifting and support devices have been designed to improve efficiency and safety of transfers of dependent patients and residents across a variety of care settings. It is common to share patient lift devices between patients.

However, they can act as a vehicle by which microorganisms are transferred between patients/residents receiving care, which may subsequently result in infection. Equipment should, therefore, be cleaned and disinfected after each use with cleaning agents compatible with the piece of equipment.

Cleaning of lifts and slings should follow the manufacturer's instructions and the facility's local infection control policy<sup>7</sup>. Many countries have national standards in addition to medical device industry standards which guide healthcare facilities with reusable medical devices on methods of cleaning and disinfection<sup>8,9,10</sup>.

## ARJO SARA PLUS

Arjo Sara Plus active lift, is used in conjunction with a lift sling. The lift should be cleaned between each patient use, according to the manufacturer's instructions for use.

Sara Plus has an attachment cord mechanism for attaching the sling to the lift (see fig 1).



Figure 1 - Sara Plus with attachment cords (highlighted above)

The cords are made of a polyester material and have a 'rope like' effect. If these are not cleaned and decontaminated correctly, this could create a potentially high contamination zone due to frequent handling by the caregiver.

### STUDY TO EVALUATE THE EFFICACY OF LOW LEVEL DISINFECTION ON THE TIME-KILL FOR COMMON MICROORGANISMS.

Low level disinfection is a process utilizing an agent that kills vegetative forms of bacteria, some fungi, and lipid viruses<sup>11</sup>.

#### OBJECTIVE

An independent test facility (Toxikon, Massachusetts, USA) undertook a low level disinfection 'time-kill' study of four specific microorganisms to evaluate a common disinfection method when applied to the Sara Plus sling attachment cords.

#### METHOD

The bacterial strains chosen for the test were those found in health centres/hospitals and known as being hard to disinfect<sup>12</sup>.

- **Pseudomonas aeruginosa** - One of the most common isolated pathogens in people hospitalized for more than one week. It thrives on moist surfaces, heightening the risk of infection for patients with catheters or ventilators<sup>12</sup>.
- **Staphylococcus aureus** - A bacteria becoming increasingly resistant to antibiotics. Potentially fatal in healthcare settings, especially when identified as the cause of sepsis, pneumonia, endocarditis or osteomyelitis<sup>12</sup>.
- **Escherichia coli** - The leading cause of urinary tract infections in hospitals, but can also cause gastroenteritis, pneumonia or even neonatal meningitis<sup>12</sup>.
- **Klebsiella pneumoniae** - A cause of urinary tract infections, wound infections, upper respiratory tract infections, osteomyelitis and even meningitis<sup>12</sup>.

Three (3) Sara Plus sling attachment cords that were visibly clean, were inoculated with the four common microorganisms and left to dry under ambient conditions for between ten (10) and twenty-five (25) minutes which allowed the substrate to adhere to the cords prior to disinfectant exposure.

The inoculated cords were then wiped with a 1,000 ppm sodium hypochlorite (bleach) solution, using a lint free cloth, and allowed to stand for the required exposure time: three (3), five (5), ten (10), and twenty (20) minutes.

The Sara Plus cords were evaluated for surviving organisms - the 'bioload,' at four different time intervals. The results were expressed as a percentage reduction of microorganisms.

#### RESULTS

The results of the testing showed significant antimicrobial efficacy against all of the 4 strains after being subjected to the wipe-down disinfection process (table 1).

#### CONCLUSION

Table 1 - Test results (percentage reduction of microorganisms)

CHALLENGE STRAIN	EXPOSURE TIME (MIN)	% REDUCTION
S. aureus	3	99.9999
P. aeruginosa	3	99.9999
E. coli	3	99.9999
K. pneumoniae	3	99.9999

The tests showed that using the low level disinfection solution to wipe the visibly clean Sara Plus cords resulted in a significant reduction of 4 commonly found microorganisms.

99.9999% of the four commonly found microorganisms tested can be killed after 3 minutes exposure to a low level disinfectant of 1000ppm of Sodium Hypochlorite (bleach).

Sling attachment cords that are visibly soiled with bodily fluids, for example faeces or blood, should be replaced with new cords. This should be completed by a trained service technician. For more information, please see the Sara Plus Instructions for Use.

#### SUMMARY

Equipment that is easy to clean and disinfect can assist caregivers to reduce the risk of cross contamination between patients/residents.

Carers should note that they should follow the instructions provided on the disinfection products.

## REFERENCES

1. Friedman, N.D et al (2018) Towards a Definition for Health Care-Associated Infection. Health Care-Associated Infection Definition. Open Forum for Infectious Diseases.
2. Haque, M et al (2018) Health care-associated infections – an overview. Infection and Drug Resistance 2018;11 2321–2333
3. Mackley, A et al (2018) Raising standards of infection prevention and control in the NHS. Debate Pack. UK House of Commons Library.
4. Bianco, A et al (2018) Prospective surveillance of healthcare associated infections and patterns of antimicrobial resistance of pathogens in an Italian intensive care unit. Antimicrobial Resistance and Infection Control (2018) 7:48
5. Guest, J.F et al (2019) Modelling the costs and consequences of reducing healthcare-associated infections by improving hand hygiene in an average hospital in England. BMJ Open
6. Centre for Disease Control (2019) Guidelines for Environmental Infection Control in Health-Care Facilities. Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). July 2003. Updated 2019. Accessible version: <https://www.cdc.gov/infectioncontrol/guidelines/environmental/index.html>
7. Loveday, H.P et al (2014) epic3: National Evidence-Based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England. Journal of Hospital Infection 86S1 (2014) S1–S70
8. Norovirus Working Party (2012) Guidelines for the management of norovirus outbreaks in acute and community health and social care settings. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/322943/Guidance\\_for\\_managing\\_norovirus\\_outbreaks\\_in\\_healthcare\\_settings.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/322943/Guidance_for_managing_norovirus_outbreaks_in_healthcare_settings.pdf). Accessed 25th February 2020
9. <https://www.gov.uk/government/publications/health-matters-preventing-infections-and-reducing-amr/health-matters-preventing-infections-and-reducing-antimicrobial-resistance> Accessed 25th February 2020
10. BHTA (2018) Decontamination of Medical Devices . The BHTA guide to Decontamination of Medical Devices and other Assistive Technology. British Healthcare Trades Association.
11. Reprocessing US Department of Health and Human Services. Food and Drug Administration, 2015. Medical Devices in the Healthcare Setting: Validation Methods and Labelling. March 17, 2015
12. <https://www.beckershospitalreview.com/quality/most-common-healthcare-associated-infections-25-bacteria-viruses-causing-hais.html> Accessed 31st Jan 2020