Evaluation and adoption of an alcohol free hand rub to help drive reductions in outbreak duration across a national nursing home group

JOANNE BALMER, Senior Director of Care and Quality, Sunrise Senior Living, Beaconsfield, UK

Background

In any healthcare setting the direct hand and skin contact between carers, nursing staff and residents / patients is a key microbial transmission pathway. If this transmission pathway isn't managed correctly – for example if there are inadequate or ineffective hand hygiene procedures and ineffective or unused hand hygiene products then it can significantly increase the risk of infections and outbreaks.

Effective hand hygiene plays a pivotal role in reducing the risk of infection from people's hands by interrupting the transmission of microbes to and from the environment and to and from other people. For this reason hand hygiene is widely recognised as one of the most important infection prevention procedures in the fight against healthcare associated infections.

It has been documented that contamination of the hands of health care workers with known microbial pathogens is equally as likely to occur after contact with high touch environmental surfaces as it is after direct patient contact. [1-3] Therefore there is a clear need for all staff and patients / residents within a care setting to ensure they use the correct hand hygiene product in the correct way and at the appropriate time.

Essentially what this means for both care staff and residents is that their hands and skin will be exposed to a hand hygiene product on a frequent, ongoing basis therefore it is essential for the healthcare provider to select a hand hygiene product and technology that is well liked and accepted and that can be used frequently without any problematic side effects.

Aims

Sunrise Senior Living is a national nursing and care-home group consisting of forty three sites across the UK. The group wanted to reduce diarrhoea and vomiting (D&V) outbreak duration from 20-30 days to less than 7 days across their facilities.

Observation audits and outbreak support visits, highlighted a lack of alcohol hand rub (AHR) use as a hazard and reason for prolonged outbreaks within the organisation. The aim of the senior management team at Sunrise Senior Living was to identify and adopt a more widely accepted hand rub into routine use across the group, with the aim that this would help to contribute towards a reduction in outbreak duration when adopted alongside other elements of a comprehensive infection prevention care bundle.

The trial product identified and evaluated by the team at Sunrise Senior Living was the water based TECcare® PROTECT hand sanitiser (see Figure 1). In addition to passing the EN1500 bactericidal test for hand hygiene products the product is also effective against both enveloped and non-enveloped viruses and has passed the EN14476 test for virucidal efficacy.

Figure 1. TECcare PROTECT 600ml and 50ml hand rubs

Methods

A formal, multi-site comparative evaluation of alcohol hand rub vs. the water-based hand rub was set up in order to answer three key questions around effective hand hygiene for the group. The three questions posed were;

1. How microbially effective is the new TECcare hand foam sanitiser compared to the current AHR?
2. What impact if any do the different hand rubs have on skin integrity?
3. Which hand rub is more likely to be consistently and regularly used by staff as they deliver care and service in their work environment?

Forty staff volunteers, covering various roles across four different locations / care settings within the group were used to compare the two different hand rub products over an eight day period. The product evaluation process was performed as follows; three days using the alcohol rub; two day 'wash-out' period; three days using the water-based hand rub.

Contact slides were used to determine microbial effectiveness of each product. Structured questionnaires were used to report participants' user views on both skin integrity and user acceptance. The questionnaires were completed after the three day test period for each product. In addition to effectiveness and user acceptance a direct cost comparison was made between the alcohol rub and the water based hand rub for both the large (450ml/600ml) dispensers and smaller, personal size (50ml) product offerings.

Results

Of the 40 staff who participated in the hand rub evaluation, on average 37 staff completed the questionnaires for the alcohol rub and 32 staff completed the questionnaires for the water based hand rub. For both skin integrity and general user acceptance (scent, feel on the skin etc.) there was a clear preference for the water-based, TECcare PROTECT hand rub over the alcohol rub (see Table 1).

Questions		Alcohol based hand rub	TECcare PROTECT (water based) hand rub
Did you like the product scent?	Yes	19 (51%)	30 (94%)
	No	18 (49%)	2 (6%)
	No response	3	8
Did it evaporate quickly?	Yes	27 (73%)	25 (78%)
	No	10 (27%)	7 (22%)
	No response	3	8
Was there any skin irritation / stinging upon application?	Yes	9 (24%)	1 (3%)
	No	28 (76%)	31 (97%)
	No response	3	8
Did your hands feel dry after application?	Yes	21 (58%)	12 (38%)
	No	15 (42%)	20 (62%)
	No reponse	4	8
Could the test product improve your / your resident's social hand hygiene practice?	Yes	8 (22%)	26 (81%)
	Same as now	15 (41%)	6 (19%)
	Maybe/not at all	14 (37%)	-

Table 1. Questionnaire feedback on skin integrity and user acceptance.

Contact slides consistently showed fewer transient bacteria on fingers 5-minutes post application of both rubs. The greatest reduction was noted with the water-based product (see Figure 2).

To understand any differences in the costs associated with each product a direct cost comparison was made between both the large and small dispensers for the alcohol rub and the water based hand rub. The results of the costing exercise are reported in Table 2.

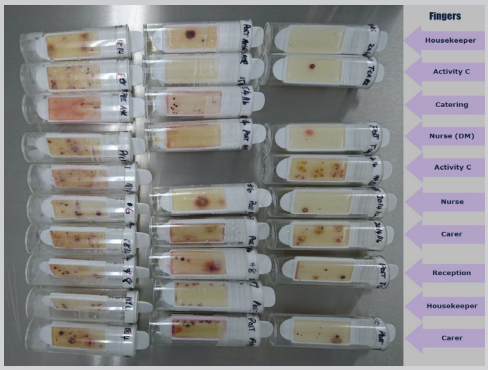

Figure 2. Baseline microbial flora (left); 5 minutes after application with alcohol rub (middle); 5 minutes post application of the water based hand rub (right)

* Retractable belt clip cost £1.50 each

		Alcohol rub	TECcare PROTECT
Large dispenser	Volume	480ml	600ml
	Price / unit	£3.56	£5.01
	Applications per bottle	160 (based on 3ml / application	792
	Price per application	2.23p	0.63p (72% saving)
Small (personal) dispenser	Volume	50ml	50ml
	Price / unit	£1.51	£4.18 (incl. belt clip)* £2.68 (excl. belt clip)
	Applications per bottle	16 (based on 3ml / application	66
	Price per application	9.44p	6.33p incl. belt clip (33% saving) 4.06p excl. belt clip (57% saving)

Table 2. Head to head cost comparison of alcohol rub vs. TECcare PROTECT

After the successful evaluation, the water based hand rub was adopted across the group as part of a multi-point infection prevention care bundle. Since adoption of the care bundle the diarrhoea and vomiting outbreak duration has reduced from 20-30 days to less than 7 days across the group and effective hand hygiene has played a key role in this reduction in outbreak duration.

Discussion

Irrespective of the care setting, the reality is that any antimicrobial hand rub will only ever be truly effective when it is applied and used correctly, in the right place and at the right time in the care process.

Performing a simplistic 'desk-top' comparison between hand rubs may throw up small differences between products in terms of costs, antimicrobial efficacy or effective contact times required to kill certain microbes. However, in the majority of cases these small, and often inconsequential differences are insufficient to inform a change in product or practice and a 'desk-top' evaluation gives no indication how any product change may play out in practice once it is rolled out into the care setting.

Therefore it is the user acceptance of the product that is essential to ascertain prior to making any change in practice based on antimicrobial efficacy, contact time or product cost.

The data gathered from this structured head to head product comparison clearly showed that there was an obvious user preference for the water based TECcare PROTECT hand rub over the current alcohol hand rub. Staff reported that they and their residents are more likely to improve their hand hygiene practice by using the new TECcare product.

What this means in practice is that both staff and residents are likely to be performing effective hand hygiene more frequently when using the water based hand rub and this will result in improved outcomes for residents, staff and the overall group. This is evidenced when seeing the outbreak duration reduce from 20-30 days to less than 7 days across the group as a result of implementing an effective infection prevention care bundle which encompassed the change in hand hygiene product as part of this process.

In addition to the excellent levels of user acceptance the direct cost comparison between products clearly showed that the water based product was up to 70% more cost effective than the alcohol rub currently used in the comparison.

Conclusion

With up to 40% of healthcare associated infections attributed to cross infection via the hands of healthcare workers [4] the focus on hand hygiene is understandable.

Getting hand hygiene correct can have a major impact on infection prevention and the identification and adoption of TECcare PROTECT offers a safe, effective, easy-to-use and user-friendly hand hygiene product across the group. These essential attributes for any hand hygiene product will only improve compliance with hand hygiene processes and protocols across all Sunrise Senior Living facilities thereby helping to safeguard our visitors, staff and residents by helping to reduce outbreak duration to its lowest practical level.

References

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