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HARTMANN

DISINFACTS

BODE SCIENCE CENTER

BODE SCIENCE CENTER's lunchtime symposium: New research results to protect patients in daily hospital routine.

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What needs to be considered when selecting protective gloves for handling use-solutions of disinfectants?

When disinfecting surfaces, protective gloves are necessary to protect the skin from being exposed to the use-solution. The gloves must meet the requirements of DIN EN 374 and thus be impermeable to liquids, low-allergen and intended for personal protective equipment (PPE) categories I and II.

Normally highly diluted, use-solutions contain 0.1 % (0.1 g/100 g) of the active substances that may damage the skin. However, direct contact with the use-solution may be a risk to the skin. For this reason, protective gloves should be used for surface disinfection.

Quality criteria of protective gloves

When selecting protective gloves, consider the requirements of DIN EN 374, which specifies the properties gloves need to fulfil, e.g. for handling chemicals.

Adequate gloves are impermeable to liquids, low-allergen and suitable for PPE Categories I and II. Longer cuffs or rolling down the cuff may prevent the disinfection solution from getting into the glove and damaging the skin.

In terms of material, nitrile-rubber gloves are first choice: they are both highly resistant to chemicals and mechanical stresses. Single-use examination gloves made of vinyl, natural rubber or natural rubber latex, however, are not suitable due to their short break through times. In case you need to wear protective gloves that are impermeable to liquids for more than 2 hours (“wet work”), always treat your hands with a skin protection cream before putting on gloves.

Performance criteria of personal protective gloves

Characteristics of protective gloves

Category	Description	Use / application	Certification
I	Protection against minor risks	• Diluted disinfectants • Diluted cleaning agents • Diluted chemicals	• “CE” labelling
II	Protection against risks that come not under Category I and Category III	• Protection against potentially pathogenic microorganisms, e.g. when disinfecting contaminated work surfaces	• “CE” labelling
III	Protection against fatal, high, irreversible risks	• As splash protection when handling concentrated disinfectants and chemicals • When preparing dilutions	• „CE“labelling and number of the testing institute

As part of the personal protective equipment, protective gloves need to fulfil certain legal requirements (1, 2) to ensure adequate protection against chemicals and microorganisms. The Categories I, II or III on the packaging of protective gloves provide information on the gloves’ protective function and performance characteristics, respectively.

1 In Europe, protective gloves are subject to the European Directive 89/686/EWG for personal protective equipment (PPE).
2 The European Norm (EN) 374 defines the requirements for protective gloves against chemicals and microorganisms.

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Editorial

Dear Reader,

In the face of ever increasing hygienic demands it is occasionally forgotten that hygiene is no end in itself, but protects patients against infections. But how can infection control measures such as hand hygiene be easily and effectively integrated into the complex clinical activities?

With its current intervention study at the University Medical Center Hamburg-Eppendorf (UKE), the BODE SCIENCE CENTER has come a major step closer to the answer to this question. The approach: rather than looking at hand disinfection in isolation, it is the whole process including all defined actions involving a risk of infection that is considered. A strategy that clearly can serve as model.

The study was presented at the "Simple Processes – Improved Hygiene" lunchtime symposium organised by the BODE SCIENCE CENTER. Prof. Dr. med. Frank Martin Brunkhorst from the Clinical Trials Centre at the University Hospital of Jena, Germany also sees enormous potential in improving working processes in hygiene and infection management to increase patient safety. And Joachim Prölß, Director of Nursing and Patient Organisation at the UKE thinks that process optimisation, a holistic understanding of hygiene safety and management staff serving as hygiene role models play a chief part on the road to increased patient safety.

Conclusion: integrating hygiene into clinical workflows is a complex task. However, it is worth accepting this challenge.

Yours sincerely,

Claudia James,
Director BODE SCIENCE CENTER

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Research for infection prevention.

BODE SCIENCE CENTER's lunchtime symposium: Simple Processes – Improved Hygiene

The lunchtime symposium "Simple Processes – Improved Hygiene" focused on how to optimise clinical workflows and thus reduce nosocomial infection rates. Members of the medical trade press and the hygiene experts – Prof. Dr. med. Frank Martin Brunkhorst*, Prof. Dr. med. Günter Kampf** and Joachim Prölß*** – also discussed how to make hygiene more intuitive and easier.

Simply changing into the next gear, without thinking about it. Hygiene experts wish that hygiene measures – particularly hand hygiene – during medical and nursing activities were as automatically carried out as driving a car. Up to 30 per cent of all nosocomial infections are considered avoidable, when employees would even better carry out the recommendations on hygiene.

So, what needs to be changed? The risks of infection that hygiene-related tasks involve should be looked at in their entirety, and clinical working processes should be standardised and simplified. That was the core message of the lunchtime symposium "Simple Processes – Improved Hygiene. New research results to protect patients in daily hospital routine" held on 19 September 2013 in Berlin and hosted by the BODE SCIENCE CENTER together with the University Medical Center Hamburg-Eppendorf (UKE).

"The greatest potential is in prevention"

The symposium was opened with the presentation by Prof. Dr. med. Frank Martin Brunkhorst from the Clinical Trials Centre at the University Hospital of Jena, Germany. The renowned bloodstream infection researcher heads the ALERTS study, a preventative action programme for reducing the incidence of nosocomial infection and associated cases of bloodstream infection. In recent years, there had been no progress in therapy and diagnostics, reported Brunkhorst. Hence, the greatest potential for decreasing the high mortality of bloodstream infections is in prevention.

Brunkhorst used the example of a patient suffering from herpes zoster (shingles) to describe the consequences of inadequate working processes in hygiene and infection management. During treatment

with a virostatic agent, the patient developed a catheter-associated phlebitis, which resulted in a fatal bloodstream infection. Several factors added up here. For example, the elbow pit was an inappropriate insertion site and microbiological diagnostics (blood culture) were not carried out, although there already have been contrary evidence-based recommendations available.

Simplify working processes – increase compliance

Prof. Dr. med. Günter Kampf, Director Science of the BODE SCIENCE CENTER, Hamburg, Germany explained how to optimise healthcare workflows to reduce nosocomial infection. In his speech, Kampf presented a new intervention study carried out at the UKE. The innovative approach: rather than looking at hand disinfection in isolation, it is the whole process including all defined actions involving a risk of infection that is taken into account.

Together with the UKE, the researchers identified the operating procedure considered optimal from an infection control point of view for one of the most frequent activities in hospital patients: placing a peripheral venous catheter. The process comprised five sub-steps that involve risks of infection. For nearly all steps relevant to hygiene, this optimisation of medical and nursing activities had led to higher compliance, said Kampf. (Please find details on the study results on the following pages.) Thus, the rate of nosocomial infection, for example severe bloodstream infections set off by PVCs, may be further reduced.

With this study, the BODE SCIENCE CENTER has come much closer to the goal of making patient protection more intuitive and easier.

Clear roles and responsibilities in hygiene

Process optimisation and a holistic understanding of hygiene safety is also high on the UKE's list of priorities. Prerequisite for improved patient safety was a common management philosophy and clear structures, reported Joachim Prölß, Director of Nursing and Patient Organisation and member of the board of the UKE. The UKE's management staff deliberately acted as role model in hygiene behaviour and the clinic had established an open "no blame" culture, said Prölß. The hospital possesses a hygiene organisation that may serve as model: for all employees treating patients to be increasingly aware of infection control measures, hospital hygiene directly reports to the UKE's board. And all 11 clinical centres have, for example, their own hygiene commission to also embed hygiene at intermediate levels and at the base.

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Greater patient protection through optimised working processes

Standard operating procedures for placing a peripheral venous catheter (PVC) may reduce the risk of infection – a considerable plus for patient protection. The present study [1] shows how a multimodal intervention improves hygiene compliance during activities that are relevant to hygiene.

Often used in hospitalised patients, PVCs entail the risk of nosocomial blood stream infection. Establishing evidence-based, standard operating procedures (SOPs) in clinical practice can considerably improve patient protection. The World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC) and the Robert Koch-Institute (RKI) recommend certain steps to reduce the risk of infection during placing peripheral venous catheters.

The objective of Kampf et al. was first to verify how often these steps are actually carried out in clinical practice when placing a PVC. Based on the results, the target was then to improve compliance and the adherence to the ideal sequence of steps by a multimodal intervention.

Source: Kampf G et al.

Figure 1: Sheets for trays and posters as part of the intervention including a checklist and the five most important steps for patient safety.

Methods

In preparation of the study, the ideal PVC procedure was defined based on the recommendations from WHO, CDC and RKI. Afterwards, the authors identified five steps that are necessary for patient safety (level of evidence IA or IB): hand disinfection before touching the patient; skin antisepsis at puncture site under consideration of the exposure time; no palpation of the puncture site after disinfection; hand disinfection before aseptic procedure (insertion of the PVC); sterile dressing on puncture site (see figure 1).

The observational and intervention study was carried out at the University Medical Center Hamburg-Eppendorf (UKE). A nurse observed and documented how the healthcare personnel placed the PVC. The control phase was from August to October 2012. The authors selected four hospital departments that use PVCs with above-average frequency: endoscopy, central emergency admission, paediatrics, and dermatology.

The intervention phase was from November 2012 to March 2013 and comprised five elements: training certified by the Medical Association of Hamburg; a plastic sheet for trays and a poster describing the most important steps; dummy training; an e-learning programme; and individual direct feedback. The intervention was followed by another observation phase. In the last week of the observation, the participants rated the intervention.

Type of activity	Compliance rate before the intervention	Compliance rate after the intervention
Hand disinfection before touching the patient	11.6 % (24 of 207)	57.9 % (117 of 202)
Skin antisepsis of the puncture site	99.5 % (206 of 207)	99 % (200 of 202)
No palpation of the disinfected puncture site	33.3 % (69 of 207)	66.3 % (134 of 202)
Hand disinfection before aseptic procedures	0.5 % (1 of 207)	45.5 % (92 of 202)
Sterile dressing on the puncture site	24.6 % (51 of 207)	73.3 % (148 of 202)

Source: Kampf G et al. (2013)

Table 1: Compliance rates during peripheral venous catheter placement before and after the intervention.

Study results

The control phase comprised the placement of 207 PVCs; 202 cases were observed during the intervention phase. The compliance improved significantly for four of five steps, for example, from 11.6 % to 57.9 % for hand disinfection before touching the patient and from 24.6 % to 73.3 % for the sterile dressing on the puncture site (table 1).

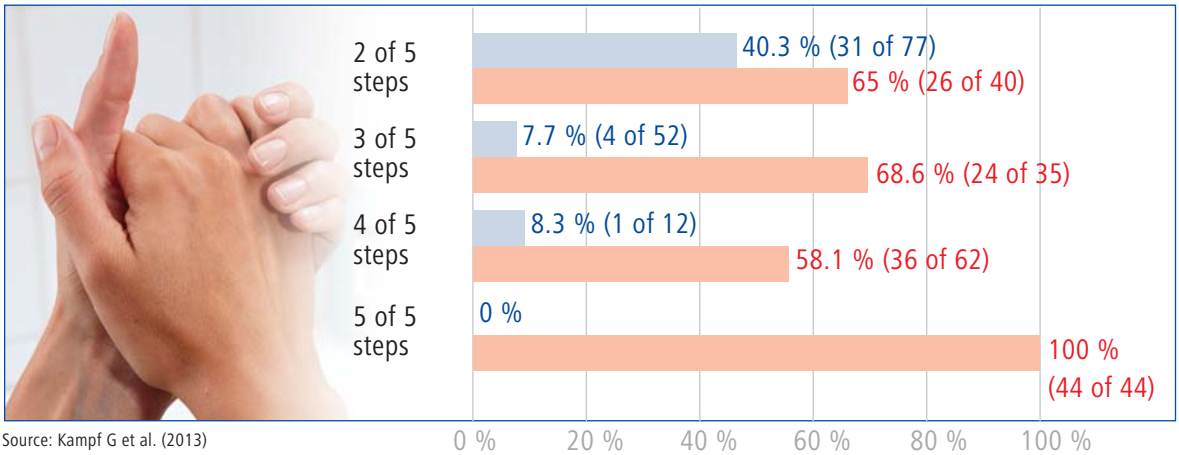
Compliance during skin antisepsis of the puncture site was high before and after the intervention (99. 5 % vs. 99 %). Adherence to the sequence of steps also improved considerably: for three of the five steps the value rose from 7.7 % before the intervention to 68.6 % after the intervention (see figure 2).

Most participants assessed the intervention with "helpful" (46.8 %) or "neutral" (46.8 %); only few employees considered the measures to be disturbing (6.4 %).

Conclusion

The multimodal approach was able to improve compliance during activities relevant to patient protection and the adherence to the ideal sequence of steps. The risk of infection (e.g. blood stream infection) may be reduced by establishing such standard operating procedures in clinical practice. The employees considered the intervention helpful. This acceptance is an important prerequisite for making hygiene measures top of mind for staff.

Source:
Kampf G, Reise G, James C, Gittelbauer K, Gosch J, Alpers B Improving patient safety during insertion of peripheral venous catheters: an observational intervention study. GMS Hyg Infect Control. 2013;8(2):Doc19.
DOI: 10.3205/dgkh000219, URN: urn:nbn:de:0183-dgkh0002194



Source: Kampf G et al. (2013)

before the intervention
after the intervention

Figure 2: Frequency of correct sequence of two to five steps when placing a peripheral venous catheter before and after the intervention.

Physician campaign for better hand hygiene – Every moment counts

Every
moment counts
Your 5 moments
for hand disinfection

According to surveys among hygienists, systematic and independent hand hygiene education of physicians belongs to the key issues. PAUL HARTMANN AG and its BODE SCIENCE CENTER have developed new innovative solutions for improved hand hygiene among physicians.

How compliant with hand hygiene are physicians? Many studies already examined this question from different angles. Some of these show that hand hygiene compliance is lower among physicians than among nursing staff [1]. Other studies indicate, however, that 77 % of the interviewed physicians aim at being compliant with hand hygiene; even 74 % of physicians are motivated to improve their compliance [2]. These results reveal: there is urgent need for action – but physicians also like to learn something new in hand hygiene.

Physicians as role models for their staff

And that is a decisive factor. Because medical staff demonstrably serve as role model for their team – also and especially in hand hygiene: when senior physicians perform hand disinfection, 66 % of the team members adopt this behaviour. At the same time, the willingness to disinfect hands drops to 42 %, when the physician does not disinfect the hands [3]. This finding is fundamental for developing programmes for systematic hand hygiene and with it for increased protection of patients and staff.

Helpful tools for improved hand hygiene

Based on several studies, PAUL HARTMANN AG and its BODE SCIENCE CENTER have developed a hand hygiene campaign that especially addresses physicians. Apart from a study supplement summarising current clinical research on hand hygiene, the focus is on the innovative e-learning programme for medical activities. In addition, the Marburger Bund – the largest association of physicians in Europe – supports the campaign by positive reports in its newspaper.

Study supplement: Current clinical research on hand hygiene

The study supplement gives a concise overview of the most important research results in infection control and hand hygiene.
The main emphasis is on studies of the role model of physicians and the implementation of programmes for improving hand hygiene compliance.

Download the study supplement for free at www.bode-science-center.com.

Sources:

1. Eckmanns T et al. (2006) Compliance with antiseptic hand rub use in intensive care units: the Hawthorne effect. Infect. Control Hosp. Epidmiol. 27: 931-4.
2. Pittet et al. (2004) Hand Hygiene among Physicians: Performance, Beliefs, and Perceptions. Ann Intern Med. 141: 1-8.
3. Haessler et al. (2012) Getting doctors to clean their hands: lead the followers. BMJ Qual Saf. 21: 499-502.

New: The “5 Moments E-Learning Tool” for medical activities

In addition to the successful “5 Moments E-Learning Tool” for nursing tasks, the BODE SCIENCE CENTER has created an e-learning tool especially for medical activities. The tool helps better recognise the most important indications for hand disinfection.

Efficient management of time and resources is indispensable for clinical routine today. However, a look at the real life reveals that there is room for improvement in many areas in terms of working processes. This also applies to hand hygiene. In clinical routine, employees also disinfect their hands in situations that do not contribute to patient and staff protection, or do not perform hand disinfection when actually indicated and necessary for infection protection. Also for medical activities, such as throat swabs or vaccinations, there is too much ignorance of how and how often to disinfect hands.

Greater patient protection and better efficiency

The “5 Moments E-Learning Tool” for medical activities provides good support in these cases. The interactive training programme integrates the “5 Moments” of the WHO model and uses examples of medical activities to teach which situations demonstrably indicate targeted hand disinfection to protect patients. When performing the activities that are presented in a realistic way, the user decides in the process when it is necessary to disinfect hands, put on gloves or wash hands. The right order of the individual actions improve the operating procedure and also contributes to higher efficiency in the facilities.

Long-lasting learning retention

The e-learning tool utilises high-quality computer animations and is based on recent findings of learning and motivation research. The reason: it has been shown that programmes, which simulate real application situations, interactively involve the learner and work with qualified feedback, ensure lasting learning successes. Hence, the online tool for medical activities is an excellent complement to traditional training measures and additionally enhances their lasting effect.

The “5 Moments E-Learning Tool” for medical activities can be used free of charge at any time: come and visit **www.bode-science-center.com.**

More is more: the amount of hand rub applied influences coverage and efficacy

There has been a trend of some manufacturers recommending smaller and smaller volumes of hand disinfectant to be applied for hygienic hand disinfection. A study now shows that some of these recommended amounts are not sufficient to ensure full hand coverage and fulfill efficacy requirements.

Gold standard in efficient and convenient hand disinfection are alcohol-based hand disinfectants – provided they are applied correctly. The World Health Organization (WHO) advises applying a palmful of hand rub to cover all hand surfaces and rubbing hands until dry. There is no amount of hand rub specified, which would be almost impossible anyway: hand sizes differ, and so does the amount needed to cover all surfaces of the hands and to keep hands wet over the application time of 30 seconds. Shorter application times have been shown to hardly suffice to completely cover both hands.

In recent times, the market has seen some companies that recommend small volumes, for example 1.1 ml, claimed to be effective in accordance with the test methods of the American Society for Testing and Materials (ASTM). Furthermore, these products possess a low alcohol content, which, in combination with a small volume applied, additionally raises the concern that the U.S. Food and Drug Administration (FDA) minimum efficacy requirements are not fulfilled.

Driven by this concern, Günter Kampf et al. investigated the quality of hand coverage and bactericidal efficacy yielded by different application amounts of three commonly used hand rubs [1].

The three products in test:

- Purell Advanced Instant Hand Sanitizer (70 % v/v Ethanol, Gojo Industries)
- Purell Advanced Instant Hand Sanitizer Foam (70 % v/v Ethanol, Gojo Industries)
- Sterillium Comfort Gel (85 % w/w Ethanol, Bode Chemie).

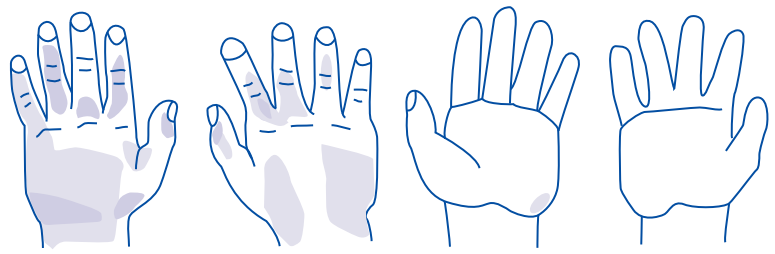
Higher amount, less gaps

For assessing the quality of hand coverage, the products were supplemented with fluorescent dye. Using the "responsible application technique", 15 test participants rubbed in 1.1 ml, 2 ml, 2.4 ml, and 1 or 2 pump dispenser activations of each product, and then had their hands screened for gaps in coverage with the aid of UV light by blinded investigators. Participants with no gaps in coverage were categorised as "complete coverage of both hands", those with one or more gaps on any of both hands were classified as having leaks. Gap locations were documented with a standardised hand drawing. The highest proportion of untreated skin areas were illustrated by superimposing scans of all drawings.

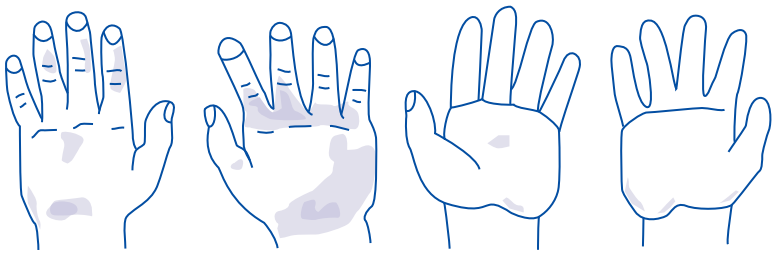
Small volumes applied (1 dispenser activation or 1.1 ml) took 20 to 29 seconds to dry, larger volumes (2 ml, 2.4 ml and 2 dispenser activations) 34 to 53 seconds. 67 % - 93 % of participants showed incomplete hand coverage with volumes less than 2 ml, volumes ≥ 2 ml resulted in better coverage (0 % - 53 % leaks).

Product	1.1 ml product		1 pump dispenser push of product			2 ml product		2.4 ml product		2 pump dispenser pushes of product		
	Time	Leaks	Time	Leaks	Applied volume (mean)	Time	Leaks	Time	Leaks	Time	Leaks	Applied volume (mean)
Purell Advanced Instant Hand Sanitizer	25 s	73 %	28 s	80 %	1.3 mL	37 s	27 %	46 s	13 %	53 s	47 %	2.7 mL
Purell Advanced Instant Hand Sanitizer Foam	23 s	67 %	20 s	87 %	0.7 mL	41 s	40 %	49 s	13 %	34 s	33 %	1.5 mL
Sterillium Comfort Gel	20 s	87 %	29 s	93 %	1.6 mL	39 s	53 %	41 s	27 %	51 s	0 %	3.1 mL

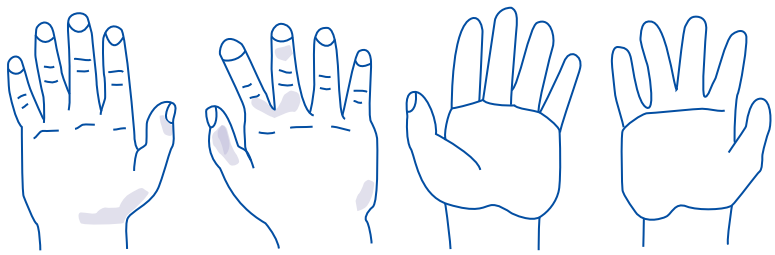
Frequency of untreated skin areas after application of 1.1 ml of Purell Advanced Instant Hand Sanitizer to both hands; darker areas indicate a higher frequency of untreated skin; mean duration obtained with 15 volunteers: 25 seconds.

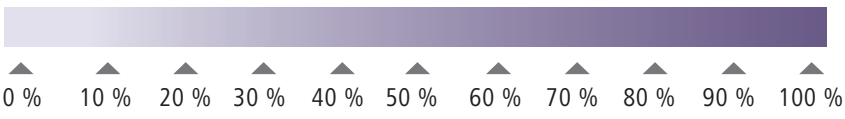


Frequency of untreated skin areas after application of 1.1 ml of Purell Advanced Instant Hand Sanitizer Foam to both hands; darker areas indicate a higher frequency of untreated skin; mean duration obtained with 15 volunteers: 23 seconds.



Frequency of untreated skin areas after application of 1.1 ml of Purell Advanced Instant Hand Sanitizer Foam to both hands; darker areas indicate a higher frequency of untreated skin; mean duration obtained with 15 volunteers: 23 seconds.





Higher amount & high alcohol concentration, greater efficacy

Efficacy testing in accordance with ASTM E 1174-6 and ASTM 2755-10 was performed with 12 participants per product as specified by the test methods: the test subjects' hands were washed, rinsed and then contaminated with a fluid containing *Serratia marcescens*. After determining baseline population levels, the hands were contaminated again. Afterwards, the participants applied the amount of hand rub recommended by the manufacturers – for the three products in test: 1.1 ml and 2 ml, respectively. For calculating $\log_{10}$ reduction, microbial samples were taken using the glove juice technique with a sampling solution containing valid neutralising agents. A neutraliser assay was conducted in accordance with ASTM E 1054-08.

Application of 1.1 ml of the 70 % ethanol hand rubs did not achieve the FDA's minimum efficacy requirements of a 2 $\log_{10}$ reduction in both ASTM E 1174-06 and ASTM E 2755-10. The application of 2 ml of the 85 % ethanol hand disinfectant, however, resulted in $\log_{10}$ reductions of 2.06 (ASTM E 1174-06) or 2.90 (ASTM E 2755-10), thus proving to fulfil the FDA efficacy requirements.

Higher amount, better standard

The determined coverage rates suggest that it is not an easy task to meet the WHO's recommendation of "covering all surfaces of the hands", particularly with amounts as small as 1.1 ml. In addition, small amounts of products that possess low alcohol contents do not deliver efficacy data that meet the FDA's standards – and thus may jeopardise patient safety. To play it safe, hand rubs should contain adequate alcohol contents and be applied at adequate volumes.

Source
1. Kampf et al. Less and less – influence of volume on hand coverage and bactericidal efficacy in hand disinfection. BMC Infectious Diseases 2013, 13:472

Type of hand rub	Applied volume as recommended by manufacturer	Mean $\log_{10}$-reduction (ASTM E 2755-10)	Mean $\log_{10}$-reduction (ASTM E 1174-06)
Sterillium Comfort Gel	2 ml	2.90±0.33	2.06±0.33
Purell Advanced Instant Hand Sanitizer	1.1 ml	1.97±0.45	1.85±0.60
Purell Advanced Instant Hand Sanitizer Foam	1.1 ml	1.96±0.31	1.60±0.55

When applying the amount recommended by the manufacturers, the researchers found that the products with small volumes do not meet the requirements of the FDA.

Prof. Dr. med. Constanze Wendt
Dealing with MRGN – when to isolate patients?

Since 2005, clinics have recorded a significant decrease in isolates of *S. aureus*. The share of resistant strains among the Gram-negative pathogens, however, increases. A huge challenge – especially when isolation precautions need to be taken. DISINFACTS spoke with the head of the MRGN working group of KRINKO, Prof. Dr. Constanze Wendt, about the risk assessment of multi-resistant Gram-negative pathogens.

The KRINKO recommendation includes details on risk assessment and special hygiene measures in case of MRGN. What is the basis for this?

Prof. Dr. med. Constanze Wendt: Our recommendations draw on the review of more than 400 publications and took two criteria as a basis: Which clinical consequence is linked to the resistance status? Resistance leads to higher mortality that is. And second: What are the routes of transmission and can these be influenced by hygiene measures in clinics?

How high is the risk of death in case of MRGN and which measures are able to minimise it?

KRINKO definition: 3 MRGN and 4 MRGN

The recommendations are based on the resistance pattern of individual pathogens to the most important groups of antibiotics for initial therapy of severe infections (acylureidopenicillins, 3rd and 4th generation cephalosporins, carbapenems and fluoroquinolones). Multi-resistant Gram-negative (MRGN) rods being resistant to 3 of the 4 classes of antibiotics are referred to as 3 MRGN and those being resistant to 4 of the 4 antibiotic classes as 4 MRGN.

Prof. Dr. med. Constanze Wendt: The amount of data available for all MRGN varies. In case of 3 MRGN *E. coli* und *Klebsiella spp.*, the risk of death is twice as high. 3 MRGN *Enterobacter*, however, do not involve a higher risk. Standard hygiene is sufficient here. For 3 MRGN *Acinetobacter baumanii* it is questionable whether the risk is increased.

When are measures necessary that exceed standard hygiene, for example, the isolation of patient?

Prof. Dr. med. Constanze Wendt: In case 4 MRGN occurs and in high-risk areas, i.e. wards that take care of patients with increased risk of infection. For these wards, we recommend isolation precautions for all MRGN except 3 MRGN *Enterobacter*. However, a risk area does not necessarily have to be a ward. Clinics should assess the risks specific to their facility. Example: in a recovery room for intensive care patients, preventive measures need to be implemented that exceed standard hygiene, for example, isolation of patients.

Clinical consequences and routes of transmission of MRGN

	Mortality	Spread (mainly)	Consequence
3 MRGN *E.coli* and *Klebsiella spp.*	Risk twice as high	Outpatient facilities	Measures to protect patients at risk (isolation)
3 MRGN *Enterobacter*	Risk not increased	Outpatient facilities	Basic hygiene
3 MRGN *A. baumanii*	Risk not known	Medical facilities	Measures to protect patients at risk (isolation)
3 MRGN *P. aeruginosa*	Risk not known	Medical facilities (outpatient)	Measures to protect patients at risk (isolation)
All **4 MRGN**	Increased risk	Medical facilities	Measures in all areas (isolation)

Source: Wendt C., Labor Limbach, 2013.

* RKI Guidelines on Hospital Hygiene and Infectious Disease Prevention

Maximum hygiene for the little ones

The centre for children and adolescent medicine at the community clinic Koblenz-Meyen, Kemperhof Koblenz in Germany is the largest children's hospital in northern Rhineland-Palatinate. One of its areas of expertise is neonatal and paediatric intensive care. Care of the young patients requires maximum safety, also in terms of hygiene.

Vera Greiff-Jobs and Anette Kollmann: a strong team for hygiene

Vera Greiff-Jobs and Anette Kollmann hurry down the long corridors towards the neonatal ward. Both women are experts in hygienic issues and strong walkers. For a good reason: the distances on the clinic premises are far and there is always much to do.

It is particular the work in the neonatal ward that concerns the two hygiene specialists at Kemperhof Koblenz. At the same time, this area of work is linked to especially high demands. The premature and newborn babies in this ward are in situations that are often acutely threatening.

No doubt, neonatology is a highly sensitive working environment, which has strongly developed in the past decades. Vera Greiff-Jobs confirms: "During the past three decades, the developments in medical technology have been enormous. That's impressing."

And the infection control nurse knows what she is talking about, as she herself completed her state examination in a children's hospital in 1981 and then had worked in children's nursing and neonatology for several years.

Central contact point in the region

In the neonatal ward, the focus is not only on medical-technical issues, but also on intensively supporting the contact between parents and their children. This primarily includes immediate contact, visits at any time day or night, and breastfeeding promotion and support from the first day.

The intensive care unit for newborns at Kemperhof Koblenz looks after a large number of ill children from the region. The annual total is 350 premature and newborn babies and more than 350 children in all other age groups. And the responsibility goes beyond the own small patients: the department provides consultation for about 2 500 newborns in surrounding maternity clinics.

Having an eye on current provisions

This huge workload represents a mighty challenge – particularly for hygiene management, because hospital germs are a major threat to the not yet matured immune system of premature and ill newborn babies. Hence, flawless hygiene is key in this area. To cope with this fact, it is a matter of course for both experts to keep their fingers on the pulse of hygiene developments. "We continuously read specialist literature and updates of hygiene guidelines," explains Vera Greiff-Jobs. Anette

Neonatal intensive care unit

Kollmann adds: "We also conduct some research, for example, for employees having questions or when we implement a new guideline." For both it is imperative that guidelines can be explained and justified, because plain prohibitions are not useful. Only when the employees understand hygiene protocols these can be implemented successfully and lastingly.

Hygiene safety for premature and newborn babies

In addition to reliably carrying out hygiene measures, the absolutely safe effect of the products used plays a central role in high-risk areas such as neonatology. Hence, for disinfecting the incubators, the children's clinic in Koblenz banks on HARTMANN's Dismozon plus, which is listed by the RKI.

Thanks to its microbial activity, the highly effective surface disinfectant is well-suited for sensitive and near-patient areas.

The employees were also extremely satisfied with the product's material compatibility, reported Vera Greiff-Jobs. Another advantage, which has been rated positive by all employees, is the pleasant scent, compared to the disinfectant used before. One thing is clear to both hygiene experts: "Dismozon plus is the product of choice for this area of application – and we will keep it that way."

Vera Greiff-Jobs and Anette Kollmann think that hygiene demands will further increase in the future. The well-established team is curious about new challenges and looks forward to much new reading material on hygiene.

Kemperhof Koblenz

The fabulous world of microbiology

Product filtration in the safety cabinet

Behind the scenes: the employees of the microbiological laboratory at BODE Chemie Hamburg provide exciting insights into their wide range of tasks.

Travelling the infinite vastness of the microcosm – the staff of BODE Chemie's microbiology department experience this every day. So, *Escherichia coli*, *Staphylococcus aureus* and *Candida albicans* are close acquaintances, maintaining regular contact 'in culture' and via 'prepared microscope slides'.

The department's heart is the strain bank of bacteria and fungi. To always have microorganisms of constant quality, the staff needs to consider a sophisticated set of rules – even minor changes to the growth conditions may have extensive consequences. It goes almost without saying that such a highly sensitive sphere requires a team of employees with a broad range of skills. Christiane Ostermeyer, Head of Microbiology, explains: "Employees working with the microorganisms all have a scientific/technical background in medicine, biology, dairy farming and agriculture. Our laboratory has the respective equipment and, of course, has the official permit to deal with microorganisms."

Good coordination of a many-sided work field

The microbiological department's scope of tasks is huge. It ranges from quality inspections for products, check tests for industrial hygiene and efficacy testing of hand, skin, surface and instrument disinfectants to visitor training. Commissioning external efficacy tests of products, documentation of the results and application for product certification and listing is also part of the department's work. In addition, the employees permanently look into current requirements, because bacteria never go on holiday. Example: recent comprehensive series of experiments could reveal a simple manual procedure for safely reprocessing wipes dispensers (also see page 18).

The working processes in the different department areas such as laboratory, growth media preparation room, ordering and documentation are closely interlinked and need to be well organised. Sigrid Köhne, Head of the Laboratory, confirms: "Every day we have to face this challenge, which we gladly accept to team up efficiently." Apart from internal networking, the exchange with external contacts is essential part of the work. The microbiology department has regular contact with societies such as the Association for Applied Hygiene (VAH), Robert Koch-Institute (RKI) or hygiene specialists at different universities.

Marked by quality and innovation

One of the central tasks is carrying out quality control inspections. The microbial purity of finished products is monitored by membrane filtration by dint of a vacuum pump. Sigrid Köhne explains:
"The filter discs have such a small pore size they safely retain microorganisms that are not visible to the naked eye." Afterwards, the discs are applied to different growth media. After specified incubation times, possible microorganisms are visible as colonies. When the results correspond to the specifications, the sampled batch is released for sale.

The second important field of activity is product efficacy testing that is carried out in line with national methods and European standards. For this, the employees test newly developed trial products in suspension tests or different practical tests. The results of these tests play a key role in product development – and present the developer with quite some challenges. The laboratory was even involved in the development of the test method of the recently established practical four-square test for surface disinfectants and could deliver useful advice on the practicability.

Expertise provides safety

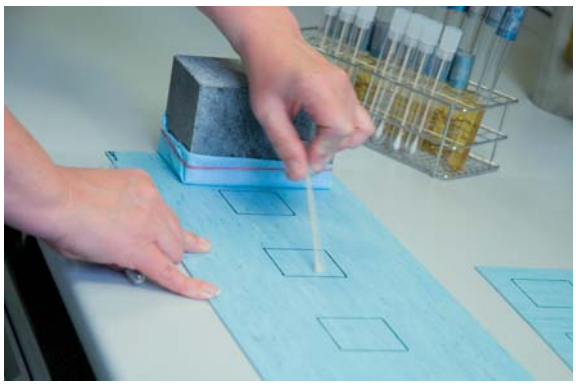
An important basis for the examinations in the laboratory is the work in the own growth media preparation room. It supplies the laboratory with necessary growth media, provides sterile work materials, and processes materials used and waste from the laboratory. The majority of routinely required liquid growth media are produced here. Thus, in special situations, the lab's demands can be satisfied at short notice. In case the staff in the growth media preparation room makes a mistake, the results of the examinations carried out cannot be used.

In this worst-case scenario, finished products cannot be released.

Inka Wiebensohn-Kramski, who manages this area, reports: "Luckily, we have never had such a case. Sterilisation processes have become extremely safe. All prepared and provided growth media are regularly checked for sterility and microbial growth behaviour. Thus, we have been able to validly detect all microorganisms."

A good feeling, because it shows: the employees keep an eye on the seemingly invisible world of microbiology at all times.

Quality inspection evaluation



Execution of the four-square test

Autoclave with growth media

Easily and safely reprocessing of wipes dispensers

Together with the Research & Development department the BODE SCIENCE CENTER has evaluated a simple manual reprocessing procedure that safely prevents recontamination of wipes dispensers used for surface disinfection.

In November 2012, the Disinfectant Commission in the German Association for Applied Hygiene (VAH) pointed to the fact that use-solutions in wipes dispensers for surface disinfection may become contaminated when dispensers are reprocessed inadequately before reuse.

The VAH warning was confirmed by studies of the BODE SCIENCE CENTER: 42 % of the tested surface disinfection dispensers from clinical and medical practices were contaminated with up to 10^7 bacteria per ml. Most of the isolated bacteria were Gram-negative, for example, *Achromobacter spp.* Contamination only occurred with surface disinfectants based on surface-active substances without aldehyde. The reason was inadequate reprocessing of the wipes dispensers, facilitating the formation of biofilms.

Together with the Research & Development department the BODE SCIENCE CENTER investigated different procedures for several months to be able to recommend a simple and safe procedure for wipes dispenser reprocessing. The examinations revealed a simple manual procedure to be capable of preventing recontamination over the maximum standing time of 28 days. With this procedure, the dispenser is thoroughly rinsed with hot drinking water, dried and then disinfected with an alcohol-based rapid disinfectant.

Manual reprocessing procedure

▼

First, thoroughly rinse the dispenser and lid with hot water, and dry.

▼

Afterwards, wipe disinfect all surfaces with Bacillol AF (or any other surface disinfectant with a high alcohol content that dries without leaving any residue). Pay attention to the exposure time of at least 30 seconds. Make sure all surfaces are wetted.

▼

After all surfaces are completely dry, refill the dispenser with a new fleece roll and freshly prepared disinfection solution to be used for up to 28 days.

The evaluated process not only offers increased patient safety, but also simplifies operational sequences: all dispenser parts can now be reprocessed with the same method; it is no longer necessary to distinguish surface disinfectants based on surface-active substances without aldehyde and those based on aldehydes or alcohols.

Please visit our website at www.bode-science-center.com to download the simple manual reprocessing method under CENTER. In this section, you will also find interesting study results relating to this topic.

The manual reprocessing procedure evaluated by the BODE SCIENCE CENTER offers safety and simplifies operational sequences.

Adequate hygiene in the event of poliovirus

The World Health Organisation (WHO) plans to eradicate poliovirus worldwide by 2018. However, there have been some setbacks recently: in October 2013, for the first time after 14 years, there were a number of new infections with wild poliovirus in Syria. Additionally, polioviruses were found in sewage in Egypt, the West Bank, the Gaza Strip and Israel. Hence, WHO considers the risk of an international spread as high.

Polioviruses are transmitted via the faecal-oral route. They spread through contact with contaminated people, surfaces, food and water – at the beginning of an infection also via droplets. If a polio infection is suspected, people concerned must be admitted to a hospital immediately and isolated.
The most important and most effective protection against polio infection is vaccination. To prevent transmission of the pathogen, strict hygiene measures are necessary as well.

Important hygiene rules at a glance

- Always disinfect your hands after each contact with pathogenic material, patients or their immediate surroundings with a virucidal hand disinfectant*.
- Adhere to the 5 Moments for Hand Hygiene.
- When direct patient contact is expected, always use gloves and disinfect your hands after glove removal.
- Disinfect all instruments, surfaces and objects that might have come in contact with pathogens with a virucidal disinfectant.
- Avoid exposure to aerosols of infected patients at the beginning of an infection. If necessary, infected patients should wear a surgical face mask.

For further information please visit www.**bode-science-center.com** under CENTER.

*A recent study revealed that hand disinfectants that are claimed to be virucidal in accordance with EN 14476 do not possess adequate virucidal activity.

Wash lotions of the Baktolin® range: Product range optimised to please customers

In addition to disinfection, cleansing hands belongs to the daily routine of many professional users and places enormous demands on products. With the Baktolin range, PAUL HARTMANN AG offers special, particularly mild wash lotions that are gentler on the skin than conventional surfactants.

The products in the Baktolin range have now been realigned with the customer needs and the variety of the range has been optimised accordingly: since 01 July 2013, HARTMANN exclusively offers the two most popular product lines Baktolin pure and Baktolin sensitive.

The fragrance and colourant-free Baktolin pure is suitable for sensitive skin and allergy sufferers and is characterised by a good value for money. Baktolin sensitive now comes with a new, improved formula. With a pleasant scent, it contains moisturising, replenishing substances to satisfy the needs of stressed skin and has a nourishing effect already during washing. Premium additives ensure improved skin moisturisation.

Additional information on the Baktolin wash lotions, you will find on the website of BODE Chemie GmbH at **www.bode-chemie.com** under Products/Hands.