

schülke -†

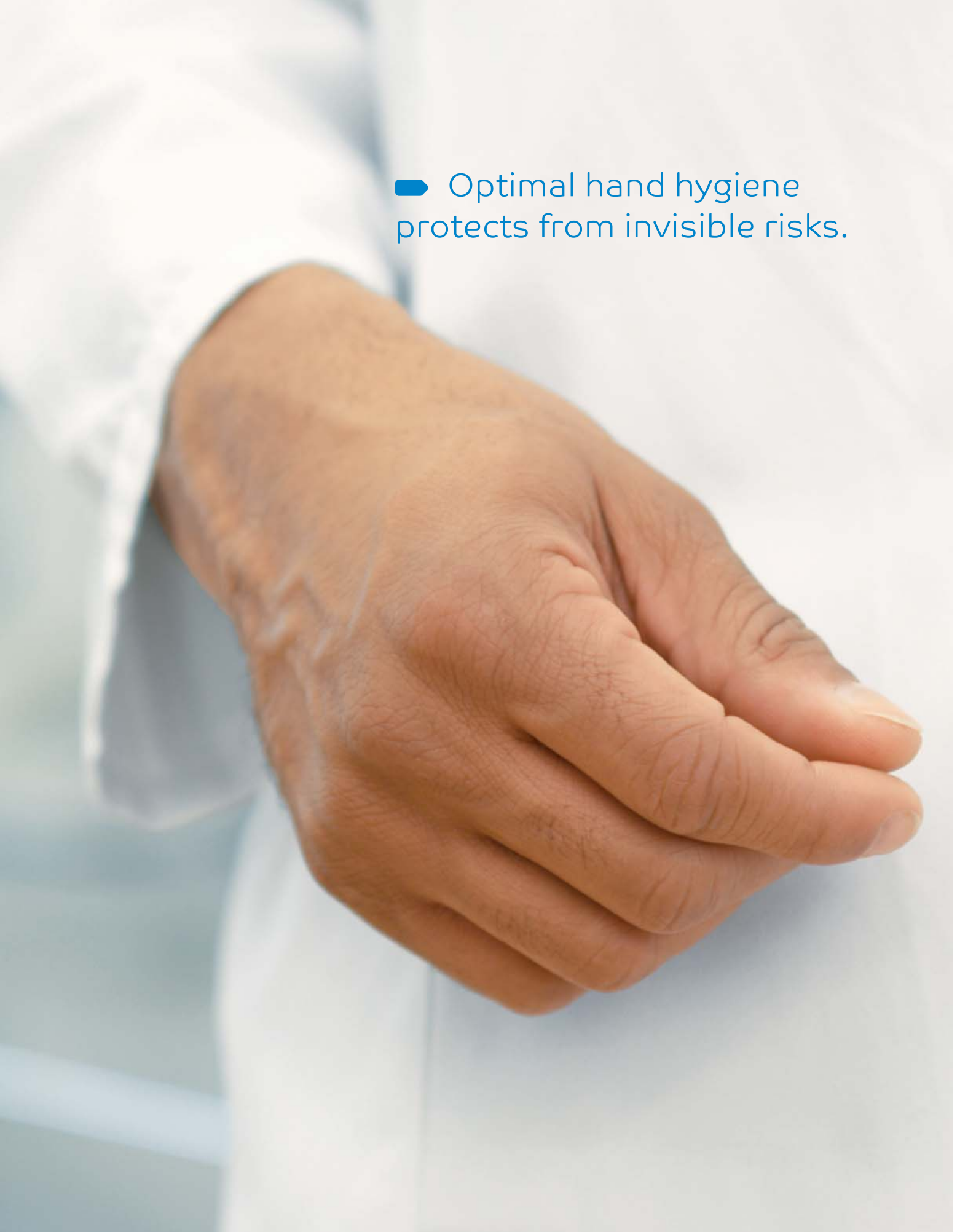
Hand Disinfection in Focus.

Maximum protection, optimal skin care.



the plus of pure
performance

➤ Optimal hand hygiene protects from invisible risks.



Meeting every standard of hygienic cleanliness!

schülke

In the everyday business of medicine, no instrument is more in focus than the human hand.

According to the state of current knowledge, hands represent the greatest risk for the transmission of disease pathogens! The WHO (World Health Organization), VAH (Association for Applied Hygiene, registered association) and RKI (Robert Koch Institute) also consider the hands to be the number one source for the spread of hospital acquired infections, in addition to others.

Professional hand hygiene is therefore one of the most important preventive measures for the protection of personnel and patients. Correctly performed hand hygiene reduces contamination with pathogens up to 99.9 %.

Statistics for hospital acquired infections:

- Each year, at least 2.000.000 patients in the USA and over 320.000 patients in the UK acquire one or more health care-associated infections during their stay in hospital
- 3 million hospital acquired infections in the EU, of which 50.000 result in death
- In 80 % of all cases, hospital acquired infections are transmitted via the hands



As a consequence, this leads to prolonged patient suffering and longer confinement to bed rest. Furthermore, an elevated cost factor arises. In Great Britain, additional hospitalization costs in the amount of 930 million British pounds (this is equivalent to approx. 1,2 billion euros) are calculated to be the result of hospital acquired infections*.

* Sources: Robert Koch Institute, www.rki.de, Federal Health Monitoring System – Issue 8 Nosocomial Infections, ECDC (European Centre for Disease Prevention and Control), <http://ecdc.europa.eu>, The First European Communicable Disease Epidemiological Report, 2007, WHO guidelines on hand hygiene in health care, 2005

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Hand hygiene: clean is not necessarily safe!



Hand disinfection vs. handwashing

Handwashing is not an alternative to hand disinfection because only disinfection is capable of

reducing pathogens rapidly enough so that no more pathogens can be transmitted.

Handwashing does not impress pathogens:

Even though it is more of a habit to us and often meets our inherent need for cleanliness: while soap does indeed remove dirt, it does not inactivate pathogenic microbes reliably or quickly enough. Furthermore, disease pathogens are

distributed during washing of the hands but not completely removed. And irrespective of the safety factor – thorough handwashing usually takes longer than hand disinfection!

Hand disinfection brings an end to pathogens:

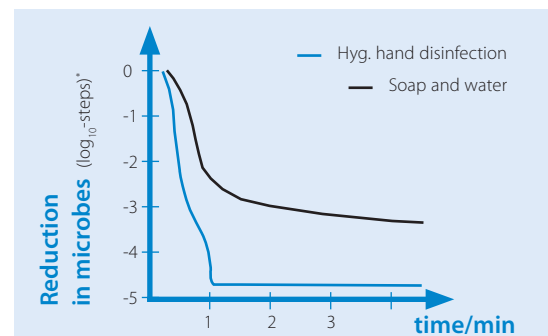
Hygienic hand disinfection barely affects the skin's own resident flora. Mainly the foreign transient bacterial flora is to be eliminated, including

microbes with a high pathogenic potential, pathogens from existing infections and viruses.

It is essential to perform hygienic hand disinfection*

- before aseptic task
- before patient contact
- after patient contact
- after body fluid exposure risk
- after contact with patient surroundings

*WHO definition: 5 Moments of hand hygiene



*Reduction by 3 log₁₀ steps means a microbial reduction of ≥ 99,9 %

Viruses. Robust bad guys!

Selected viruses

Virus	Envelope	Incubation time	Disease pattern
Vacciniavirus	enveloped	no information	The vacciniavirus does not occur in nature and is used for pox vaccination and for virological, biochemical and gene technological experimentation. The origin of the virus is unknown.
Adenovirus	non-enveloped	5-10 days	Keratonconjunctivitis – infection of the eyes, intestinal infections, infections of the respiratory tract
Poliovirus	non-enveloped	3-35 days	Poliomyelitis (polio), polioencephalitis
Polyoma SV40	non-enveloped	latent in the host	PML (JC sub-type) during immunosuppression, infection of the respiratory tract can elicit multiple tumors
Norovirus	non-enveloped	6-50 hours	Noroviruses cause acute gastroenteritis characterized by intense projectile type vomiting and severe diarrhea which can lead to considerable fluid deficit (approx. 200,000 infections reported in Germany in 2007)*
HCV	enveloped	usually 6-9 weeks	Hepatitis, jaundice (icterus), liver inflammation
HBV	enveloped	1-3 months	Hepatitis, jaundice (icterus), liver inflammation
HIV	enveloped	Variable – several months up to several years	Acquired immune deficiency syndrome (AIDS)
Rotavirus	non-enveloped	1-3 days	Diarrhea (approx. 60,000 reported cases in Germany in 2007)*
Influenzavirus	enveloped	1-5 days	Flu

Source: based on J. Sander, Händehygiene in der Medizin [Hand Hygiene in the Field of Medicine], J.S. Publishing Company 1996, *Source: Robert Koch Institute, www.rki.de, Epidemiological Bulletin 18 January 2008/no. 3

Characterization of non-enveloped and enveloped viruses

Non-enveloped viruses possess an external protein coat (which is referred to as a capsid). They exhibit exceptional resistance to chemical and physical processes.

The **enveloped viruses** have a membrane around the protein coat, the integrity of which is required for full infectivity. Because this shell is relatively easy to destroy, enveloped viruses can generally be more quickly and more easily inactivated.

The recommendation – don't wash your hands off it.

Alcohol based disinfection products

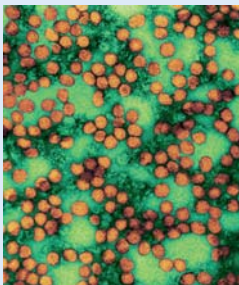
Optimal protection only through alcohol based hand disinfection agents: A hand disinfection agent should kill as many different types of pathogens as quickly as possible.

Almost all commercially available preparations therefore contain alcohols such as n-propanol, isopropanol and ethanol as a sole active ingredient or in various combinations / concentrations. Alcohol-based hand disinfection products are recommended by the WHO because they are highly efficient against a broad spectrum of micro-

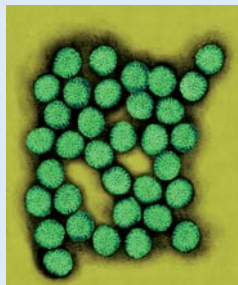
organisms and take effect rapidly. Furthermore, resistance does not develop.

Preparations containing alcohol fight viruses, gram-positive and gram-negative bacteria (including MRSA), M. tuberculosis and fungi as well as yeasts. However, they have no effect against bacterial spores (e.g. Clostridium difficile).

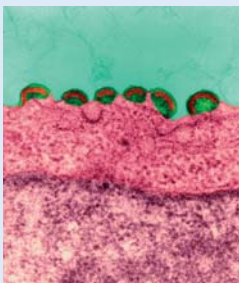
Therefore the RKI recommends additional hand-washing after hygienic hand disinfection to remove bacterial spores from hands.



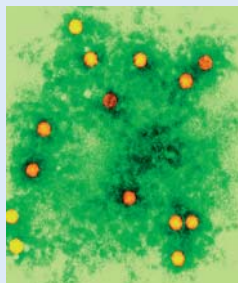
Hepatitis C Virus



Rotavirus



HIV infection in the lymph tissue



Polio virus

Efficacy of alcohol under customary contact times for hand disinfection*

Alcohol against	ethanol	n-propanol	iso-propanol
Bacteria	+++	+++	++(+)
Enveloped viruses	+++	+++	+++
Non-enveloped viruses	++	- (Rota:++)	- (Rota:++)
Bacterial spores	-	-	-
Yeasts/aspergilli	++ (yeasts: +++)	++	++

Copyright Dennis Kunkel Microscopy, Inc.

*30 sec for hygienic hand disinfection, 1.5 – 3 min for surgical hand disinfection

Viruses, a special case: test effectiveness individually!

The direct dissemination of the virus from person to person plays the greatest roll in the transmission of viruses – very often via the hands.

Non-enveloped viruses can represent a problem for alcoholic solutions.

On the other hand, enveloped viruses such as herpes simplex, HIV or influenza are very

susceptible to alcohol. In general, ethanol is more active against viruses than propanols. This aspect is also relevant for the easily transmitted norovirus.

But be careful: only selected products have been proven to be effective against noroviruses. desderman®N and desderman®pure have been proven to be effective against noroviruses within 15 sec.

Compliance in the daily hospital routine.

Hygienic hand disinfection requires consistent use

What belongs in the OR as a compulsory procedure prior to every intervention (surgical hand disinfection) must be even more consistently performed during the course of the day in the clinical setting – **hygienic hand disinfection**.

That hand disinfection takes time and interrupts the work process, it is not disputed. However, it is also indisputable that hands are the primary transmitter of microbial pathogens. Consequently, the close contact between doctors, nurses, aids, and patients undeniably becomes a transmission risk. The potential dangers associated with this can only be reduced by consistent and repetitive hand disinfection!

Reasons given for not performing hand disinfection (according to EURIDIKI study of hygienic hand disinfection):

- **forgetfulness / laziness**
- **lack of training or knowledge**
- **time pressure, lack of time**
- **fear of possible skin problems**
- **lack of awareness of the problem**

Hand disinfection that is not performed is also a psychological problem. It is considered a preventive measure – but not always a vital measure as well. **However: not only the pathogens, but also the extent of their danger is invisible.**



Compliance – to follow the guidelines

This is what various studies have been dealing with over the past years: determining the compliance rate of hygienic hand disinfection in German hospitals. These studies showed that the

average compliance rate in German hospitals lies below 50 %. These results vary in regards to departments as well as professional category.

Studies to measure hand disinfection compliance in Germany*

Compliance studies	Compliance rate (%)		Author
	Average rate	range	
Announced observation	55,2	25,7 - 83,7	Eckmanns, 2001
Unannounced observation	52,2	n.a.	Wendt, 2004
Announced and unannounced observation	41,2	29,6 - 46,8	Eckmanns, 2006

*Source: Krankenhaushygiene + Infektionsverhütung („Hospital hygiene and infection prevention“) 30/June 2008/Issue 3

One hand disinfects the other.

Hygienic hand disinfection

Hygienic hand disinfection: It should annihilate transient microbes acquired from the surroundings as fast as possible.

It is a must, not a may! Because handwashing

alone is not sufficient and soap is not effective enough against bacteria or viruses (e.g. HI, hepatitis B or hepatitis C viruses). And – hygienic hand disinfection not only serves to protect the patient, it also protects the health care worker himself.

Standard rub-in technique for hygienic hand disinfection in accordance with EN 1500

For **hygienic hand disinfection**, apply the hand disinfectant onto dry palms and rub in up to the wrists for **30 seconds** according to the steps listed below. Perform the movements of each step five times. After completion of the 6th step, the individual steps are to be repeated until the rubbing

time indicated has been attained.

Important: Make sure that the hands remain moist during the entire rubbing time. If necessary, use more hand disinfectant.



1 Rub palm to palm. In addition the wrists, if required



2 Right palm over the back of the left hand – and vice versa



3 Rub palm to palm with interlaced spread fingers



4 Rub the backs of the interlocked fingers on the opposing palms



5 Rub the right thumb in the closed palm of the left hand using a circular motion – and vice versa



6 Rub the closed fingertips of the right hand on the left palm using a circular motion – and vice versa

Disinfection at lower arm's length.

Surgical hand disinfection

Surgical hand disinfection: It should prevent the transfer of microbes of any type (transient as well as resident) for as long as possible.

According to RKI guidelines hand washing with soap and water is not required prior to surgical hand disinfection if hands are not visibly soiled.

But: To exclude a risk of possible contamination with bacterial spores (alcoholic hand disinfectants do not have a sporicidal effect), hands must be washed with water and soap before starting the shift or before dressing of surgical clothes at the latest.

Standard rub-in technique for surgical hand disinfection in accordance with EN 12791

During **surgical hand disinfection** hands and lower arms must be kept moist with the disinfectant for **at least 1,5 Min** (dependant on the preparation – schülke hand disinfectants have a proven efficacy

of 1, 5 Min. for surgical hand disinfection). When disinfecting the hands, follow the rub-in method for hygienic hand disinfection.



Wash hands and forearms up to the elbows with a mild liquid soap. Sterile brushes only to be used for nails and nailfolds (if necessary)



Dry hands and forearms with a single-use towel



Apply hand disinfectant onto dry hands. Activate the dispenser with the elbow



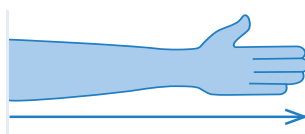
Rub hand disinfectant into hands and lower arms up to the elbow for at least 90 seconds



Follow the standard hygienic hand disinfection method to thoroughly rub in the disinfectant to the hands



Keep hands above elbow level during and after rubbing in the hand disinfectant. Hands must be dried off before sterile gown and gloves are dressed



Important: Hands and lower arms must be kept moistened with the disinfectant for at least 90 seconds.

Trouble-free. Friendly to skin. Reliable.

Alcoholic hand disinfection agents. Compatible for all skin types.

One question concerning alcohol based disinfecting agents that keeps coming up again is the question of the skin compatibility of alcohol. Unlike soap and water, the skin's innate pH is not clinically relevantly altered by alcohol. Because of this, the skin-protective properties of the natural acid mantle of the skin are preserved.

Only in very rare cases, the alcohols used in hand disinfectants are responsible for the formation of a contact allergy.

The decision which kind and concentration of alcohol is being preferred as a basis for the formulation of a hand disinfectant is based on the efficacy of the product, individual skin compatibility as well as preference. In general it is recommended to use

ethanol based products for hygienic hand disinfection with sensitive patients (e.g. newborns, infants and patients with respiratory diseases).*

The alcoholic component evaporates very rapidly during the use of alcoholic rub-in preparations. In the process, the important skin lipids are indeed dissolved but not removed. Instead, they are redistributed – the skin's fatty film remains intact. In addition, high quality disinfectants such as sensiva® hand disinfection, desderman N®, desderman®pure and desmanol N® increase skin protection through the addition of moisture retaining substances such as conditioning agents and emollients that restore the lipid layer.

*Source: Working group recommendation, published in *Hygiene + Medizin*, 2008; 33 (Arbeitskreis "Krankenhaus- und Praxishygiene" der AWMF für Einrichtungen des Gesundheitswesens zur Formulierung von Regeln zur Händehygiene - AWMF-Register Nr. 029/027)



SELS Test – the proof.

Skin compatibility of alcoholic hand disinfecting agents put to the test:

The compatibility of hand and skin care products can be objectively evaluated using the SELS test (surface evaluation of living skin): here, the surface structure of the skin is determined under a special light and analyzed electronically in terms of the parameters skin rawness, scaling, smoothness and degree of wrinkling.

Example: desderman®pure*.

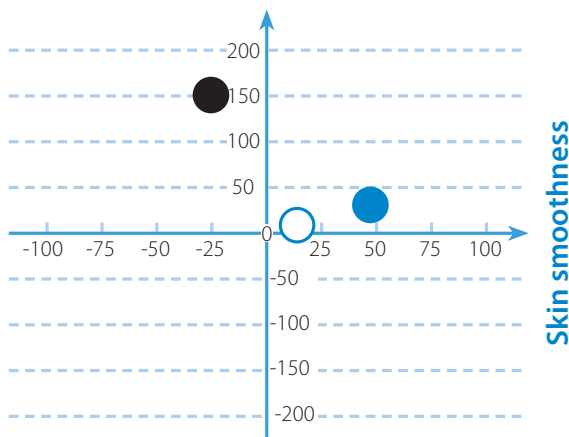
In the SELS test, it exhibited an extremely gentle effect on the skin surface and performed most favorably in the categories skin rawness, scaling, smoothness in direct comparison with a commercially available product (based on Propan-1-ol and Propan-2-ol).



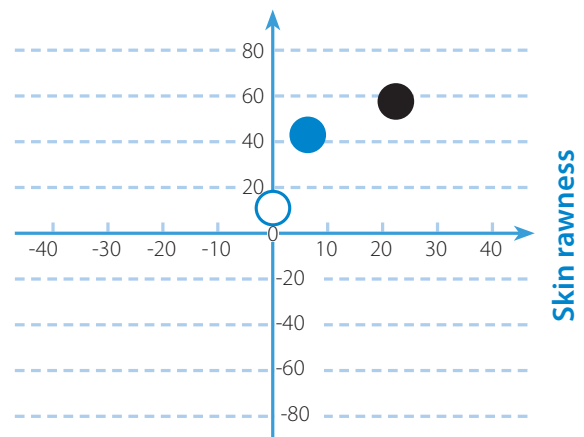
*The test results of desderman N can be transferred to desderman pure as the removing of colour and perfume out of the formulation does not affect the effect of the product onto the skin.

Changes in the skin due to disinfecting agents after 3 weeks in %

Skin scaling



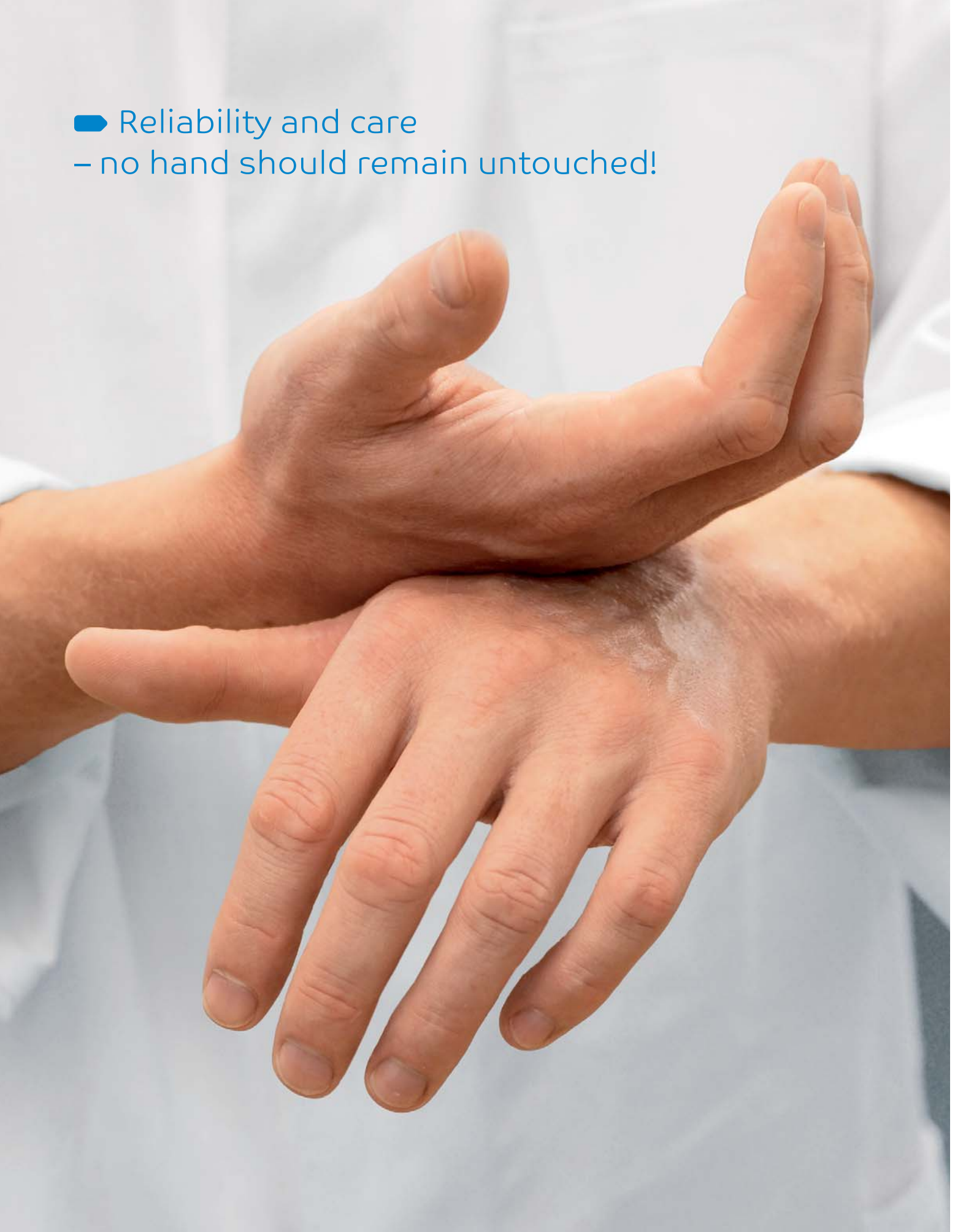
Transepidermal water loss



Source: Results of the SELS (Surface Evaluation of Living Skin) Measuring Procedure; Prof. H. Tronnier, 1998

○ control ● desderman® N ● competition

➤ Reliability and care
– no hand should remain untouched!



It's obvious: healthy, cared-for skin is important!

And increases the effectiveness of hygienic hand disinfection

"The more healthy the skin, the smoother and more undamaged the surface, the fewer microbes will remain attached. Consequently, it is not only of decisive significance for subjective well-being but also for the effectiveness of the disinfecting procedure in particular, that the hands are not just clean and disinfected, but just as consistently cared for." (Source: EURIDIKI. Ein Leitfaden zur hygienischen Händedisinfektion [A Guide to Hygienic Hand Disinfection], page 50, mhp Publishing Company 1996)

The frequently feared drying out of the skin through the use of alcohol, mainly occurs due to the prior cleansing of the hands by washing. Therefore, the hands must be completely dried off.

And: the subsequent hand disinfection is only optimally effective on skin that has been completely dried off! In general, the regular combination of washing and disinfecting should be avoided (exception: visible soil).

The use of additional skin care products that contain emollients and moisturizers is recommended. When using these products, their compatibility with the hand disinfectant used should be checked.

schülke hand disinfectants are generally coordinated with the skin care products esemtan® and sensiva®.

Skin Care – the right way:

- for hygienic reasons use a pump or product dispenser to extract the product
- rub product in clean and dry hands
- apply product onto the back of the hand and use other back of the hand to spread the product
- spread product over fingers and inner hands
- when rubbing in the product take care of nail beds and space between fingers



What	Skin protection	Skin cleaning	Skin care
When	after breaks or in-between before skin compromising activity	after contamination, before breaks and after work	after activity that compromises the skin or mornings and evenings
With what (e.g.)	sensiva® protective emulsion, esemtan® hand emulsion	sensiva® wash lotion, esemtan® wash lotion	sensiva® care emulsion, sensiva® regeneration cream

Protected by knowledge.

Hygienic hand disinfection has to be learned!

Only one who knows which risks he must protect himself and his fellow human beings from will take prophylaxis seriously. For this reason, every medical facility should invest sufficient time in informing and training personnel on the topic of hygienic hand disinfection.

We would be pleased to support you in the following measures:

➤ Provide sufficient hand disinfectants in every ward

- Products (hand disinfectants and skin care products)
- Dispensers (sufficient number)

➤ Personnel training in theory...

- Brief training
- Explain the basic principles / clear up misunderstandings
- Highlight risks associated with not performing hand disinfection
- Introduce products / discuss alcohol in preparations

➤ ... and practice - UV lights, S&M Optik and Sebumeter*

- Perform the individual disinfection steps together and demonstrate the correct technique
- Check the disinfected skin areas and make the skin areas that were unknowingly missed, visible by means of UV light
- Measurement of skin moisture and lipid after disinfection and application of high quality products: determination of the skin condition and demonstration of the effect of the products on the skin condition

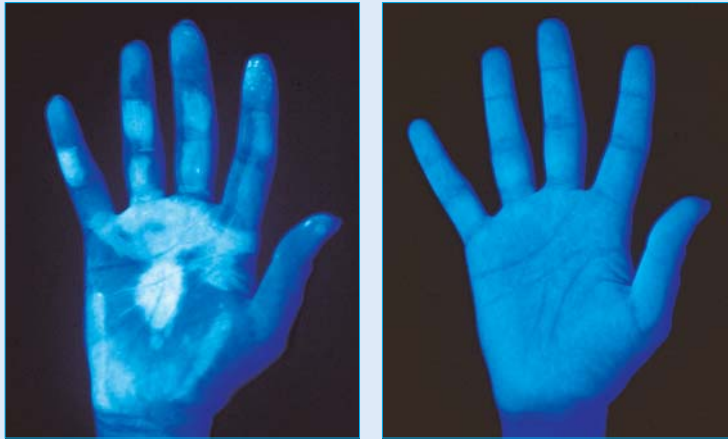
➤ Place guidelines, rules for use and reminder signs at generally accessible places on every ward



* please contact schülke for details

Risk identified – risk averted!

We put you in the picture



Pathogenic agents – an invisible enemy, that can only be countered through thorough hygienic hand disinfection. The problem is that the human eye cannot determine whether all parts of the hands – areas on the hands that are difficult to reach, e.g. finger tips, thumbs, skin below jewelry - have been covered by the disinfectant.

With S&M Optik you can make those gaps visible:

S&M Optik is a hand disinfection training product

that contains fluorescent substances. Disinfect your hands with S&M Optik according to valid standards and your own course of action.

Now place your hands underneath a UV-Light

(366 nm). You might see light as well as dark parts on your skin. Bright spots indicate an effectual hand disinfection. Dark spots show parts of your skin that have not been covered by the disinfectant well enough.



Hand Disinfection



Norovirus-Efficacy
within time of hygienic
hand disinfection

desderman® pure

Alcohol preparation for hygienic and surgical hand disinfection

Our plus

- bactericidal (incl. TB) | fungicidal | virucidal against lipophilic and hydrophilic viruses: polio, rotaviruses, adenoviruses, vaccinia and herpes simplex viruses, HAV, HBV, HCV, HIV, noroviruses
- norovirus efficacy tested (15 sec.) in accordance with latest test methods (murine norovirus)
- with bonus of skin protection and care through re-fattening agents
- colour and fragrance free, therefore hypoallergenic
- rapid onset of action and quick drying due to ethanol base

Pack Size

150 ml bottle
500 ml bottle
1 l bottle
5 l canister



desderman® N

Alcohol preparation for hygienic and surgical hand disinfection

Our plus

- bactericidal (incl. TB) | fungicidal | virucidal against lipophilic and hydrophilic viruses: polio, rotaviruses, adenoviruses, vaccinia and herpes simplex viruses, HAV, HBV, HCV, HIV, noroviruses
- rapid onset of action and quick drying due to ethanol base
- with bonus of skin protection and care
- norovirus efficacy tested (15 sec.) in accordance with latest test methods (murine norovirus)

Pack Size

150 ml bottle
500 ml bottle
1 l bottle
5 l canister



desderman® gel

Rapid acting alcohol based hand gel, formulated for surgical and hygienic hand disinfection

Our plus

- Re-fattening agents ensure the skin is maintained in supple condition
- fast drying and leaves no sticky residue, making gloves easy to don
- suitable for frequent use
- effective against bacteria (Tb, MRSA, VRE), fungi and viruses (Polio, Herpes Simplex, Adeno, Rota and Vaccinia virus)

Pack Size

150 ml bottle
500 ml bottle
1 l bottle



sensiva® hand disinfection

Colouring- and fragrance-free – for hygienic and surgical hand disinfection for normally sensitive skin

Our plus

- Bactericidal (incl. mycobacteria) | fungicidal: C. albicans | virucidal: vaccinia viruses, rotaviruses, HBV, HIV, HCV
- Well tolerated by the skin due to lipid-replacing ingredients
- Particularly suitable for those with allergies

Pack Size

150 ml bottle
500 ml bottle
1 l bottle
5 l canister



desmanol® N

Alcohol rub for hygienic and surgical hand disinfection with skin care ingredients

Our plus

- Bactericidal (incl. mycobacteria) | fungicidal: C. albicans | virucidal: vaccinia viruses, rotaviruses, HBV, HIV, HCV
- Protects and cares for the skin with a special lipid replacement system and a moisture retaining agent
- Pronounced residual activity

Pack Size

150 ml bottle
500 ml bottle
1 l bottle
5 l canister



desmanol®

Alcohol product for hygienic and surgical hand disinfection

Our plus

- protects and cares for hands with special lipid replacement system and moisture retaining agent
- pronounced residual activity
- broad microbicidal action, deactivates lipophilic viruses (including HBV, HCV, HIV, vaccinia viruses) and rotaviruses

Pack Size

150 ml bottle
500 ml bottle
1 l bottle

- The products presented in this brochure are not available in every country. Please contact our subsidiary (listed on the back) or your local distributor.



primasept® med

Wash preparation for hygienic hand disinfection and disinfectant skin cleansing.

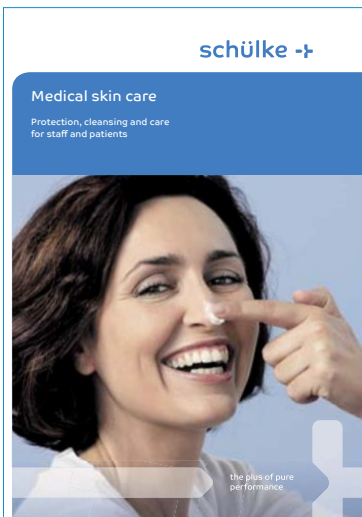
Our plus

- bactericidal (incl. TB) | fungicidal: C. albicans | effective against: papovaviruses, HBV, HIV
- hygienic hand disinfection and cleansing in a single operation
- excellent cleansing effect, even against stubborn soil
- as a result of user-friendly viscosity, no dripping from the hands
- suitable for glove disinfection and for washing patients with MRSA infection

Pack Size

500 ml bottle
1 l bottle
5 l canister

Information Material



Medical skin care brochure



Flyer hygienic hand disinfection



Flyer surgical hand disinfection



Brochure Norovirus

For more information on **schülke** products please visit www.schuelke.com

Accessories



SM 2 500 | SM 2 Universal

Product dispenser SM 2 500 for all 450 / 500 ml bottles (incl. 500 ml Euro bottles);
Product dispenser SM 2 Universal for 450 ml to 1 l bottles

Our plus

- Adjustable metered dose of approx. 1 to 3 ml
- Removable pump
- Attractive, robust plastic dispenser
- Arm- or elbow-operated dispensing lever
- Constant check on level of contents possible
- Meets the requirements of workplace regulations
- Easy to install

Typ KH-SM 26/24



- easy and accurate dosing of hand disinfectants, wash and skin care preparations
- 3 adjustable dosing amounts range from 0.8 to 1.8 ml per actuation
- exchangeable pump made of stainless steel guarantees trouble-free extracting of the product without clogging or dripping
- if necessary dispenser can be taken off the wall mounting plate
- for all commercially available 350-500ml bottles



Dosing set

Wall brackets and doser for hand disinfection, wash and cream lotion.
Dispenses 3 ml per plunge.



Dosing pump

Pump for hand disinfection, wash and cream lotion. Dispenses 3 ml per plunge.

For more information on [schülke](http://www.schuelke.com) accessories please visit www.schuelke.com



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