Excellence in Infection Control

German Standards
BRAND OF THE CENTURY 2022

Sterillium®

Internationally acclaimed **world renowned most widely evaluated** with more than 600 publications in international journals of repute, **undisputed classic hand rub** among medical professionals for hygienic hand disinfection and surgical hand disinfection.

50 Years ! GOLD STANDARD ! 57 Countries consuming more than 6000 Tonnes Per Year !

Product properties

- Best peer-reviewed hand disinfectant -since 1965
- Excellent action
- Provides very good residual effect
- Excellent skin tolerability even with long-term use

Composition

- Each 100 gms contains:
  2-propanol 45.0g
  1-propanol 30.0g
  Mecetroniumethylsulphate 0.2g
  Emollients and skin protecting substances.

Microbiology

- Bactericidal, yeasticidal, tuberculocidal, mycobactericidal, virucidal against enveloped viruses (incl. HBV, HIV, HCV) Adeno, Polyoma, Rota viruses

Areas of application

- **Sterillium**® is used as ready-to-use alcohol based rub-in product independent of water and wash basin, to prevent infection, in all areas of health care and industry, where hygiene is important. It can also be used in home dialysis and travelling.

Areas of application in detail:
For hygienic and surgical hand disinfection:

- In critical care areas,ICCU, ICU, NICU, MICU AKD, operations theatres, infectious depts., burns dept, laboratories, ambulances, treatment units dental and ophthalmic depts., hospital canteen kitchens, emergency medical services, home care of patients, home dialysis etc

Hygienic hand disinfection - 30 seconds
Surgical hand disinfection - 1.5 minutes

Direction for use

- 3ml **Sterillium**® is rubbed undiluted into clean dry hands; be sure that the hands are completely covered during the application time. Keep special attention to fingertips and thumbs.

Optional use: with elbow dispensing stands/cot stands.

clinically relevant skin areas

CME for hospital personnel for training on the self-responsible rub-in method available on request.

Sterillium®

Alcoholic rub-in hand disinfectant

WHO-recommended

Spectrum of activity:

- 70 different strains of bacteria (gm+ve&gm-ve)
- 14 antibiotic resistant strains
- 6 types of mycobacteria
- 7 types of fungi
- 23 types of viruses including SARS-CoV-2 variants B.1.1.7, B.1.351, B.1.617.1 / B.1.617.2, B.1.1.529 (Omicron), SARS-CoV, HCV, Avian Flu, Swine Flu, Polyoma, Adeno and Ebola.

S.N.	Bacteria, Mycobacteria	
1	Acinetobacter baumannii	
2	Acinetobacter baumannii	ATCC 19606
3	Acinetobacter baumannii	**multidrug-resistant**
4	Acinetobacter calcoacetocus	
5	Acinetobacter lwoffii	ATCC 15309
6	Bacteroides fragilis	ATCC 25285
7	Burkholderia cepacia	ATCC 25416
8	Clostridium difficile	ATCC 9689
9	Cholera-Vibrionen	
10	Citrobacter freundii	
11	Enterobacter cloacae	ATCC 13048
12	Enterobacter cloacae	
13	Enterobacter cloacae	ATCC 13047
14	Enterococcus faecalis	ATCC 29212
15	Enterococcus faecalis	**vancomycin-resistant**
16	Enterococcus faecium	ATCC 19434
17	Enterococcus faecium	**antibiotic resistant**
18	Enterococcus faecium	**vancomycin-resistant**
19	Enterococcus hirae	ATCC 10541
20	Escherichia coli (K 12)	NCTC 10538
21	Escherichia coli	ATCC 25922
22	Escherichia coli	ATCC 10536
23	Escherichia coli	ATCC 11229
24	Escherichia coli	CNCTC Ec 324 / 70
25	Escherichia coli EHEC	DSM 8579
26	Escherichia coli	0157: H 7
27	Escherichia coli	**multidrug-resistant**
28	Haemophilus influenzae	ATCC 19418
29	Klebsiella oxytoca	ATCC 43165
30	Klebsiella pneumoniae	**multidrug-resistant**
31	Klebsiella pneumoniae	ATCC 11296
32	Klebsiella pneumoniae	ATCC 4352
33	Klebsiella pneumoniae	
34	Listeria monocytogenes	
35	Listeria monocytogenes	ATCC 7644
36	Micrococcus luteus	ATCC 7468
37	Micrococcus luteus	ATCC 9341
38	MRSA	ATCC 33592
39	Mycobacterium smegmatis	CFB 022
40	Mycobacterium terrae	ATCC 15755
41	Mycobacterium tuberculosis	ATCC 27294
42	Mycobacterium tuberculosis	ATCC 25618
43	Mycobacterium tuberculosis	**multidrug-resistant**
44	Mycobacterium tuberculosis	H_{37}Ra CIP 103471
45	Proteus mirabilis	ATCC 14153
46	Proteus mirabilis	ATCC 7002
47	Proteus vulgaris	
48	Proteus vulgaris	ATCC 13315
49	Proteus vulgaris	CNCTC PrO 10/52
50	Pseudomonas aeruginosa	ATCC 15442
51	Pseudomonas aeruginosa	ATCC 27853
52	Pseudomonas aeruginosa	**antibiotic resistant**
53	Pseudomonas aeruginosa	
54	Pseudomonas aeruginosa	ATCC 15442
55	Pseudomonas aeruginosa	CNCTC Ps 79 / 70
56	Pseudomonas aeruginosa	HM 116
57	Pseudomonas aeruginosa	**multidrug –resistant**
58	Pseudomonas aeruginosa	
59	Pseudomonas aeruginosa	
60	Pseudomonas aeruginosa	
61	Pseudomonas aeruginosa	
62	Salmonella enteritidis	
63	Salmonella enteritidis	ATCC 13076
64	Salmonella typhimurium	
65	Salmonella typhimurium	ATCC 13311
66	Serratia marcescens	
67	Serratia marcescens	ATCC 14756
68	Serratia marcescens	CNCTC Sm 29 / 80
69	Shigella sonnei	ATCC 11060
70	Staphylococcus aureus	
71	Staphylococcus aureus	ATCC 29213
72	Staphylococcus aureus	**vancomycin – intermediate resistant(MRSA)**
73	Staphylococcus aureus	**antibiotic resistant (MRSA)**
74	Staphylococcus aureus	ATCC 597
75	Staphylococcus aureus	ATCC 6538
76	Staphylococcus aureus	ATCC 9144
77	Staphylococcus aureus	CNCTC Mau 43 / 60
78	Staphylococcus epidermis	
79	Staphylococcus epidermis	ATCC 12228
80	Staphylococcus haemolyticus	ATCC 29970
81	Staphylococcus hominis	ATCC 27844
82	Staphylococcus saprophyticus	ATCC 15305
83	Streptococcus faecalis	
84	Streptococcus faecalis	ATCC 6057
85	Streptococcus faecalis	ATCC 10541
86	Streptococcus pneumoniae	
87	Streptococcus pneumoniae	ATCC 6303
88	Streptococcus pneumoniae	**penicillin-resistant**
89	Streptococcus pyogenes	
90	Streptococcus pyogenes	ATCC 19615

S.N	Fungi, Yeast	
1	Aspergillus niger	ATCC 6275 / 70
2	Candida albicans	
3	Candida albicans	ATCC 10231
4	Candida tropicalis	STCC 1400
5	Epidermopphyton floccosum	
6	Microsporum gypseum	
7	Trichophyton mentagrophytes	

S.N.	Bacteria, Mycobacteria	
1	Adeno	Type 5 strain Adenoid 75
2	BVDV	Stamm NADL
3	HBV	
4	Herpes simplex	Type 1 strain HFEM
5	Herpes simplex	Type 1 strain RR
6	Herpes simplex	Type 1 MS ATCC VR-540
7	Herpes simplex	Type 2 strain D 316
8	Herpes simplex	Type 2 maclntyre ATCC vr 539
9	HIV	
10	Influenza A	ATCC VR – 544
11	Polyoma	STRAln 777
12	Rota	Strain WA
13	Rota	Strain RIT 4237
14	Vaccinia	Strain elstree
15	H5N1	Avian flu
16	H1N1	Swine flu
17	Ebola	Ebola Haemorrhagic Fever
18	SARS-CoV-2	B.1.1.7
19	SARS-CoV-2	B.1.351
20	SARS-CoV-2	B.1.617.1
21	SARS-CoV-2	B.1.617.2
22	SARS-CoV-2	B.1.1.529

Proven efficacy

Bacteria and Fungi

Phase 2/ step 2	Efficacy according to EN phase 2 / step 2 (practical tests)	Hygienic hand disinfection **(EN 1500)** Surgical hand disinfection **(EN 12791)**	30 sec 1.5 min
Phase 2/ step 1	Appraised efficacy according to EN phase 2 / step 1 (suspension tests)	Bactericidal **(EN 13727)** Yeasticidal **(EN 13624)** Tuberculocidal **(EN 14348)** Mycobactericidal **(EN 14348)**	15 sec 15 sec 30 sec 30 sec
Phase 1	Appraisal according to EN phase 1 (basic tests /suspension tests) without contamination; does not define the applicability of a product for a specific purpose	Bactericidal **(EN 1040)** Yeasticidal **(EN 1275)**	15 sec 15 sec
	Certified application recommendedations for Hygienic Hand Disinfection from the Association for Applied Hygiene (VAH). Based on suspension and practical tests.	Bactericidal/Yeasticidal	30 sec
	Certified application recommendedations for Surgical Hand Disinfection from (VAH). Based on suspension and practical tests.	Bactericidal/Yeasticidal	1.5 min
DGHM	Appraised efficacy against bacteria (in accordance with the German Society of Hygiene and Microbiology (DGHM) within the certified bactericidal efficacy	MRSA/EHEC Listeria / Salmonella	30 sec 15 sec
RKI	Recognized substances for decontamination according to (Robert Koch-Institut) (RKI)	Area A-vegetative bacteria; incl.mycobacteria; Incl. mycobacteria (use twice for Tb)	30 sec
ASTM (USA FDA)	Appraised efficacy in compliance with American Standard Test Methods (ASTM)	Bactericidal (FDA) Yeasticidal (FDA)	30 sec 30 sec

Proven efficacy

Viruses

EN phase 2 /step 1	Efficacy accoding to EN phase / step 1 (suspension tests)	Adeno virus (EN 14476)	1 min
DVV	Efficacy against viruses (German Society for the Control of Viral Diseases (DVV))	Virucidal against enveloped viruses (incl.HBV, HIV, HCV, ebola)	15 sec
DVV	Appraised efficacy against enveloped viruses (DVV)	Influenza A virus (avian) Influenza A virus(human) Herpes simplex virus type 1 and 2 SARS-CoV	15 sec 15 sec 15 sec 30 sec
DVV	Appraised efficacy against non enveloped viruses (DVV)	Adenovirus Polyoma virus	1 min 5 min
DVV	Appraised efficacy against enveloped viruses (DVV)	Rota virus	15 sec

Compatibility with Bode products

The prior use of **Sterillium®** does not interfere with the durability of the most common single-use glove materials such as latex, nitrile and vinyl

Stability

After opening in tightly closed container : 12 months

Listing

- List of the Robert Koch-institut (RKI) effect area A
- List of disinfectants of the Association for Applied Hygiene (former DGHM list)

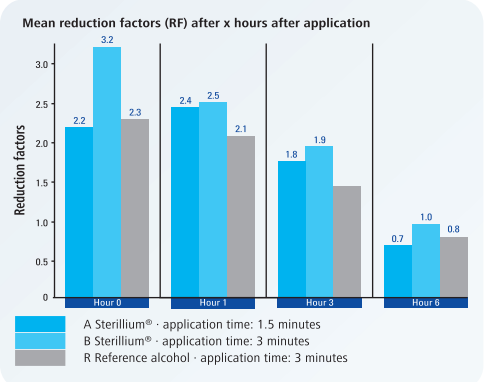
Packing

Content	Carton
5 Ltrs	2 Jars
500ml with dispenser	20 Bottles
100ml	50 Bottles
100ml with dispenser	50 Bottles

SURGICAL HAND DISINFECTION within 1.5 minutes with 6ml Sterillium®

Surgical hand disinfection within 1.5 minutes

In 2005, a study for the first time investigated the efficacy of the alcohol-based hand disinfection with different application times (3,2,1.5 and 1 minute) in comparison with the 3-minute reference treatment in accordance with EN 12791 (1)



At any point in time Sterillium® with application times of 1.5 and 3 minutes was at least as the reference treatment. Also its bacterial colonization rate approximately corresponded to the reference alcohol

Even with an exposure time 1.5 minute only, Sterillium®'s immediate and sustained effect is still superior to the 3 minute reference procedure

Futher studies have confirmed the efficacy even with additional application to forearms and elbows (2,3). The Federal Institute for Drugs and Medical Devices (BfArM) authorized the reduced application time in 2005. Since 2007 the Association for Applied Hygiene (VAH) certifies surgical hand disinfection procedures with exposure times below the previously approved minimum application time of 3 minutes.

Another study (4) with Sterillium® could proof that an exposure time of only 1.5 minutes does not influence the long term effect of surgical hand disinfection.after 6 hours under the glove Sterillium® coloisation rate was as low as the rate of the reference procedure with a 3 minute application time

The exposure time 1.5 minutes applies to the complete Sterillium® range of products and depending on the preparation –meanwhile has become standard. The advantages include less consumption and according to a study time saving of approx. 1000 working hours per year (5)

1. Kampf G ostermeyer C Heeg P. surgical hand disinfection with a propanol based hand rub : equivalence of shorter application times. J hosp infect 2005 apr; 59(4):304-10.
2. Suchomel m. gnant G Weinlich M rotter M surgical hand disinfection using alcohol the effects of alcohol type, mode and duration of application, j hosp infect 2009 mar; 71(3):228-33
3. Kampf G ostermeyer C Heeg P Paulson D evaluation of two methods of determing the efficacies of two alcohol based hand rubs for surgical hand antisepsis. Appl environ microbial 2006; 72: 3856-3861
4. Rotter M L kampf g suchomel M kundi m long term effect of a 1.5 minute d=surgical hand rub wih a propanol based product on the resident hand flora journal of hospital infection volume 66 issue 1 (may 2007) p 84-85
5. Kampf G voss A widmer AF die chirurgische handedesinfektion zwischen tradition and fortschritt hyg med 2006; 31 (7+8): 316-321

SCIENCE CENTER BODE

Better compliance through good skin compatibility

Introducing Sterillium® to a medical intensive care unit (MICU) as alternative to washing increased compliance with hand disinfection by almost 20 percent these results were attributed good skin tolerability even with repeated application

Research for infection protection

Source : Maury E et al availability of an alcohol solution can improve hand disinfection compliance in an intensive care unit Am. j. Respir. Crit. Care Med., 2000, 162: 324 - 7.

SCIENCE CENTER BODE

Surgical Hand Disinfection

Dermal Tolerance

1.Parienti, J. J., P. Thibon, R. Heller, Y. Le Roux, P. von Theobald,H. Bensadoun, A. Bouvet, F. Lemarchand, and X.Le Coutour. 2002. Hand-rubbing with an aqueous alcoholic solution vs traditional surgical hand-scrubbing and 30-day surgical site infection rates - a randomized equivalence study. The Journal of the American Medical Association 288:722-727.

Spectrum of activity

1.Kampf G, Hollingsworth A (2003) Validity of the four European test strains of prEN 12054 for the determination of comprehensive bactericidal activity of an alcohol-based hand rub. Journal of Hospital Infection 55: 226-231.
2.Kampf G, Steinmann J, Rabenau H (2007) Suitability of vaccinia virus and bovine viral diarrhea virus (BVDV) to determine activity against enveloped viruses of three commonly used alcohol-based hand rubs. BMC Infectious Diseases 7: 5.

EN 12791 - Surgical Hand Disinfection(Bactericidal effect)

1.Marchetti MG, Kampf G, Finzi G, Salvatorelli G (2003) Evaluation of the bactericidal effect of five products for surgical hand disinfection according to prEN 12054 and prEN 12791. Journal of Hospital Infection 54: 63-67.
2.Kampf G, Ostermeyer C (2004) Influence of applied volume on efficacy of 3-minute surgical reference disinfection method prEN 12791. Applied and Environmental Microbiology 70: 7066-7069.
3.Kampf G, Heeg P, Ostermeyer C (2005) Surgical hand disinfection with a propanol-based hand rub: equivalence of shorter application times. Journal of Hospital Infection 59: 304-310.
4.Kampf G, Ostermeyer C, Heeg P, Paulson D (2006) Evaluation of two methods to determine the efficacy of alcohol-based hand rubs for surgical hand antisepsis. Applied and Environmental Microbiology72: 3856-3861.
5.Hübner N-O, Kampf G, Kamp P, Kohlmann T, Kramer A (2006) Does a preceding hand wash and drying time after a surgical hand disinfection influence the efficacy of a propanol-based hand rub? BMC Microbiology 6: 57.
6.Rotter ML, Kampf G, Suchomel M, Kundi M (2007) Population kinetics of the skin flora on gloved hands following surgical hand disinfection with 3 propanol-based hand rubs: a prospective, randomized, double-blind trial. Infection Control and Hospital Epidemiology 28: 346-350.
7.Rotter ML, Kampf G, Suchomel M, Kundi M (2007) Long term effect of a 1.5 minute surgical hand rub with a propanol-based product on the resident hand flora. Journal of Hospital Infection 66: 84-85.
8.Kampf G, Ostermeyer C, Kohlmann T (2008) Bacterial population kinetics on hands during two consecutive surgical hand disinfection procedures. American Journal of Infection Control 36: 369-374.
9.Kampf G, Ostermeyer C (2009) A 1 minute hand wash does not impair the efficacy of a propanol-based hand rub in two consecutive surgical hand disinfection procedures. European Journal of Clinical Microbiology and Infectious Diseases 28:1357-1362.
10.Suchomel, M., G. Gnant, M. Weinlich, and M. Rotter. 2009. Surgical hand disinfection using alcohol: the effects of alcohol type, mode and duration of application. Journal of Hospital Infection 71:228-233.
11.Hübner N-O, Kampf G, Löffler H, Kramer A (2006) Effect of a 1 minute hand wash on skin hydration and the bactericidal efficacy of standard alcohols for surgical hand disinfection. International Journal of Hygiene and Environmental Health 209: 285-291.

1.5 min

1.Kampf G, Heeg P, Ostermeyer C (2005) Surgical hand disinfection with a propanol-based hand rub: equivalence of shorter application times. Journal of Hospital Infection59:304-310.
2.Kampf G, Ostermeyer C, Heeg P, Paulson D (2006) Evaluation of two methods to determine the efficacy of alcohol-based hand rubs for surgical hand antisepsis. Applied and Environmental Microbiology72: 3856-3861.
3.Hübner N-O, Kampf G, Kamp P, Kohlmann T, Kramer A (2006) Does a preceding hand wash and drying time after a surgical hand disinfection influence the efficacy of a propanol-based hand rub? BMC Microbiology 6: 57.
4.Rotter ML, Kampf G, Suchomel M, Kundi M (2007) Long term effect of a 1.5 minute surgical hand rub with a propanol-based product on the resident hand flora. Journal of Hospital Infection 66: 84-85.
5.Kampf G, Ostermeyer C, Kohlmann T (2008) Bacterial population kinetics on hands during two consecutive surgical hand disinfection procedures. American Journal of Infection Control 36: 369-374.
6.Kampf G, Ostermeyer C (2009) A 1 minute hand wash does not impair the efficacy of a propanol-based hand rub in two consecutive surgical hand disinfection procedures. European Journal of Clinical Microbiology and Infectious Diseases 28:1357-1362.
7.Weber, W. P., S. Reck, U. Neff, R. Saccilotto, M. Dangel, M. L. Rotter, R. Frei, D. Oertli, W. R. Marti, and A. F. Widmer. 2009. Surgical hand antisepsis with alcohol-based hand rub: comparison of effectiveness after 1.5 and 3 minutes of application. Infection Control and Hospital Epidemiology 30:420-426.
8.Suchomel, M., G. Gnant, M. Weinlich, and M. Rotter. 2009. Surgical hand disinfection using alcohol: the effects of alcohol type, mode and duration of application. Journal of Hospital Infection 71:228-233.
9.Kac G, Masmejean E, Gueneret M, Rodi A, Peyrard S, Podglajen I: Bactericidal efficacy of a 1.5 min surgical hand-rubbing protocol under in-use conditions. J Hosp Infect 2009, 72(2): 135-139.

Kinetics over 6 hours

1.Rotter ML, Kampf G, Suchomel M, Kundi M (2007) Population kinetics of the skin flora on gloved hands following surgical hand disinfection with 3 propanol-based hand rubs: a prospective, randomized, double-blind trial. Infection Control and Hospital Epidemiology 28: 346-350.
2.Rotter ML, Kampf G, Suchomel M, Kundi M (2007) Long term effect of a 1.5 minute surgical hand rub with a propanol-based product on the resident hand flora. Journal of Hospital Infection 66: 84-85.

Comparison with Scrubs

1.Marchetti MG, Kampf G, Finzi G, Salvatorelli G (2003) Evaluation of the bactericidal effect of five products for surgical hand disinfection according to prEN 12054 and prEN 12791. Journal of Hospital Infection 54: 63-67.
2.Kampf G, Heeg P, Ostermeyer C (2005) Surgical hand disinfection with a propanol-based hand rub: equivalence of shorter application times. Journal of Hospital Infection 59: 304-310.
3.Kac G, Masmejean E, Gueneret M, Rodi A, Peyrard S, Podglajen I: Bactericidal efficacy of a 1.5 min surgical hand-rubbing protocol under in-use conditions. J Hosp Infect 2009, 72(2): 135-139.
4.Kampf G (2008) What is left to justify the use of chlorhexidine in hand hygiene? Journal of Hospital Infection 70 (suppl. 1): 27-34.
5.Parienti, J. J., P. Thibon, R. Heller, Y. Le Roux, P. von Theobald, H. Bensadoun, A. Bouvet, F. Lemarchand, and X. Le Coutour. 2002. Hand-rubbing with an aqueous alcoholic solution vs traditional surgical hand-scrubbing and 30-day surgical site infection rates - a randomized equivalence study. The Journal of the American Medical Association 288:722-727.

Hygienic Hand Disinfection

Dermal Tolerance

1.Kampf G, Kramer A. Epidemiologic background of hand hygiene and evaluation of the most important agents for scrubs and rubs.Clinical Microbiology Reviews 2004;17(4):863-893.
2.Kampf G, Löffler H. Dermatological aspects of a successful introduction and continuation of alcohol-based hand rubs for hygienic hand disinfection. Journal of Hospital Infection 2003 ;55(1):1-7.
3.Kampf G, Muscatiello M, Häntschel D, Rudolf M. Dermal tolerance and effect on skin hydration of a new ethanol-based hand gel.Journal of Hospital Infection 2002;52(4):297-301.
4.Kampf G, Wigger-Alberti W, Wilhelm KP. Do atopics tolerate alcohol-based hand rubs? A prospective, controlled, randomized double-blind clinical trial. Acta Dermato-Venereologica 2006;86(2):140-143.
5.Kramer A, Bernig T, Kampf G. Clinical double-blind trial on the dermal tolerance and user acceptability of six alcohol-based hand disinfectants for hygienic hand disinfection. Journal of Hospital Infection 2002;51(2):114-120.

EN 1500

1.Kampf G, Kramer A. Epidemiologic background of hand hygiene and evaluation of the most important agents for scrubs and rubs.Clinical Microbiology Reviews 2004;17(4):863-893.
2.Kramer A, Rudolph P, Kampf G, Pittet D. Limited efficacy of alcohol-based hand gels. The Lancet 2002;359:1489-1490.
3.Kampf G, Marschall S, Eggerstedt S, Ostermeyer C. Efficacy of ethanol-based hand foams using clinically relevant amounts: a cross-over controlled study among healthy volunteers. BMC Infectious Diseases 2010;10:78.

Spectrum of activity (Bacteria, Viruses, Spores)

1.Kampf G, Kramer A. Epidemiologic background of hand hygiene and evaluation of the most important agents for scrubs and rubs. Clinical Microbiology Reviews 2004;17(4):863-893.
2.Kampf G. Clostridium difficile – what should be considered for an effective disinfection? Hygiene + Medizin 2008;33(4):153-159.
3.Kampf G, Steinmann J, Rabenau H. Suitability of vaccinia virus and bovine viral diarrhea virus (BVDV) for determining activities of three commonly-used alcohol-based hand rubs against enveloped viruses. BMC Infectious Diseases 2007;7:5.
4.Kampf G, Hollingsworth A. Validity of the four European test strains of prEN 12054 for the determination of comprehensive bactericidal activity of an alcohol-based hand rub. Journal of Hospital Infection 2003;55(3):226-231.
5.Weber DJ, Sickbert-Bennett E, Gergen MF, Rutala WA. Efficacy of selected hand hygiene agents used to remove Bacillus atrophaeus (a surrogate of Bacillus anthracis) from contaminated hands. The Journal of the American Medical Association 2003;289(10): 1274-1277.

Compliance

1.Pittet D, Hugonnet S, Harbarth S, Monronga P, Sauvan V, Touveneau S, et al. Effectiveness of a hospital-wide programme to improve compliance with hand hygiene. The Lancet 2000; 356:1307-1312.
2.Kampf G, Kramer A. Epidemiologic background of hand hygiene and evaluation of the most important agents for scrubs and rubs.Clinical Microbiology Reviews 2004;17(4):863-893.
3.Sax H, Allegranzi B, Uçkay I, Larson E, Boyce J, Pittet D.'My five moments for hand hygiene': a user-centred design approach to understand, train, monitor and report hand hygiene. Journal of Hospital Infection 2007;67(1):9-21.
4.Kampf G. The six golden rules to improve compliance in hand hygiene. Journal of Hospital Infection 2004;56(Suppl. 2):S3-S5.
5.Kampf G, Reichel M, Feil Y, Eggerstedt S, Kaulfers P-M. Influence of rub-in technique on required application time and hand coverage in hygienic hand disinfection. BMC Infectious Diseases 2008;8:149.
6.Kampf G, Löffler H. Dermatological aspects of a successful introduction and continuation of alcohol-based hand rubs for hygienic hand disinfection. Journal of Hospital Infection 2003 ;55(1):1-7.
7.Rupp ME, Fitzgerald T, Puumala S, Anderson JR, Craig R, Iwen PC, et al. Prospective, controlled, cross-over trial of alcohol-based hand gel in critical care units. Infection Control and Hospital Epidemiology 2008;29(1):8-15.

Nosocomial Infections

1.Pittet D, Hugonnet S, Harbarth S, Monronga P, Sauvan V, Touveneau S, et al. Effectiveness of a hospital-wide programme to improve compliance with hand hygiene. The Lancet 2000; 356:1307-1312.
2.Kampf G, Kramer A. Epidemiologic background of hand hygiene and evaluation of the most important agents for scrubs and rubs. Clinical Microbiology Reviews 2004;17(4):863-893.
3.Rupp ME, Fitzgerald T, Puumala S, Anderson JR, Craig R, Iwen PC, et al. Prospective, controlled, cross-over trial of alcohol-based hand gel in critical care units. Infection Control and Hospital Epidemiology 2008;29(1):8-15.

Clinical data

1.Weber, W. P., S. Reck, U. Neff, R. Saccilotto, M. Dangel, M. L. Rotter, R. Frei, D. Oertli, W. R. Marti, and A. F. Widmer. 2009. Surgical hand antisepsis with alcohol-based hand rub: comparison of effectiveness after 1.5 and 3 minutes of application. **Infection Control and Hospital Epidemiology 30:420-426.**
2.Kac G, Masmejean E, Gueneret M, Rodi A, Peyrard S, Podglajen I: Bactericidal efficacy of a 1.5 min surgical hand-rubbing protocol under in-use conditions. ***J Hosp Infect* 2009, 72(2): 135-139.**
3.Parienti, J. J., P. Thibon, R. Heller, Y. Le Roux, P. von Theobald, H. Bensadoun, A. Bouvet, F. Lemarchand, and X. Le Coutour. 2002. Hand-rubbing with an aqueous alcoholic solution vs traditional surgical hand-scrubbing and 30-day surgical site infection rates - a randomized equivalence study. **The Journal of the American Medical Association 288:722-727.**