The importance of surface cleaning and disinfection to prevent hospital infections

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JOINT MEETING OF WFHCC AND DGSV
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Prof. Martin Exner and Dr. Jürgen Gebel
The beginnings of evidence-based disinfection by Robert Koch in 1881

Über Desinfektion. 1)

Von Dr. R. Koch, Regierungs-Bezirk. Prefekt.

Eine genaue Kenntnis der Desinfektionsmittel in bezug auf die Art und Weiße, wie sie wirken und, was allerdings auffallend klingt, ob sie überhaupt so wirken, wie man sich bei ihrer Empfehlung und Verwendung vorbildlich, hat sich bis jetzt nicht erlangen lassen. Es kann das aber auch nicht wunderbar erscheinen, wenn man bedenkt, daß die Infektionsstoffe, an denen ein Desinfektionsmittel seine Wirkung ausüben soll, noch so wenig bekannt sind. Es ist bisher noch nicht einmal als fastgelegt zu betrachten, daß die Infektionsstoffe sämtlich organisierte Infektionsstoffe sind und auch die durch chemische Verbindung ausgeschiedenen, nicht in der bloßen Weise bestehen. Deswegen wären es, wenn ein Desinfektionsmittel in ganz exakter Weise geprüft werden solle, notwendig sein, dasselbe der Reife nach an allen den Krankheitserregern, gegen die es überhaupt gebraucht werden soll, gewöhnlich doch auch anderen Infektionsstoffen, und zwar unter den seltenen Verhältnissen, für welche es bestimmt ist, auf seine Wirksamkeit zu untersuchen. Wenn beispielsweise schwefelige Säure zur Desinfektion von geschlossenen Räumen dienen soll, müßten Krankheitsreger, die durch Typhus, Pest, Diphtherie, Schlauch- usw. Kranken infiziert wurden, damit behandelt werden und abhäng von diesen Räumen festgelegt werden, daß in ihnen die betreffenden Infektionsstoffe auch wirklich unschädlich gemacht sind. Wie sollte dies aber nachgewiesen werden? Nur wenn der Zudruck der Untersuchung zu Hilfe käme, ließe sich durch weitere Erkundigungen von Menschen in diesen Räumen möglichst auf die noch bestehende Wirksamkeit des Infektionstoffes schließen, während aus dem Umstand, daß niemand mehr dascheht erkrankte, selbstverständlich noch nicht die Vernichtung der Infektionsstoffe erwiesen ist. Einen sichereren Boden hat die unmittelbare Prüfung des Desinfektionswesens in dem Falle gewonnen, daß die Übertragung der Infektionskrankheiten, dessen Keime von den Desinfektionsmitteln nicht erwiesen werden, auf Tiere leicht und unbehinderter ausgeführt und die Versuchstiere gewissermaßen als Röntgen auf die Wirksamkeit des Mittels zu überwachen sind. Völlig sind diese Bedingungen kaum für eine oder die andere der bekannten Infektionserkrankungen ausführbar und es ist sehr fraglich, ob sie jemals für alle oder doch nur für die Mehrzahl der Infektionskrankheiten zu eröffnen sein werden.

Um nun zunächst erst einmal über die Wirksamkeit der Desinfektionsmittel überhaupt Aufschluß zu gewinnen und zu erfahren, was unter der langen Reihe der im Laufe der beiden letzten Jahrzehnte angewendeten Desinfektionsmittel dem noch als solches an-

Topics

- The change of risk assessment
- The situation now and in the future
- The new risk assessment of the environment and HAI
- The German Guideline on Hospital Hygiene
- New problems in surface disinfection systems
- Environmental monitoring / risk assessment
- Testing of surface disinfection
Topics

• The change of risk assessment
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Healthcare-Acquired Infections

More than 25 years ago, Dr Robert Weinstein estimated, that the source of pathogens causing a healthcare-associated infection in the intensive care unit was as follows:

- patients’ endogenous flora, 40%–60%;
- cross infection via the hands of personnel, 20%–40%;
- antibiotic-driven changes in flora, 20%–25%;
- other (including contamination of the environment), 20%.

Routine surface disinfection in health care facilities: Should we do it?

To the Editor

The new Draft Guideline for Disinfection and Sterilization in Health Care Facilities, prepared by William A. Rutala, David J. Weber, and the Healthcare Infection Control Practices Advisory Committee (HICPAC) is now open for public comments. It recommends that environmental surface disinfection should only be done when visibly soiled and on a regular basis (Category IIB). A one-step process and an Environmental Protection Agency (EPA)-registered hospital-grade disinfectant/detergent designed for housekeeping purposes should be used Category III. Horizontal surfaces should regularly be cleaned with a detergent, or a detergent/disinfectant, as a means of removing visible dirt and organic material (Category II). The definition of Category IIIB is as follows: Strongly recommended for implementation and supported by some experimental, clinical, or epidemiological studies and a strong theoretical rationale. However, none of these recommendations can be strongly recommended. There is not a single study in the literature that shows routine environmental disinfection to have any impact on hospital-acquired infection rates. Rutala and Weber do not strongly recommend routine surface disinfection, but state in their most recent paper that “the minimum cost and added antimicrobial activity, to disinfect floors is reasonable.” Reasonable would mean Category II, but not Category IIB.

Rutala and coworkers7,8 and Dharan and coworkers4 are cited as references supporting the use of disinfectants/detergents for housekeeping purposes and wet-dusting horizontal surfaces regularly with an hospital disinfectant. But the latter writers: “We are convinced that reduction of bacterial contamination of the patients’ environment can be achieved only with frequent cleaning e.g. more than once daily, rather than using disinfectants once a day.” In none of these studies do Rutala and coworkers ever recommend routine surface disinfection in hospitals.

Despite the lack of evidence, the guidelines recommend routine surface disinfection.

If floors are to be disinfected on a regular basis then all carpets must be removed from hospitals since carpets cannot be effectively disinfected.

If we advocate soap and water for hands, we should also allow soap/detergent and water for cleaning environmental surfaces in hospitals.

The papers by Scott and Blockfield4,5,6 are cited to support the recommendation that clean clothes be

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[Image of logo]

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Routine surface disinfection in health care facilities: Should we do it?

To the Editor:

The new Draft Guideline for Disinfection and Sterilization in Health Care Facilities, prepared by William A. Rutala, David J. Weber, and the Health Care Infection Control Practices Advisory Committee (HCPAC), is now open for public comments. It recommends that environmental surface disinfection should minimally be done weekly and on a regular basis (Category II) or as part of an Environmental Process Improvement Program (Category III). Horizontal surfaces should be used regularly e.g., daily or until the work area is dry. The category III items are not to be used. Wet dusting using dry cloths is not an option.

In conclusion, there are insufficient scientific data to support the strong recommendation to routinely disinfect environmental surfaces in health care facilities except in certain high-risk areas (e.g., isolation units) or possibly to prevent transmission of high-risk organisms (e.g., MRSA, VRE).

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The role of surface disinfection in infection prevention

Jürgen Gebel, Martin Exner, Gary French, Yves Chartier, Bärbel Christiansen, Stefanie Gemein, Peter Goroncy-Bermes, Philippe Hartemann, Ursel Heudorf, Axel Kramer, Jean-Yves Maillard, Peter Oltmanns, Manfred Rotter, and Hans-Günther Sonntag

Methods and findings: After discussion and review of current scientific literature the authors agreed that contaminated surfaces contribute to the transmission of pathogens and may thus pose an infection hazard. Targeted surface disinfection based on a risk profile is seen as an indispensable constituent in a multibarrier approach of universal infection control precautions. Resistance and cross-resistance depend on the disinfectant agent as well as on the microbial species. Prudent implementation of surface disinfection regimens tested to be effective can prevent or minimize adverse effects.

Conclusions: Disinfection must be viewed as a holistic process. There is a need for defining standard principles for cleaning and disinfection, for ensuring compliance with these principles by measures such as written standard operating procedures, adequate training and suitable audit systems. Also, test procedures must be set up in order to demonstrate the efficacy of disinfectants including new application methods such as pre-soaked wipes for surface disinfection.
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Healthcare-Acquired Infections in Germany

- Data on estimated rates of nosocomial infections vary, likely to be between 600,000 and 1,000,000.
- Large percentage of HAI is preventable, especially intravascular-catheter-associated blood-stream infections (BSI)
- Highest rate of HAI: Postoperative wound-infections (approx. 225,000)
- Pathogens of special concern: multiple antibiotic resistant organisms, e.g. A. baumannii, K. pneumonae, P. aeruginosa; MRSA (significantly reduced) (Gastmeier Dtsch Arztebl Int 2014; 111(19): 331-6)
- C. difficile


Trends in MRSA in % in different European Countries reported by EARSS

Deutsches Ärzteblatt 2015
Prof. Otto Cars
Chairman
The Swedish Strategic programme against antibiotic resistance (Strama)

Modern medicine is depending on effective antibiotics....
Challenge: Fewer Antibiotics approved and more reserve antibiotics used
The Current Paradox:

- Antibiotic Resistance
- Drug Development

Morbidity
Mortality
Costs
Notified infections with precentage of hospitalization and case fatality
(minimum 100 cases, Germany, 2016)

<table>
<thead>
<tr>
<th></th>
<th>Fälle gesamt</th>
<th>Fälle mit Angaben zur Hospitalisierung</th>
<th>Hospitalisierte Fälle</th>
<th>Fälle mit Angabe zum Tod</th>
<th>Verstorbene Fälle</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Anzahl</td>
<td>Anzahl</td>
<td>Anzahl</td>
<td>Anteil (%)</td>
<td>Anzahl</td>
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<td>Adenovirus-Konjunktivitis</td>
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<td>563</td>
<td>68</td>
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<td>704</td>
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<td>Campylobacter-Enteritis</td>
<td>73.999</td>
<td>64.952</td>
<td>15.527</td>
<td>24</td>
<td>71.323</td>
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<tr>
<td>Clostridium-difficile-Erkran-</td>
<td>2.337</td>
<td>2.270</td>
<td>2.203</td>
<td>97</td>
<td>2.251</td>
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<tr>
<td>kung, schwere Verlaufsform</td>
<td></td>
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<tr>
<td>Denguefieber</td>
<td>956</td>
<td>839</td>
<td>286</td>
<td>34</td>
<td>950</td>
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<tr>
<td>EHEC-Erkrankung</td>
<td>1.816</td>
<td>1.607</td>
<td>419</td>
<td>26</td>
<td>1.767</td>
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<td>FSME</td>
<td>348</td>
<td>337</td>
<td>296</td>
<td>88</td>
<td>347</td>
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<td>Giardiasis</td>
<td>3.484</td>
<td>2.865</td>
<td>357</td>
<td>13</td>
<td>3.390</td>
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<td>Legionellose</td>
<td>992</td>
<td>947</td>
<td>912</td>
<td>96</td>
<td>962</td>
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<tr>
<td>Listeriose</td>
<td>707</td>
<td>666</td>
<td>642</td>
<td>96</td>
<td>678</td>
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<tr>
<td>Masern</td>
<td>326</td>
<td>306</td>
<td>168</td>
<td>55</td>
<td>315</td>
</tr>
<tr>
<td>Meningokokken, invasive Infektion</td>
<td>338</td>
<td>334</td>
<td>332</td>
<td>99</td>
<td>337</td>
</tr>
<tr>
<td>MRSA, invasive Infektion</td>
<td>3.136</td>
<td>3.031</td>
<td>2.932</td>
<td>97</td>
<td>3.015</td>
</tr>
</tbody>
</table>
Current and Future Challenges

• Increase in immunocompromised patients in hospital and domestic settings

• Increase in pathogens with multiple antimicrobial resistances, increase of gram-negative organisms, increase in CDAD and VRE

• Transfer/admission of patients with unknown status of infection/colonisation

• Biofilm formation and microorganisms in the VBNC status
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Transmission of Healthcare-Associated Pathogens

• Hospitalization in a room in which the previous patient had been colonized or infected with MRSA, VRE, C. difficile, multidrug-resistant Acinetobacter, or multidrug-resistant Pseudomonas has been shown to be a risk factor for colonization or infection with the same pathogen for the next patient admitted to the room.

• Multiple studies have demonstrated that less than 50% of hospital room surfaces are adequately cleaned and disinfected when chemical germicides are used.

Weber, Rutala et al. 2013 (Infection control and hospital epidemiology, 34, 5)
transmission routes

source: Russotto 2015 (modified)
Prevention by surface disinfection

Colonized/infected patient

Contaminated hands and equipment

Inanimate surfaces and equipment contamination

source: Russotto 2015 (modified)
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Richtlinie für Krankenhaushygiene und Infektionsprävention
## RKI-Guideline: Surface Cleaning and Disinfection

### Table 1: Risk areas with regard to the specification of cleaning and disinfection measures

<table>
<thead>
<tr>
<th>Areas without infection risk(^1)</th>
<th>Areas with possible infection risk</th>
<th>Areas with special infection risk</th>
<th>Areas with patients harboring microbes in or on their body such that there could be a risk of transmission</th>
<th>Areas where infection risk posed to personnel(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stairways, corridors, administrative areas, offices, dining rooms, lecture/teaching rooms, engineering rooms</td>
<td>General wards, outpatient departments, radiology, physiotherapy, sanitary areas, dialysis, obstetrics, intensive care/surveillance</td>
<td>OR department, surgical procedures rooms, areas used for: special intensive care (long-term ventilated patients (&gt;24 h); patients suffering from extensive burns, transplants (BMT, stem cells); hemato-oncology (e.g. patients undergoing aggressive chemotherapy, preterm babies)</td>
<td>Isolation wings, nursing functional units where aforementioned patients are treated</td>
<td>Microbiology laboratories, pathology, disposal. Unclean areas of: Laundries, functional departments, e.g. CSSD</td>
</tr>
</tbody>
</table>

\(^1\)Based on the general risk in the population

\(^2\)More information on risk evaluation can be consulted in the Technical Regulations on Biological Substances e.g. TRBA 250 “Biological Substances in the Health Services and Welfare Services” (75)
# RKI-Guideline: Surface Cleaning and Disinfection

## Table 2: Cleaning and disinfection measures in different risk areas

<table>
<thead>
<tr>
<th>Areas without infection risk&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Areas with possible infection risk</th>
<th>Areas with special infection risk</th>
<th>Areas with patients harboring microbes in or on their body such that there could be a risk of transmission</th>
<th>Areas where infection risk posed to patients&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>All surfaces: Cleaning</td>
<td>Surfaces with frequent hand/skin contact: Disinfection (Cat. II)</td>
<td>Surfaces with frequent hand/skin contact: Disinfection (Cat. II)</td>
<td>Surfaces with frequent hand/skin contact: Disinfection (Cat. II)</td>
<td>See Technical Regulation on Biological Substances (TRBA) (Cat. IV)</td>
</tr>
<tr>
<td></td>
<td>Floors: cleaning</td>
<td>Floors: disinfection (Cat. II)</td>
<td>Floors: disinfection (Cat. II)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other surfaces: cleaning</td>
<td>Other surfaces: cleaning</td>
<td>Other surfaces: cleaning</td>
<td></td>
</tr>
</tbody>
</table>

When deciding whether routine cleaning or detergent surface disinfection is to be carried out, practicability and safe conductance must also be taken into account.

<sup>1</sup> Based on the general risk in the population

<sup>2</sup> More information on risk evaluation can be consulted in the Technical Regulations on Biological Substances e.g. TRBA 250 “Biological Substances in the Health Services and Welfare Services” (75)
Hand contact areas
Other areas
Requirements for Surface Cleaning and Disinfection Procedures

• No increase of cfu and no dissemination of pathogens into the patient environment

• Proven antimicrobial effectivity

• Fast acting antimicrobial effectivity – and remanent effect (new)

• Broad antimicrobial spectrum of activity to prevent selection of pathogens

• Ecologically friendly
Ubiquitious microorganisms

dirt

Pathogens

Cleaning

Disinfection

Cleaning and Disinfection
Principle of the 4-field test
Efficacy of cleaning and disinfection in the 4-field test with *S. aureus*

<table>
<thead>
<tr>
<th>Field</th>
<th>Water</th>
<th>Alkylamines</th>
<th>Tensides</th>
<th>Aldehydes</th>
<th>Glykole Derivate &amp; Quats</th>
<th>Peroxides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field 1</td>
<td><img src="image1" alt="Water" /></td>
<td><img src="image2" alt="Alkylamines" /></td>
<td><img src="image3" alt="Tensides" /></td>
<td><img src="image4" alt="Aldehydes" /></td>
<td><img src="image5" alt="Glykole Derivate &amp; Quats" /></td>
<td><img src="image6" alt="Peroxides" /></td>
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<tr>
<td>Field 2</td>
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<td><img src="image2" alt="Alkylamines" /></td>
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<td>Field 4</td>
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<td><img src="image5" alt="Glykole Derivate &amp; Quats" /></td>
<td><img src="image6" alt="Peroxides" /></td>
</tr>
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</table>
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Application of Surface Disinfectants

bucket and wipe

pre-moistened wipes

ready-to-use wipes

source: IHPH University-Hospital Bonn
Choosing Pre-Wetted Wipes

Disinfectants Commission in the Association for Applied Hygiene (VAH) in collaboration with the „4+4 Working Group“

Recommendation on the monitoring of critical control points for the use of dispensing systems for pre-moistened surface disinfectant wipes

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1 English translation of the German original publication „Empfehlung zur Kontrolle kritischer Punkte bei der Anwendung von Tuchspendersystemen im Vortränksystem für die Flächendesinfektion“. HygMed. 2012;37(11):468-469. © VAH e.V.
Critical control points which need to be monitored

- Disinfectant solution for dispenser system is contaminated
- Wipes are not compatible with the disinfectant
- Prolonged reuse periods (longer than 28 d)
- Wipes are dried out
- Contamination of wipes hanging outside the dispenser
- Multiplication of Gram-negative bacteria in the bucket (threshold values 0 cfu/10 ml and for airborne spore formers 3 cfu/10 ml)
Monitoring of critical control points

- Rapid detection of contamination of disinfectant solution during filling procedure
- Expert report on the compatibility of wipe material and disinfectant
- Expert report for extended reuse periods
- Tight closure of the dispenser
- Adequate reprocessing of dispensers before refilling
- Laboratory examination during outbreaks
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Recovery rate of culture methods for nosocomial pathogens from environmental surfaces is low

Other methods like ATP-luminescence only provide a rough assessment of contamination
Risk assessment together with the cleaning staff
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Certification of Disinfectants

• Medical applications – public facilities:
  VAH for routine and prophylactic disinfection,
certification by VAH, products published with exposure time/concentration ratios in VAH List of Disinfectants

RKI for disinfection measures issued by health authorities according to the Infection Protection Act (IfSG § 18), products suitable for this purpose published with exposure time/concentration ratios in RKI List of Disinfectants

• Veterinary applications, foods sector:
  DVG (German Veterinary Society)
Association for Applied Hygiene

- consolidation of competence in applied hygiene
- elaboration of test protocols and evaluation standards for decontamination, disinfection, antisepsis and sterilization procedures
- exchange of ideas and multidisciplinary cooperation with the relevant medical and non-medical disciplines
- national and international harmonization of efforts with regard to indication, toxicological and ecological aspects of products and procedures employed for preventing infections
Conformity Evaluation
Standard Methods and Requirements of VAH

• Testing since 1959 in 2 steps
  o *in-vitro* tests
  o tests under practical conditions
• Determination of MIC (minimal inhibition concentration) and suitable neutralizer
• Qualitative suspension test
• Quantitative suspension test
• Quantitative test under practical conditions (hands and skin)
• Quantitative carrier test (surface, instruments, linen)
Spectrum of microbicidal activity

- Bactericidal (obligatory)
- Levurocidal (obligatory)
- Fungidical (optional)
- Tuberculocidal (optional)
- Mycobactericidal (optional)
- Virucidal (optional)
  (conformity assessment according to DVV – German Association for Controlling Viral Diseases)

- Sporicidal (optional)
Online-Version

open access: 1st of January 2018
CEN TC 216 – Chemical Disinfectants and Antiseptics – development of standards in Europe

<table>
<thead>
<tr>
<th>TC 216 / WG 1</th>
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<td>Veterinary use</td>
<td>Tierhaltung</td>
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<tr>
<td>BSI</td>
<td>DIN</td>
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<th>TC 216 / WG 3</th>
<th>NAL</th>
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<tbody>
<tr>
<td>Food hygiene and domestic and institutional use</td>
<td>Lebensmittel, Haushalt und Institutionell</td>
</tr>
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<td>AFNOR</td>
<td>DIN</td>
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<table>
<thead>
<tr>
<th>TC 216 / WG 5</th>
<th>NAMed/NAL</th>
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<tr>
<td>Strategy Group</td>
<td>Strategie-Gruppe</td>
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<tr>
<td>DIN</td>
<td>DIN</td>
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</tbody>
</table>

CEN TC 216
Chemical Disinfectants and Antiseptics
Secretariat: AFNOR
founded in 1990 - 2016: 36 member states
Disinfectant Testing according to CEN-TC 216 – EN 14885 - 3-Phase-Model

- **Phase 1:** Basis test
  - **Phase 2 / Step 1** Suspension test
  - **Phase 2 / Step 2** Carrier test
- **Phase 3:** Field trials
# EN-Standards CEN TC 216 WG1 – 2017

<table>
<thead>
<tr>
<th>Type and/or Purpose of product</th>
<th>Phase / Step</th>
<th>Activity claims</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Bactericidal</td>
</tr>
<tr>
<td>Hygienic hand wash</td>
<td>2 / 1</td>
<td>EN 13627</td>
</tr>
<tr>
<td></td>
<td>2 / 2</td>
<td>EN 1409</td>
</tr>
<tr>
<td>Hygienic hand rub</td>
<td>2 / 1</td>
<td>EN 13727</td>
</tr>
<tr>
<td></td>
<td>2 / 2</td>
<td>EN 1508</td>
</tr>
<tr>
<td>Surgical hand rub and</td>
<td>2 / 1</td>
<td>EN 13727</td>
</tr>
<tr>
<td>surgical hand wash</td>
<td>2 / 2</td>
<td>EN 12791/prA1</td>
</tr>
<tr>
<td>Surface disinfection, clean</td>
<td>2 / 1</td>
<td>EN 13727</td>
</tr>
<tr>
<td>and dirty conditions</td>
<td>2 / 2</td>
<td>EN 13857 mod</td>
</tr>
<tr>
<td>without mechanical action</td>
<td>2 / 2</td>
<td>EN 13857 mod</td>
</tr>
<tr>
<td>with mechanical action</td>
<td>2 / 2</td>
<td>EN 14851</td>
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<td>Instrument disinfection,</td>
<td>2 / 1</td>
<td>EN 13727</td>
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<tr>
<td>clean and dirty conditions</td>
<td>2 / 2</td>
<td>EN 14861</td>
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<td>Water treatment against</td>
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<td>EN 13823/rev</td>
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<td>Legionella</td>
<td>2 / 2</td>
<td>**</td>
</tr>
<tr>
<td>Chemical-thermal linen</td>
<td>2 / 1</td>
<td>EN 13727</td>
</tr>
<tr>
<td>disinfection</td>
<td>2 / 2</td>
<td>EN 16816</td>
</tr>
</tbody>
</table>

* No work items are yet approved but relevant standards may become available in the future
** No intention to develop a test

6. October 2017

M. Exner and J. Gebel, Association for Applied Hygiene e.V.
Institute for Hygiene and Public Health, University-Hospital Bonn
Intervention with Different Disinfectants for *Clostridium difficile*-associated diarrhoe

Mayfield J.L. et al.: Environmental Control to reduce transmission of *Clostridium difficile*, Clin Infect Dis 2000; 31, 995-1000
C. difficile – ways of transmission

- **faecal-oral:**
  - non living environment (patient near surfaces, instruments)
  - hands (personal, patient)

<table>
<thead>
<tr>
<th>place (outbreak)</th>
<th>contamination rate</th>
<th>contamination place</th>
</tr>
</thead>
<tbody>
<tr>
<td>surgical ICU</td>
<td>11,1 % positive (control unit: 2,8%)</td>
<td>toilet seats 33%</td>
</tr>
<tr>
<td>(432 examinations)</td>
<td></td>
<td>bed-pans 33%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>floor 15%</td>
</tr>
</tbody>
</table>

- **persistence of C. difficile on surfaces:**
  - Vegetative forms: ~ 15 min
  - spores: ~ 5 – 6 month

→ only spores are relevant on surfaces (sporicidal activity)!
C. difficile – measures of prevention

- Rationale and restrictive use of antibiotics
- Strict and exact application of hygiene measures
  - Use of sporicidal products!!!

Problem:

- No listing of sporicidal products (RKI, VAH, SFHH, ÖGHMP, AOAC)
- To find sporicidal products in adequate use concentrations – patient friendly
Sporicidal test - phase 2 / step 1

since 6. October 2017
M. Exner and J. Gebel, Association for Applied Hygiene e.V.
Institute for Hygiene and Public Health, University-Hospital Bonn

actual

WORKING DRAFT prEN (WI 18+32)
CEN/TC 216/ WG 1 N XX
March 2000

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

prEN 17126

May 2017

ICS 11.080.20

English Version

Chemical disinfectants and antiseptics - Quantitative suspension test for the evaluation of sporicidal activity of chemical disinfectants in the medical area - Test method and requirements (phase 2, step 1)
Bestimmung der sporiziden Wirksamkeit
im quantitativen Suspensionsversuch*
(Methode 18)

18.1 Testorganismus

18.1.1 Testorganismen und Ausgangskonzentrationen

| Clostridium difficile | NCTC 13366 (DSM 27147) | 1,5 bis 5 x 10⁷ KBE/ml |
Transitional Guidance on the Biocidal Products Regulation

Transitional Guidance on Efficacy Assessment for Product Types 1-5, Disinfectants

May 2016
Challenges for Disinfection
As a consequence of the European Biocidal Product Directive (to be in effect by 2020), many active ingredients will not be available anymore.
4 of 5 main activity ingredients are under discussion for restriction

- QAC: problems of residues
- Active chlorine: stability
- Aldehydes: stronger classification
- Alcohols (e.g. ethanol): discussion about CRM-classification
Divergent opinions on surface disinfection: myths or prevention? A review of the literature

Die Auseinandersetzung zur Flächendesinfektion: Mythos oder Prävention? Ein Rückblick auf ein Lehrstück

Abstract

Virtually no prevention strategies are frequently controversial. Set against that background and infection prevention and control, which is a most carefully drafted guidelines, and also incorporated a new cleaning and disinfection protocol that there is no longer facultatively pathogenic organisms. Numerous studies have come to the conclusion that a basic infection control concept is aimed at controlling nosocomial pathogens can be controlled. This form of control is not taken into account in future when environment, for example, norovirus outbreaks, or insights are of paramount importance. The infection of surfaces and of areas in the hospital. This discussion about the need to causing confusion among healthcare providers to accept hygienic practices, and nosocomial infections as well as

Thank you for your attention!

With best regards from Prof. Exner