

Hand hygiene

Benefits and risks of remanent active ingredients in alcohol-based hand disinfectants.



In addition to containing alcohol, some commonly used hand disinfectants also contain remanent active substances such as chlorhexidine (CHG), mectronium ethylsulfate (MES) or ortho-phenylphenol (OPP) to improve the sustained activity. However, according to scientific evidence, remanent active ingredients offer no benefit, neither for hygienic nor for surgical hand disinfection – but pose risks to skin health. The current recommendations “Händehygiene in Einrichtungen des Gesundheitswesens” (Hand hygiene in healthcare facilities) and “Prävention postoperativer Wundinfektionen” (Prevention of surgical site infection) issued by the “Kommission für Krankenhaushygiene und Infektionsprävention” (abbr.: KRINKO; German Commission for Hospital Hygiene and Infection Prevention) therefore advise against using hand disinfectants containing remanent active ingredients.

Background: no benefit for hygienic hand disinfection

Several well-known alcohol-based hand disinfectants additionally contain antimicrobial, remanent substances. They do not evaporate and thus remain on the skin longer to create a sustained effect of the disinfectant. These remanent active ingredients include chlorhexidine (CHG), mectronium ethylsulfate (MES) and ortho-phenylphenol (OPP).

The KRINKO recommendation “**Händehygiene in Einrichtungen des Gesundheitswesens**” (Hand hygiene in healthcare facilities), updated in 2016, does not advise to apply preparations with additional antimicrobial, remanent active substances for **hygienic** hand disinfection, as they do not improve the activity but increase the risk of side effects.¹ The lack of benefit of these remanent additives makes their potential risks much more serious. CHG, for example,

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has been described to cause acquired resistances in bacteria, skin irritation and anaphylactic reactions.²

Clarification of the situation for surgical hand disinfection

In 2017, a review in the Journal of Hospital Infection (JHI) evaluated all published data on surgical hand disinfection (according to EN 12791) with alcohol-based hand disinfectants containing CHG, MES or OPP for improved sustained effect. Neither the preparations containing 0.5 % or 1 % CHG, nor those containing 0.2 % MES or 0.1 % OPP could be shown to have a better sustained activity after the 1.5-minute exposure time generally applied today.³

Another study from 2017 showed for the first time that two propanol-based formulations – both with identical alcohol content (45 % propan-2-ol and 30 % propan-1-ol) but one with 0.2 % MES and one without MES – with an exposure time of 1.5 minutes achieved a comparable activity under the sterile surgical glove after three hours (sustained effect according to EN 12791). Accordingly, the formulation with the added 0.2 % MES does not achieve a better sustained activity.⁴

Adoption of the findings in the updated KRINKO guideline

For **surgical** hand disinfection, the findings described above were integrated into the KRINKO recommendation “Prävention postoperativer Wundinfektionen” (Prevention of surgical site infection), which was updated in 2018. The reasoning given: “Since the addition of a remanent antiseptic to alcohol-based hand disinfectants has not been shown to have an influence on the SSI rate but may reduce tolerability, the addition of such agents is unnecessary given the current state of knowledge.”⁵

Conclusion: scientific findings change recommendations for daily routine

Scientific findings are constantly evolving and – after validation – are incorporated into the respective updated versions of evidence-based guidelines. The integration of this data regularly causes recommendations for daily routine to change. Benefit/risk assessments based on supplemented data contribute to continuous improvement – as is also the case with the investigation, evaluation, and integration of findings on remanent active ingredients in alcohol-based hand disinfectants for hygienic and surgical hand disinfection. According to the current state of scientific knowledge, products that contain alcohols as active ingredients alone are to be preferred for hand disinfection.

¹ Händehygiene in Einrichtungen des Gesundheitswesens: Empfehlung der Kommission für Krankenhaushygiene und Infektionsprävention (KRINKO) beim Robert Koch-Institut (RKI). Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz. 2016 Sep; 59(9): 1189-220.

² Kampf G. Acquired resistance to chlorhexidine - is it time to establish an 'antiseptic stewardship' initiative? J Hosp Infect. 2016 Nov; 94(3): 213-227.

³ Kampf G, Kramer A, Suchomel M: Lack of sustained efficacy for alcohol-based surgical hand rubs containing 'residual active ingredients' according to EN 12791. J Hosp Infect. 2017 Feb; 95(2):163-168.

⁴ Kampf G: Lack of antimicrobial efficacy of mectronium etilsulfate in propanol-based hand rubs for surgical hand disinfection. J Hosp Infect. 2017 Jun; 96(2): 189-191.

⁵ Prävention postoperativer Wundinfektionen: Empfehlung der Kommission für Krankenhaushygiene und Infektionsprävention (KRINKO) beim Robert Koch-Institut (RKI). Bundesgesundheitsbl 2018; 61: 448-473.