Dermatological recommendations on hand hygiene in schools during the COVID-19 pandemic

Dear editors,

the COVID 19 pandemic brings new requirements for hygiene to professions and spheres of life, which, unlike the health care system, have in the past been less visible as a focus of public health efforts on infection prevention.

This applies particularly to schools, in addition to all professions with exposure to the public. Though children have been reported to have more asymptomatic COVID-19 infections, milder illnesses, faster recovery and a better prognosis than adults [1], transmission through close contact in schools remains possible, and there have been preventive closures of schools in many states despite unclear evidence for such measures in containment of the COVID-19 pandemic [2].

The gradual reopening of schools in Germany after the March/April 2020 shutdown is to be based on individual school hygiene plans in accordance with the specifications of the ministries of education. These hygiene plans envisage - in analogy to the prevention recommendations of the Robert Koch Institute (RKI) - frequent “thorough hand hygiene by handwashing with soap for 20–30 seconds”. Washing of the hands is deemed sufficient for infection prophylaxis and should be the preferred method “within the framework of resource conservation”. Hand disinfection is only recommended as an exception if “thorough hand washing is not possible”. There is no mention of skin care in the hygiene plans.

These hygiene plans pose great challenges for schools, since in the past such plans were often not drafted, adapted or updated in the respective schools, and since hygiene in the sanitary areas was often only monitored by the health authorities on a case-related basis, whereby “complaints made could usually be confirmed” [3]. Health authority inspection criticized the frequent lack of soap and disposable towels [4], which make proper hand hygiene impossible [3]. Wash basins in classrooms are often less well equipped than in school toilets [4]. On the other hand, intervention studies have confirmed the importance of hand hygiene in schools, showing that appropriate intervention can lead to a decreased number of days of absence due to illness, especially caused by gastrointestinal, but also respiratory infections [5, 6]. However, health education campaigns such as the “Hygiene tips for kids” show that targeted training measures, in particular those including teachers and parents, are necessary for the effective use of hygiene facilities, beyond their mere provision [7]. Educational material developed during this project could also be used for instruction on hand hygiene in COVID-19 infection [7]. There is no scientific evidence on the preventive effectiveness of hand hygiene for COVID-19 infection; the Robert Koch Institute, with regard to preventive measures in health care facilities, refers to the recommendation of the Commission for Hospital Hygiene and Infection Prevention (KRINKO) [8], which in turn refers to its recommendation on hand hygiene from 2000 [9]. In its 2016 recommendation on hand hygiene in health care facilities, KRINKO points out that viricidal disinfectants should be used depending on the type of viruses expected, whereby enveloped viruses, including COVID-19, are affected by all alcohols in a concentration-dependent manner [10]. The RKI regularly publishes a list of tested and approved disinfectants and procedures for hygienic hand disinfection [11]. The medical indications for hygienic hand disinfection (immediately before direct patient contact, immediately before aseptic procedures, immediately after contact with potentially infectious material, after contact with the immediate patient environment and after direct contact with the patient) [10] can only be applied to a limited extent to hand washing/disinfection in schools. Regarding the frequency of hand hygiene, the RKI refers to the Federal Center for Health Education (www.infektionsschutz.de), which recommends, without substantiating evidence, washing hands with soap and water for at least 20 seconds in the following circumstances to prevent COVID-19 infection:

- upon coming home,
- after blowing one’s nose, sneezing or coughing,
- before preparation of meals,
- before eating and after using the bathroom,
- before and after contact with other people, especially if they are ill,
- before putting on and after taking off the mouth-and-nose cover.

For hand hygiene in schools, any skin contact with potentially virus-contaminated surfaces should be added as an additional circumstance.

Although from a dermatological viewpoint there are hardly any studies on the effects of different approaches to hygiene on children’s skin health, a broad body of evidence from occupational dermatology does exist that can be transferred to the hygiene plans of schools.

There is consensus from numerous epidemiological and skin physiological studies that repeated exposure to detergents in the form of frequent hand washing significantly increases the risk of hand eczema [12]. The use of alcohol-based disinfectants is less irritating than skin cleansing with common

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Clinical Letter

detergents [13–15]. Working in damp conditions, defined by
the Technical Rules for Hazardous Substances (TRGS) 401
as an activity that is hazardous to the skin, includes activities
in which a worker frequently or intensively cleans his or her
hands; under such conditions, a worker must be provided with
suitable protective measures [16]. The AWMF Guideline “Oc-
cupational Skin Products” summarizes the available evidence
on skin protection, skin care and skin cleansing in the occupa-
tional context [17]; it states that a preventive effect of skin
protection and skin care products on the epidermal barrier
in case of detergent-induced irritation can be proven both in
epidemiological intervention studies and in experimental skin
physiological investigations. With regard to training measures
for skin protection, skin care and skin cleansing, extensive
competence, of which schools may avail themselves, is avail-
able both in the training and advice centers of the accident
insurance institutions [18] and in the skin protection centers
[19–21] managed by dermatologists. A negative impact on the
hygienic effect of an alcohol-based disinfectant by the subse-
quent application of a skin care product has not been proven.
Specific recommendations for skin care products for use after
washing/disinfection are not possible due to a lack of relevant
study-based evidence; more research is needed here.

A dermatological recommendation for the hygiene plans
of schools regarding COVID-19 prevention, grounded in
the application of the outlined occupational dermatological
and skin physiological evidence, is that these should include
a concept for the maintenance of the students’ skin health.
This is all the more important as up to 30% of children suffer
from atopic eczema or an atopic disposition [23] and thus
face an increased risk of hand eczema.

From a dermatological viewpoint, the following recom-
dendations can be made:

1. In the absence of visible contamination of the hands,
disinfection with a virucidal alcohol-based hand sanita-
tizer should be given priority over washing with soap or
washing lotions (detergents) since alcohol-based disin-
fectants affect the epidermal barrier less.
2. In order to enable infection control by hand disinfec-
tion in schools comprehensively, sanitizer dispensers
should be installed not only in washrooms but also in
classrooms and corridors (especially in front of canteens,
sports rooms), especially since the capacity of school to-
ilets and washrooms is limited due to the distance requi-
rement in COVID-19 prevention.
3. After each washing and disinfection, a skin care product
that supports regeneration of the skin barrier should be
applied.
4. Children with atopic eczema should follow the same
hygiene recommendations as normal persons; however,
greater attention should be paid to consistent skin care
after washing and disinfection.
5. For hand washing/disinfection/skin care to be effective,
it has to be done correctly; this requires health education
instruction, for which sufficiently competent consultants
are available in Germany through hygiene institutes, he-
alth authorities, training and advice centers of accident
insurance providers and skin protection centers.

Finally, students and parents should be advised that
upon the occurrence of hand eczema as a result of intensi-
fied hand hygiene, students should be given prompt dermato-
logical care. According to the current ESCD guidelines for
diagnosis, prevention and treatment of hand eczema [24],
guideline compliant treatment should be carried out promptly
to prevent chronicity.

Conflict of interest

None.

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References

1. Yang Z-D, Gao-Jun Z, Run-Ming J et al. Clinical and transmis-
sion dynamics characteristics of 406 children with coronavirus
disease 2019 in China: a review. J Infect 2020 Apr 28 [online
ahead of print].
2. Viner RM, Russell SJ, Croker H et al. School closure and man-
gement practices during coronavirus outbreaks including
COVID-19: a rapid systematic review. Lancet Child Adolesc
Health 2020; 4(5): 397–404.
3. Heudorf U. Hygiene und Infektionsprävention in med-
izinischen Einrichtungen und in Kindergemeinschaftseinrich-
tungen – Gesetzliche Grundlagen, Überwachungspraxis und
Erfahrungen der Gesundheitsämter. Gesundheitswesen 2015;
77(7): 481–7.
4. Heudorf U, Voigt K, Eikmann T, Exner M. Hygiene in Schulen –
– auch eine wichtige Aufgabe des öffentlichen Gesundheitsdi-
enstes. Gesundheitswesen 2011; 73(11): 730–6.
5. Lau CH, Springston EE, Sohn M-W et al. Hand hygiene
instruction decreases illness-related absenteism in
elementary schools: a prospective cohort study. BMC Pediatr 2012; 12: 52.
6 Wang Z, Lapinski M, Quilliam E et al. The effect of hand-hygiene interventions on infectious disease-associated absenteeism in elementary schools: A systematic literature review. Am J Infect Control 2017; 45(6): 682–9.
7 Gebel J, Teichert-Barthel U, Hornbach-Beckers S et al. [Hygiene tips for kids. Concept and examples of realisation]. Bundesgesundheitsblatt Gesundheitsforschung GesundheitsSchutz 2008; 51(11): 1304–13.
8 Ruscher C. Infektionsprävention im Rahmen der Pflege und Behandlung von Patienten mit übertragbaren Krankheiten. Bundesgesundheitsblatt Gesundheitsforschung GesundheitsSchutz 2015; 58(10): 1151–70.
9 Kommission für Krankenhaushygiene und Infektionsprävention am Robert Koch-Institut. Händehygiene. Mitteilung der Kommission für Krankenhaushygiene und Infektionsprävention am Robert Koch-Institut. Bundesgesundheitsblatt Gesundheitsforschung GesundheitsSchutz 2000; 43: 230–3.
10 Händehygiene in Einrichtungen des Gesundheitswesens. Empfehlung der Kommission für Krankenhaushygiene und Infektionsprävention (KRINKO) beim Robert Koch-Institut (RKI). Bundesgesundheitsblatt Gesundheitsforschung GesundheitsSchutz 2016; 59(9): 1189–220.
11 Robert Koch-Institut. Liste der vom Robert Koch-Institut geprüften und anerkannten Desinfektionsmittel und -verfahren. Bundesgesundheitsblatt Gesundheitsforschung GesundheitsSchutz 2017; 11: 1274.
12 Ibler KS, Jemec GBE, Agner T. Exposures related to hand eczema: a study of healthcare workers. Contact Dermatitis 2012; 66(5): 247–53.
13 Slotosch CM, Kampf G, Löffler H. Effects of disinfectants and detergents on skin irritation. Contact Dermatitis 2007; 57(4): 235–41.
14 Kappes UP, Göritz N, Wigger-Alberti W et al. Tandem application of sodium lauryl sulfate and n-propanol does not lead to enhancement of cumulative skin irritation. Acta Derm Venereol 2001; 81(6): 403–5.
15 Kampf G, Löffler H. Hand disinfection in hospitals — benefits and risks. J Dtsch Dermatol Ges 2010; 8(12): 978–83.
16 BMAS. Technische Regeln für Gefahrstoffe: Gefährdung durch Hautkontakt Ermittlung – Beurteilung – Maßnahmen. TRGS 401. 2008. Available from https://www.baua.de/DE/Angebote/Rechtstexte-und-Technische-Regeln/Regelwerk/TRGS/pdf/TRGS-401.pdf?__blob=publicationFile&v=2 [Last accessed June 22, 2020].
17 Fartasch M, Diepgen TL, Drexler H et al. S1 guideline on occupational skin products: protective creams, skin cleansers, skin care products (ICD 10: L23, L24)—short version. J Dtsch Dermatol Ges 2015; 13(6): 594–606.
18 Hamm K, Drechsel-Schlund C. Das Hautschutzprogramm in den Schulungs- und Beratungszentren der Berufsgenossenschaft für Gesundheitsdienst und Wohlfahrtspflege. Aktuelle Derm 2019; 45(11): 525–32.
19 Schwantes H, Schliemann S, Elsner P. Rehabilitation bei Berufserkrankungen. Hautarzt 2010; 61(4): 323–31.
20 Siekmann A, Friedlein H, Neuber H. Prävention im Hautschutzzentrum – ein Konzept zur erfolgreichen Vermeidung von Berufsunfähigkeit. Aktuelle Derm 2019; 45(11): 511–9.
21 Appl K-C, Klinkert M, Wouterse S. „Haut Optimal“ – Abgestufte Hautschutzberatung am Telefon, mittels Beratungsmobil und Seminar. Aktuelle Derm 2019; 45(11): 520–4.
22 Paula H, Hübner N-O, Assadian O et al. Effect of hand lotion on the effectiveness of hygienic hand antisepsis: Implications for practicing hand hygiene. Am J Infect Control 2017; 45(8): 835–8.
23 Grobe W, Bieber T, Novak N. Pathophysiology of atopic dermatitis. J Dtsch Dermatol Ges 2019; 17(4): 433–40.
24 Diepgen TL, Andersen KE, Chosidow O et al. Guidelines for diagnosis, prevention and treatment of hand eczema. J Dtsch Dermatol Ges 2015; 13(1): e1–22.