Promoting Hand Hygiene in Primary and Secondary Schools: Integrating Hand Hygiene in the Natural Science Class

Philipp Krämer, Klaus Klein, Dr.rer.nat.

ABSTRACT

Preventive methods against contagious diseases are an important matter in public health. Teaching hand hygiene is important and can be introduced in a fun but educational way in primary and secondary school classrooms. This brief paper illustrates the integration of this idea in a natural science class using a hands-on demonstration.

Umwelt und Gesundheit Online, 2011; 4, 71-72.

Introduction

Each year pathogenic organisms cause infections and illnesses around the world. On the one hand there are annual recurring diseases such as the common cold, influenza, and severe infections with NORO-Virus or MRSA (multidrug-resistant *Staphylococcus aureus)*. On the other hand periodic epidemics such as Swine Flu, Bird Flu, and SARS are major topics in public health. The problem of infectious diseases is especially important in crowded places such as kindergartens and schools, where pathogens are prevalent and young children come into close contact with one another (Guinan, McGuckin, & Ali, 2002). Furthermore, illnesses contracted at school can be spread to secondary audiences – families at home (Neuzil, Hohlbein, & Zhu, 2002). Whereas preventive approaches such as immunization can reduce the impact of infections, a carefully taught hand washing procedure is still the most effective method to avoid the spread of disease from person-to-person (Bloomfield, Aeillo, & Cookson, 2007; Curtis & Cairncross, 2003; Luby et al., 2005).

Project

This project was a cooperation of the Center for Health Education Research at the University of Cologne in cooperation with a hand hygiene disclosure product accompanied by booklets for pupils and teachers at primary and secondary schools. The booklets have a special focus on hands-on experiments which aim to show the importance of correct hand hygiene.

To advance the academic application, all materials are linked to the curricula for primary and secondary schools. In these booklets hand hygiene is separated into different topics (bacteria and viruses, skin, tenside, environment and techniques, and hand hygiene itself) such that the materials can be integrated in natural science classrooms. The teacher manual includes background information for all of these topics, as well as didactic hints and worksheets for students. The pupil manual provides brief information sheets and the aforementioned networked experiments that can be performed autonomously by pupils.

For these lessons one can take advantage of inexpensive hand hygiene "toolkits" containing products that demonstrate the effectiveness of proper hand hygiene. The boxes contain an ultraviolet "flashlight" and fluorescent hand lotion. The pupils rub their hands vigorously with this lotion and subsequently wash their hands in the typical way. Afterwards, the application of the ultraviolet flashlight reveals the insufficiently cleansed areas. This simple, yet effective experiment can be extended by using different groups with various instructions, such as "wash your hands like you always do," "wash your hands very vigorously," "use cold water without soap, "use a lot of water and soap," and various other instructions.

All materials were tested in different classes and were discussed with several teachers to ensure that they are used as directed. Whereas this simple experiment has been conducted several times, formal evaluation is still necessary. For instance, it is not proven that the demonstration of these materials promotes either more proficient hand washing or a sustained hand hygiene behavior over time.

References

Bloomfield, S., Aeillo, A.E. & Cookson, B. (2007). The effectiveness of hand hygiene procedures in reducing risks of infections in home and community settings including handwashing and alcohol-based sanitizers. *American Journal of Infection Control, 35*, 27-64.

Curtis, V. & Cairncross, S. (2003). Effect of washing hands with soap on diarrhea risk in the

community: a systematic review. *The Lancet Infectious Diseases, 3*(5), 275–281.

Guinan, M., McGuckin, M. & Ali, Y. (2002). The effect of a comprehensive handwashing program on absenteeism in elementary schools. *American Journal of Infection Control, 30*, 217-220.

Luby, S. et al. (2005). Effect of handwashing on child health. *Lancet, 366*, 255.

Neuzil, K.M., Hohlbein, C. & Zhu, Y. (2002). Illness among schoolchildren during influenza season: effect of school absenteeism, parental absenteeism from work, and secondary illness in families. *Archives of Pediatrics and Adolescence, 156*, 986-991.

ABOUT THE AUTHORS

Philipp Krämer (philipp.kraemer@uni-koeln.de) is a doctoral student and Klaus Klein (klaus.klein@uni-koeln.de) is a Professor in the Department of Biology and its Didactics, University of Cologne, Cologne, Germany.