



The handling of infusions may involve a risk of nurses' exposure to active agents by release of infusion solution into the work environment" Segner et al (2017).

Abstract:

**PURPOSE:** This study aims at experimentally determining the incidence and extent of liquid releases onto the operator's hands and into the work environment during common nursing operations involving infusions.

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**METHODS:** A sequence of operations related to the preparation and administration of infusions was conducted by three subjects for 15 times each using fluorescein marked infusion solutions and two different infusion sets (standard set vs. safety-optimized set). Unintended release of liquid was quantified by glove and surface wipe sampling and HPLC/FD analysis of the samples. Operations concerning the disposal of infusions were also part of the study.

**RESULTS:** In over 90% of the simulations, a release of infusion solution was observed in a standard workflow, comprising priming and decapping the infusion set, connecting it to a

peripheral intravenous (IV) cannula, and detaching it again. Based on median values (229 vs. 26 µl), the release of infusion solution was about ninefold higher when using the non-optimized standard infusion set. During decapping, a hand contamination was found in a majority of cases.

**CONCLUSIONS:** The handling of infusions may involve a risk of nurses' exposure to active agents by release of infusion solution into the work environment. According to our results with different infusion sets, exposure risks can be reduced technically and by appropriate handling. Nevertheless, hand contaminations found for both sets emphasize the necessity for additional measures such as more consistent use of protective gloves.

Reference:

Segner, V., Kimbel, R., Jochems, P., Heinemann, A., Letzel, S., Wollschläger, D. and Roßbach, B. (2017) Liquid release as a source of potential drug exposure during the handling of intravenous infusions in nursing. *International Archives of Occupational and Environmental Health*. January 16th. .

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