

Another aspect of transfer that had an impact was application site. Upper arms/shoulders contact with upper arms/shoulders prompted much more transfer and consequently absorption than abdomen to abdomen [5]. However, no investigation has been conducted on the effect of interpersonal transfer of chemicals from or to the forearms or the back, the transfer sites of many of the previously discussed studies. So, while the difference between shoulders and abdomen makes it apparent that locations of the body have an effect on the level of transfer, the impact the body parts studied had on the outcome of the studies reviewed in this paper remains unclear. The difference in the transfer rates of different body parts may also have implications as to where manufacturers should suggest that their medications be applied. If doing so does not diminish the efficacy of the medication, in order to minimize transfer, more topical medications should likely be applied to areas more inhibitory to transfer such as the abdomen.

Furthermore, as the results conclude that washing has little to no impact on the absorption of medications, washing should be a routine part of the application of the medication, after allowing time for the medication to absorb. However, an exact time when maximal bioavailability is reached is sub judice, and may differ from one medication to another in addition to being dependent on dosage formulation. One study regarding a testosterone gel concluded that washing the application site 2 hours after application reduced the bioavailability of the testosterone from the gel by 10% to 14%, or according to Stahlman et al. [6], not sufficient to be clinically significant in the treatment outcome. Yet another study of an estradiol transdermal spray found that washing after only 1 hour led to no significant differences in estradiol absorption [8]. Consequently, while the application site should be washed post-application, the time at which it should be washed may vary depending on the chemical and vehicle.

Recent overviews of the efficiency in washing chemicals from skin are found in Phuong and Maibach [14]. Food and Drug Administration (FDA)–initiated package label warnings based on adverse reactions of transfer of sex hormones are on the FDA website for each drug [15].

63.5 CONCLUSION

These results strongly suggest the existence of significant transfer and subsequent absorption of transdermal or topical medication. Despite the strong positive results, three studies showed otherwise. While the discrepancy can partially be attributed to demographics of the test subjects and the parameters of the studies, the large differences between the methods of each study implore for a standardized method for measuring the skin-to-skin transfer of chemicals.

The existence of significant skin-to-skin transfer and subsequent absorption by the recipient has many important implications. For example, transfer should be considered during clinical studies that involve a placebo control group, as transfer of the medication by either the researcher or between study participants may confound the true difference between the control group and treatment group, potentially changing a significant difference into insignificance [10].

Additionally, interpersonal chemical transfer has dangerous implications in any industry where workers may inadvertently contact hazardous chemicals. A worker who comes into contact with a dose of a chemical that does not cause visible side effects in himself or herself may be harmful to those that he or she comes into close contact with. Moreover, as shown in this systematic analysis, those using transdermal medications should take precautions, especially when around children, including washing the application site before touching others and ensuring they do not allow areas that have come into contact with the chemicals to touch other parts of their body.

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