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Alcohol-based hand rubs as a key factor to overcome healthcare-associated infections

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Healthcare workers (HCWs) hands are the most common vehicle for the transmission of healthcare-associated pathogens from patient to patient and within the healthcare environment. Hand hygiene is the leading measure for reducing healthcare-associated infections (HAIs) as well as preventing antimicrobial resistance spreading. Hand rubs are gels or liquids containing antimicrobial agents that decrease the number of microorganisms present on hands. The antimicrobial agents in most hand rubs are alcohols (ethanol, isopropanol, and n-propanol), available in varying concentrations. A Quazi experimental, pre-post one group study was conducted at the hematology unit, Egypt. Alcohol-based hand rubs effect on HCWs concerning the rate of HAIs among hematology patients was evaluated. HAIs samples were collected according to site of infection and subjected to bacteriological identification. According to the latest recommendations of the WHO, the 5 moments of hand hygiene were audited and the alcohol based hand rub personal bottles were distributed among the HCWs to ensure maximum compliance. Moreover, direct finger prints from the HCWs dominant hands were cultured before and after using alcohol based hand rubs. It was found that the overall percentage of HAIs in patients was 29% and 21% before and after implementation of proper hand hygiene practice among HCWs respectively. Implementation of proper hand hygiene practice using alcohol-based hand rubs led to reduction in HAIs rate in this unit. Introduction of alcohol-based hand rubs is key factor to overcome infrastructure barriers and build solid knowledge improvement.

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Early toxicity evaluation and consideration in drug discovery process

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Drug discovery process is an iterative process and prioritizing compounds is a natural process with ultimate goal of selecting a lead compound as a preclinical development. Typically scientists prioritize compounds based on potency, selectivity, DMPK profile and *in vivo* efficacy; while toxicity studies were performed later part of the process or even after selecting the pre-clinical candidate. Several reports suggest that more than half of pre-clinical candidate and about one quarter of drug candidates entering clinical development fail due to non-clinical toxicology or clinical safety issues. The late stage failure account for a large proportion of the cost of pharmaceutical R & D, recently estimated to be $2 B per marketed drug. Recently, the toxicity profiling studies have been shifted to early part of the discovery process and many tools including surrogate *in vitro* assays and *in silico* prediction software. FDA is also developing their guidelines to replace/reduce animal studies with other tools for the humane consideration. We will present recent advances in predicting toxicity profile of drug candidates and case studies to show the benefits of incorporating toxicity profile early in the drug discovery process.

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