

P0223 **Glycerol content within the WHO alcohol-based handrub formulation: balancing tolerability with antimicrobial efficacy**

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Background: The World Health Organization (WHO) alcohol based handrub (ABHR) formulation has been developed for promoting hand hygiene worldwide, especially on low-resource settings. It contains 1.45% glycerol, intended to prevent skin dryness and increase healthcare workers (HCWs) compliance with hand hygiene. However, glycerol may reduce the antimicrobial efficacy of alcohol and it is unknown how glycerol content affects tolerability in different climate regions. Our objective was to evaluate the tolerance of HCWs to WHO ABHR formulation varying the concentration of glycerol in a tropical country.

Materials/methods: This was a blinded and randomized crossover experimental study performed in an Intensive Care Unit (ICU) of a tertiary-care hospital in Ribeirão Preto, Brazil. Study population consisted of all 45 HCWs dedicated to the ICU. We tested WHO ABHR original formulation against three variations of the glycerol concentration (0, 0.5, and 0.75%). After using the solutions for seven days, HCWs' hands were assessed by an investigator using the WHO visual scale. Tolerability to different solutions was compared using Fisher's exact test.

Results: Table 1 shows the percentage of HCWs in each category of the WHO visual scale according to the ABHR formulation in use. Regarding skin redness, all formulations performed similarly ($p=0.41$). Scaliness and fissures were more frequent when HCWs used the formulation without glycerol ($p<0.001$ and $p=0.005$, respectively) but did not varied between the other three formulations ($p=0.54$ and $p=0.91$, respectively).

Table 1. Skin tolerance of HCWs applying variations of the WHO ABHR formulation

Tolerance Measures (n=45)		Glycerol Concentration within WHO ABHR formulation			
		0	0.5%	0.75%	1.45%
Redness (%)	None	96	100	100	100
	Slight	2	0	0	0
	Moderate	2	0	0	0
Scaliness (%)	None	70	100	96	98
	Occasional	28	0	4	2
	Moderate	2	0	0	0

	None	85	96	93	93
Fissures (%)	Very Fine	15	4	7	7
	Large	0	0	0	0

Conclusions: Our results show that, in tropical climate settings, the WHO-modified ABHR formulations containing 0.5% or 0.75% glycerol provides similar skin tolerance to the original WHO formulation. Therefore, a 0.5% glycerol content might offer the best balance between skin tolerance and antimicrobial efficacy.