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## Protocol for Evaluation and Comparision of Tolerability and Acceptability of Different Alcohol-based Handrubs: Method 2

## Summary

### Study Method

- Approximately 40 volunteer participants using at least 30 ml of product per day
- Randomised study: participants are allocated at random (by chance only) to the test products
- Double-blind study: neither the participant nor the observer (including data manager) is aware of product content or allocation
- Cross over study: each participant tests all formulations in a sequential way

#### Information and Instructions

- The study usually concerns two hand hygiene products: formulas A and B, but it can be used to compare several products
- The health-care workers must meet the observer on the first day and collect the bottle; on the last day they must meet again
- The observer distributes bottles without any label to identify the contained solution (both the observer and the healthcare worker are blinded) but has a number that has been allocated by the pharmacy and identifies the formulation. Each bottle must have a different number
- For at least 3-5 consecutive days (minimal test period), only the test product must be used for hand antisepsis
- An evaluation of skin integrity by the observer is required before and after the use of each test product
- The participant must complete a questionnaire after using each test product
- Each test period must be separated by a washout period\* corresponding to at least 2 days off work
- The amount of test product distributed is recorded and compared with the final amount left over
- Opened bottles, either empty or partially full, must be returned for weighing to the observer at the end of each test
- The participant is requested not to use hand lotion or cream during the test periods
- The participant must inform the observer if he/she stops the test prematurely

\*Wash-out period: gap between two test periods, during which no alcohol-based handrub is used, and which makes it possible to mitigate the effects of use and to eliminate the previous product.

### **Detailed Instructions**

This method is more complex than Method 1 ("Protocol for Evaluation of Tolerability and Acceptability of Alcohol-based Handrub in Use or Planned to be Introduced"), and is intended to be used **only** with the purpose **to compare** skin tolerability and acceptability of several products. This means that the choice of product may depend on the test results and the product's compliance with predetermined criteria for tolerability and acceptability.

## Proposed criteria, according to the assigned ranking

### Criteria for product acceptability:

- Questionnaire Part 2 "Product evaluation" Items Colour & Fragrance: ≥50% above 4
- Questionnaire Part 2 "Product evaluation" Other items: ≥75% above 4

#### Criteria for skin tolerability:

- Questionnaire Part 2 "Self evaluation of state of skin on hands" all items: ≥75% above 4
- Questionnaire Part 2 "Evaluation of the state of skin on hands by the observer": ≥75% below 2
- Several products are compared over given periods separated by breaks in work (weekly rest days, holidays, training, etc)
- Each test period lasts for at least 3-5 consecutive days
- The wash-out period\* between the testing of two products is at least 2 rest days

\*Wash-out period: gap between two test periods, during which no alcohol-based handrub is used, and which makes it possible to mitigate the effects of use and to eliminate the previous product.

Skin condition is evaluated by the observer before and after each product is tested (objective evaluation). Participants also evaluate the state of their skin after the tests and give their views on the products (subjective evaluation).

- The products undergo **double blind testing**. This means that no one who is involved in evaluating the effects of the products tested (participant, observer, analyst) knows the composition of the products being tested;
- The study is randomized\*\*. This means that participants are volunteers who are assigned a number; the number determines the order in which the products are distributed. Numbers are assigned to participants as they are enrolled. Neither the participants nor the observers are able to deliberately decide how the products are distributed.

## \*\*Randomization = random distribution

The randomization and control form is an essential tool to help observers organize their work, which has to be adapted to that of the participants. In that observers should organize themselves around the participants' variable working hours. Appointments between participants and observers should not interfere with the participants' work. For this reason, they are scheduled either before or after work depending on whether they concern the start or end of a test period, and take place at the workplace. It is possible to make appointments with several participants at the same time, although each appointment must concern a different stage in the study. In this case, it is necessary to use a control tool capable of closely monitoring the randomized test, and which is kept up to date.

We propose a form whose predetermined structure determines the random distribution (two lines per participant), corresponding to the testing of two products. If necessary, add the number of lines corresponding to the number of products tested and whose columns correspond to the identity of the participants, the products, the scheduling of the test periods and appointments and verification that each stage of the study has been completed.

Participants carry out cross-testing of the products; this means that each participant tests each product.



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### The test consists of the following stages:

- 1. Preparation of the product to be tested
- Information, identification of participants, and individual test planning
- 3. Use of the product and evaluation
- 4. Data entry and analysis
- Presentation of the results

#### 1. Preparation of the products

### The pharmacist is responsible for:

- Preparing the products. Neither the participant, the observer nor the analyst must know their composition or in which bottle they are placed (double blind test)
- (Re)-packaging each of the products in plain, (non-recognizable) identical pocket-sized bottles (75–125 ml)
- Marking each bottle with a pharmacy number, whose correspondence to a product is kept confidential
- Recording the amount of product in each bottle against the pharmacist's number
- Informing the observer of the volume to weight ratio (1 ml = x g)
- Placing the bottles in crates, which correspond to groups, on the basis of their correspondence with the products (the same number of groups as products tested) and ensuring their timely distribution to the health-care units in which the participants work

#### 2. Information, identification, planning

### The observer's tasks are to:

- Obtain the support of the service's supervisors for testing the product among their staff
- Organize information sessions for potential recruits for the test among health-care workers (aim, procedure, conditions, constraints, etc)
- Identify by name approximately 40 volunteer health-care workers and give them an identification number determined by the order in which they are recruited (participant number) using the randomization and control form

It is essential to know each participants' identity in order for the observer to organize and carry out the study; their identity is concealed, however when the data are analyzed. The number assigned to participants is copied onto the questionnaires, as well as the evaluation and planning forms and the bottles distributed on the first days of the test.

**Practical advice:** as observers generally conduct the study alone, they are unable to be in several places at the once. Wherever possible, recruit participants who work in the same service. If this is not possible, and depending on the number of participants in each service / unit, it is preferable to conduct the study successively in each service concerned; the products must be available at the participants' workplace and distributed on the spot.

- Obtain a temporary workplace in the health-care service/unit for the duration of the study, in which to interview
  participants and store products
- Schedule appointments with each participant on the basis of their working hours, to give the schedule in writing to
  each participant and to copy it onto the randomization and control form



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Appointments take place in the health-care service/unit in which the participants work and in accordance with the following conditions:

- Each product is tested for at least 3 working days;
- Each test period is separated from the next by at least 2 rest days, during which no alcohol-based product is used

#### Appointments for the first product tested:

- On Day 1, before the participants start work, the observer should distribute the bottles of the product being tested and Parts 1 and 2 of the questionnaire, and evaluate the state of the participants' hands
- After at least 3-5 consecutive days of work, after the participants have finished work, they should return the completed Parts 1 and 2 of the questionnaires and the bottles distributed, and the observer should evaluate the state of the participants' hands.

Then, after at least 2 rest days:

#### Appointments for the second product tested:

- On Day 1, before the participants start work, the observer should distribute the bottles of the product being tested and Parts 1 and 2 of the questionnaire, and evaluate the state of the participants' hands
- After at least 3 consecutive days of work, after the participants have finished work, they should return the completed Parts 1 and 2 of the questionnaires and the bottles distributed, and the observer should evaluate the state of the participants' hands.

Repeat, as many times as there are products to be tested.

**Note:** if any participant has to withdraw from the test for an unforeseen reason other than unbearable deterioration of the skin on their hands, a further test period is scheduled.

Count the number of bottles distributed and to record the number distributed, their pharmacy number and the group
to which they are assigned on the randomization form and Part 2 of the questionnaire

The number of bottles distributed depends on the size of the bottles and the number of days taken up by the test. As an example, for a daily consumption of 30–50 ml, two 100 ml bottles are more than enough for 3 working days and three 100 ml bottles for 5 days.

- Ensure supplies of the alcohol-based handrub are available to participants for the duration of the test
- Record each stage of the study for each participant on the randomization form
- Measure the amount of each product used

Two operations are required to calculate the amount of product used (on the basis of the weight of a given volume of product): 1 ml = x g (reference weight)

- 1. Convert the remaining weight (g) into remaining volume (ml): remaining weight/reference weight (x g) = ml remaining
- 2. Subtract the amount remaining from the amount distributed = amount used
- Evaluate the state of the skin on the participants' hands before and after the test, using the scores proposed

#### 3. Use and evaluation of the product

### Each participant undertakes to:

- Only use the alcohol-based handrub being tested (except in situations in which the indication to wash with soap and water applies) for hand hygiene during the respective test period (see Planning for Evaluation of Tolerability and Acceptability of Different Alcohol-based Handrubs: Method 2)
- Use no hand-care cream or lotion during the test period
- Fill in the questionnaire Part 2 (5 minutes per product tested) after each test period
- Fill in the questionnaire Part 1 (1 x 5 minutes) after the first test period
- Meet with the observer before and after each test period for an evaluation of the state of the skin on their hands (objective skin evaluation – Part 2), distribution and return of the bottles and questionnaires (3 minutes per appointment)
- Return all the bottles of product distributed for each test period, regardless of how much they have used
- Not change their working hours once the test periods have been scheduled, and if they have to do so, to inform the observer

Participants evaluate the product using the questionnaire – Part 2; the state of skin evaluation is made up of a subjective evaluation by participants using Part 2 of the questionnaire<sup>1</sup> and an objective evaluation by the observer using validated scales and scores<sup>2</sup> (objective skin evaluation – Part 2).

The data are analysed on the basis of risk factors of skin damage, regardless of the composition of the products (questionnaire – Part 1).

### 4. Data entry and analysis

 Before entering any data for analysis, the observer should complete and classify the different documents and check their content and consistency

#### Each participant should be assigned:

- 1 numbered line on the randomization form
- 1 questionnaire Part 1
- x questionnaires Part 2 (depending on the number of products to be tested) including the skin evaluation form
- Once the documents have been classified and checked, the observer must remove any name and keep only the participants' identification number
- The data are entered directly into the Data Entry Analysis Tool available from WHO or sent to the local data manager
- The data are analysed, and when the results are known, the pharmacist lifts the confidentiality covering the composition of the product tested and the criteria for tolerability and acceptability

#### 5. Presentation of the results

When the results of the data analysis are available, the pharmacist, the observer and any other key professional involved in the testing agree on how to present them to the administrative and managerial staff and to the participants, and on how to disseminate them, if they are likely to have a direct impact on all the staff.

<sup>&</sup>lt;sup>1</sup> Pittet D, Allegranzi B, Sax H, Chraiti M-N, Griffiths W, Richet H. Double-blind, randomized, crossover trial of 3 hand rub formulations: fast-track evaluation of tolerability and acceptability. *Infection Control and Hospital Epidemiology* 2007;28:1344-51.

<sup>&</sup>lt;sup>2</sup> Larson EL, Aiello AE, Bastyr J, et al. Assessment of two hand hygiene regimens for intensive care unit personnel. *Critical Care Medicine* 2001; 29: 944-951.



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## Questionnaire – Part 1

(To complete **once** per participant) Participant no: Date of questionnaire's return: (day / month / year) **Evaluation of factors influencing skin tolerance** Age: Sex: M **Professional group:** Auxiliary Nurse Midwife Student Medical doctor Medical student ☐ Therapist ☐ Technician Other Skin: Very fair with freckles Fair ± freckles Light brown Brown Dark brown Black Climate: Polar Continental / Temperate Subtropical / Mediterranean Tropical / Equatorial Desert Present season: Dry Humid Cold Hot Intermediate Do you have non work-related activity(ies) likely to cause damage to your skin? Yes No Do you normally use a protective hand lotion/cream (outside the test period)? As often as possible Several times/day Once/day Sometimes, depending on the season Never Rarely Do you develop irritative dermatitis? Sometimes (depending on season/activity) Always Do you develop atopic dermatitis? Yes No Do you develop rhinitis / allergic conjunctivitis? Yes No



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Are you asthr	natic?				
Yes	No				
Do you have a	a known intoler	ance to alcohol?			
Yes	□ No				
Evaluation of	frequency of h	and hygiene practices	6		
Do you work f	full-time?				
Yes	No				
If part-time, p	lease indicate v	which of the following	best fits your wor	'k	
< 50%	50%	60%	<b>70</b> %	80%	90%
For how long	have you been	using an alcohol-bas	sed hand hygiene p	product at work	?
lt's the first	time	☐ Since < 1 year	Since > 1 year	r and < 5 years	☐ Since > 5 years
Do you think	you can improv	e your own hand hyg	iene compliance?		
Yes	☐ No	Perhaps			
It may be diffi	cult for you to u	use an alcohol-based	hand hygiene pro	duct because o	f:
Forgetfulness	<b>;</b>	Always		Never	
Lack of time		Always	] [[] [[]	Never	
Damaged skir	n	Always DD	¬	Never	



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## **Questionnaire - Part 2**

(To be completed for each test produ	ct)		
Participant nº:		Product:	
Date of questionnaire's return (day / month / year):			
Bottle nº:		Amount of Product used (ml):	
Evaluation of frequency of hand hy	giene practices		
During how many consecutive work	king days have you use	d the test product?	
3 days 4 days	5 days	6 days 7 da	ys
How often do you have direct conta	ct with patients during	your working day (during	the test period)?
< 1 contact Between 1 and 5	Between 6 and 10	Between 11 and 15	> 15 contacts
In what percentage of times where I	hand hygiene is recomm	nended, do you really cle	an your hands?
□ 0% □ 10% □ 20% □ 30%	40% 50% 60	0% 🗌 70% 🗌 80% 🔲	90% 🗌 100%
Has the present study changed you	r hand hygiene practice	e?	
Yes No			
During your last 5 opportunities for hands?	hand hygiene, how ma	ny times did you use han	drubbing to clean your
0 1 2	3 4	<u> </u>	
On average, how often do you pract	tise hand hygiene durin	g a working hour (during	the test period)?
< 1 Between 1 and 5	Between 6 and 10	Between 11 and 15	> 15



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## **Evaluation of the test product**

What is your opinion of the test pro	oduct for hand hy	giene?	
Colour	Unpleasant		Pleasant
Smell	Unpleasant		Pleasant
Texture	Very sticky		Not sticky at all
Irritation (stinging)	Very irritating		Not irritating
Drying effect	Very much		Not at all
Ease of use	Very difficult		Very easy
Speed of drying	Very slow		Very fast
Application	Very unpleasant		Very pleasant
Overall evaluation	Dissatisfied		Very satisfied
Are there differences between the	test product and t	he product used in your hospital?	•
	Major		No
Which product do you prefer?			
	Usual produc	t Test product No p	reference
Do you think that the test product	could improve yo	ur hand hygiene compliance?	
	Yes, absolutely		Not at all
Evaluation of skin condition			
Self-assessment of the skin on you	ur hands (after us	e of the test product):	
Appearance (supple, red, blotchy, rash)	Abnormal		Normal
Intactness (abrasions, fissures)	Abnormal		Normal
Moisture content (dryness)	Abnormal		Normal
Sensation (itching, burning, soreness)	Abnormal		Normal
How would you assess the overall	integrity of the sk	in on your hands?	
	Very altered		Perfect

## Thank you for your participation!



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## Scales to evaluate skin condition by the observer (objective evaluation)

	Ве	for	е			Af	ter			
Redness	0	1	2	3	4	0	1	2	3	4
0=no redness, 1=slight redness or blotchiness, 2=moderate redness, uniformly distributing tred with oedema present	uted,	3=k	origh	t red	l, wic	desp	read	, <i>4</i> =1	/ery	
Scaliness	0	1	2	3		0	1	2	3	
0=non scaliness, 1=very slight and occasional, 2=moderate, 3=very pronounced sepa	ratio	n of	scale	e ed	ges	from	skir	)		
Fissures	0	1	2	3		0	1	2	3	
0=no fissure 1=very fine, 2=large, either single or multiple, 3=extensive cracks with ble	edir	ng oi	see	ping						
Visual Scoring of Skin Scale										
No observable scale or irritation of any kind	0					0				
Occasional scale that is not necessarily uniformly distributed	1					1				
Dry skin and/or redness	2					2				
Very dry skin with whitish appearance, rough to touch and/or redness, but without fissures	3					3				
Cracked skin surface but without bleeding/seeping	4					4				
Extensive cracking of skin surface with bleeding/seeping	5					5				



Name:

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## Planning for Evaluation of Tolerability and Acceptability of Different Alcohol-based Handrubs - Method 2

0.		
<b>:</b>		
(day / month / year)		From / / to / /
ne timetable of y	our appointments	
		WHY
	/ / (day / month / year)	To collect bottles containing the test product (amount defined according to number of working days and volume of bottles)
(Belole)	Time:	To collect the questionnaire – Parts 1 & 2 For skin assessment by the observer
Date and time (after)	/ / (day / month / year) Time:	To return all bottles  To return the questionnaire – Parts 1 & 2  For skin assessment by the observer
Date and time (before)	/ / (day / month / year) Time:	To collect bottles containing the test product (amount defined according to number of working days and volume of bottles)  To collect the questionnaire – Part 2  For skin assessment by the observer
Date and time (after)	/ / (day / month / year) Time:	To return all bottles  To return the questionnaire – Part 2  For skin assessment by the observer
according to the	number of test prod	ducts
be contacted during w	orking hours throughout t	he test period for questions and/or problems on the following number:
umber:		
	Date and time (before)  Date and time (after)  Date and time (before)  Date and time (after)	Date and time (before)  Date and time (after)  Date and time (before)  Date and time (after)  Date and time (after)  Date and time (before)  Date and time (before)  Date and time (after)  Date and time (before)  Date and time (before)



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## **Check and Randomisation Form: Method 2**

(designed for a two product-test)

Participant N°	Name	Formulation	Appointment	Distributed bottles/ Returned bottles	Remaining weight/ Amount used	Questionnaire check	Skin assessment	
1	Final Check OK	Group A Group B	Start day / / Start Time End day / / End Time  Start day / / Start Time End day / / End Time	N°	g ml g ml g ml g ml g ml	Distributed	Before	
2		Group B	Start day / / Start Time End day / / End Time	N°	g ml g ml	Distributed	Before   After	
	Final Check OK	Group A	Start day / / Start Time End day / / End Time	N°	g ml g ml	Distributed  Returned	Before	



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Participant N°	Name	Formulation	Appointment	Distributed bottles/ Returned bottles	Remaining weight/ Amount used	Questionnaire check	Skin assessment
3		Group A	Start day / / Start Time End day / / End Time	N°	g ml g ml	Distributed	Before
	Final Check OK	Group B	Start day / / Start Time End day / / End Time	N°	g ml g ml g ml	Distributed	Before After
4		Group B	Start day / / Start Time End day / / End Time	N°	g ml g ml	Distributed	Before
	Final Check OK	Group A	Start day / / Start Time End day / / End Time	N°	g ml g ml	Distributed	BeforeAfter



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Participant N°	Name	Formulation	Appointment	Distributed bottles/ Returned bottles	Remaining weight/ Amount used	Questionnaire check	Skin assessment	
5		Group A	Start day / / Start Time End day / / End Time	N°	g ml g ml	Distributed	Before After	
	Final Check OK	Group B	Start day / / Start Time End day / / End Time	N°	g ml g ml g ml	Distributed  Returned	Before After	
6		Group B	Start day / / Start Time End day / / End Time	N°	g ml g ml	Distributed	Before After	
	Final Check OK	Group A	Start day / / Start Time End day / / End Time	N°	gmlgml	Distributed  Returned	Before After	

Lines must be added according to the number of participants