

Simulation for hand hygiene compliance and prevention of healthcare-associated infections among healthcare providers in maternity wards in Bukavu, Democratic Republic of Congo

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Annex 1: hand hygiene scenario				
Procedural simulation scenario: hand hygiene				
Preamble to the drafting of the document				
1. This training course is aimed at all health care providers who deliver babies. 2. Simulation model: mannequin only 3. Use of tap water for simple hand washing 4. Respect the authenticity of the procedure to be acquired to facilitate the transfer of learning into practice: use the same equipment as that used in the practice environment, maintain an environment close to the reality of the practice environment if possible, ideally propose a short scenario to put the activity back into context (with the germ found in the spinal fluid in the case of a lumbar puncture, for example). 5. Teach the procedure = give feedback on the whole procedure 6. Provide a procedure evaluation grid 7. Anticipate strategies to prevent learning declining as soon as the scenario is drawn up: - Enable self-regulated learning: allow learners to repeat the movements outside the scheduled periods to encourage deliberate practice leading to expertise (to be organised with the centre). - Schedule skills maintenance sessions: every 3 months and every 6 months - Suggest mental imaging: after the sessions to work on or abstractly rework the gesture.				
Context of the scenario				
Simulation centre		Université Évangélique en Afrique		
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Date of revision				
Teaching team (specify if trained in simulation)		The director of nursing; a midwife; medical instructor; SimMom		
Summary of the scenario for trainers		A patient, Mrs Cikuru, in labour at the maternity unit, had a retained placenta and wanted to go to the operating theatre. She is cared for by a midwife and a paramedic (grooming, wearing operating theatre scrubs, taking blood samples). The care provider is asked to wash her hands before treating the woman.		
Targeted learners		Number	Trainee doctors (externs)	6
			Midwives	5
			Nurses/midwives	10
			Doctors	6
Possible link with a training programme		Initial hand-washing training		
Training objectives for the target procedure				
- Promoting hand hygiene with HAG among professionals through playful means - Involve professionals in innovative hand hygiene awareness campaigns				
Learning objectives				
- Be able to carry out the 8 steps of simple hand washing - Be able to apply hydro-alcoholic gel friction in accordance with WHO recommendations - Be able to work as part of a team				
Pedagogical strategy(ies) envisaged				
1. Discovery teaching (experimentation with problem-solving) 2. Demonstration teaching (observation and imitation of the gesture) 3. Mastery learning (learning in stages of increasing difficulty until mastery is achieved, with a validating assessment grid at each stage) 4. Deliberate practice (autonomous practice with free access to the simulator once learning has been completed, with feedback and defined objectives).				
Preparation				
Teaching documents to be given to learners before and/or after the session		Demo videos, mental imagery, cognitive aids, etc.		

Bibliographical references or recommendations relating to the scenario	WHO recommendation, hand hygiene (2010)
Description of the simulation environment	Type of room reproduced: maternity ward, layout, place of simulation with the dummy lying on the bed in the gynaecological position.
Equipment required in the simulation room (and on request)	SimMom dummies; hydro-alcoholic gel; washbasin; liquid soap; towel
Simulator to learner ratio	27 learners divided into two groups
Preparing the pre-briefing at the start of the session	Invitation procedures, pre-briefing adapted to the learners' simulation experience and information about the training, information specific to the procedure being taught, pre-briefing checklist reference (helps to prepare learners properly and limit difficult debriefings).
Preparing the simulator	Simulator in gynaecological position with blood in the perineum, soiled clothes, infusion, consumables, etc.
Simulation	
Details and duration of the stages envisaged for the activity	Video sequence: 10 minutes; 6 minutes per learner; evaluation: 6 minutes
Briefing des apprenants	Case presentation, medical and surgical history, habitus, medication, morphological parameters, etc. Define the roles of the learners per simulator if necessary (guide, assessor, helper, co-participation at the same level, etc.).
Feedback	Close supervision by 2 instructors; self-learning (free access to simulators organized with the centre); overall feedback at the end of the activity (in groups, +/- video review); peer feedback



Annex 2: hand hygiene questionnaire		
No.	Question	Options
1	Which of the following actions is not part of the simple handwashing procedure?	a. Circular rubbing of the right thumb clasped in the left palm and vice versa. b. Palm-to-palm rubbing. c. Rubbing the back of the right hand against the back of the left hand and vice versa. d. Rotational rubbing back and forth with the fingers of the right hand clasped together in the left palm and vice versa. e. Interdigital spaces rubbed palm to palm with fingers interlaced, using a back-and-forth motion.
2	During contact isolation for <i>Clostridioides difficile</i> diarrhea, the recommended hand antisepsis method is:	a. Simple handwashing with mild soap. b. Simple handwashing combined with alcohol-based hand rub. c. Alcohol-based hand rubs alone. d. Wearing gloves without handwashing. e. No specific measure, as the bacterium does not survive in the environment.
3	After simple handwashing, hands should be dried by:	a. Rubbing. b. Patting dry. c. Hot air drying. d. Air drying at room temperature. e. Using a clean cloth towel.
4	What is the effective duration of hygienic hand rubbing?	a. 5 seconds. b. 20 seconds. c. 30 to 60 seconds. d. 2 minutes. e. 5 minutes.
5	The main route of transmission of microorganisms is contact:	a. Directly through the hands. b. Indirectly through equipment. c. Through the air. d. Through the patient's environment. e. Through tap water.
6	Alcohol-based hand rubbing is an alternative to:	a. Simple handwashing. b. Antiseptic handwashing. c. Both simple and antiseptic handwashing. d. Surgical handwashing. e. None of the above.
7	Alcohol-based hand rub solutions should be used:	a. Diluted with water on dry hands. b. Undiluted on wet hands. c. After removing powdered gloves. d. On visibly soiled hands. e. Undiluted on clean, dry, and non-soiled hands.
8	Hand antisepsis is necessary after glove removal because:	a. Wearing gloves promotes hand contamination. b. Wearing gloves does not completely prevent hand contamination. c. Gloves are powdered. d. Gloves can be used for several antiseptic procedures. e. Gloves are completely impermeable.
9	Regarding the indicator measuring the volume of alcohol-based hand rub consumption, one statement is incorrect:	a. It is part of the healthcare-associated infection monitoring dashboard. b. It is expressed as the percentage of actual consumption compared with the annual individualized target volume. c. It takes into account all antiseptics used. d. It is defined as the volume of alcohol-based products consumed during the previous year, expressed in liters per 1,000 patient-days.
10	Regarding studies on the survival of pathogenic microorganisms on hands, one statement is incorrect:	a. <i>Escherichia coli</i> can survive for 6 minutes. b. <i>Acinetobacter</i> can survive for 1 hour. c. Bacteria survive as long on gloves as they do on the skin. d. Rotaviruses can survive for up to one hour. e. The transfer of microorganisms is not influenced by the type of surface or ambient humidity.
11	Healthcare workers' hands may become contaminated:	a. During nursing care activities. b. Through contact with the environment of an infected patient. c. When using the restroom. d. During patient care activities. e. When handling door handles.
12	What are the general recommendations for any hand hygiene procedure?	a. Short, clean, polished nails. b. Three-quarter-length sleeves. c. Wearing a wedding ring. d. No jewelry. e. Short, clean, unpolished nails. f. Short sleeves.
13	It has been shown that the use of alcohol-based hand rub solutions:	a. Improves compliance with hand antisepsis recommendations. b. Has an impact on <i>Staphylococcus aureus</i> infection rates. c. Reduces the misuse of disposable gloves. d. Reduces inadequate hand hygiene practices. e. Reduces bacterial contamination of patients' hands.
14	Which situations require simple handwashing?	a. Before going to the restroom. b. When hands are visibly dirty. c. Before handover/reporting activities. d. After removing powdered gloves. e. Upon arrival in the unit.



15	Which situations are considered to pose an intermediate risk of infection?	a. A surgical procedure. b. Contact with a patient under septic isolation. c. An exposure incident involving viruses. d. Cleaning environmental surfaces. e. After using the restroom.
16	Which active agents can be used for hand antisepsis?	a. Povidone-iodine (Betadine®). b. 70% alcohol. c. Hydrogen peroxide. d. Chlorhexidine (Hibitane®). e. Isopropanol.
17	During contact isolation:	a. Staff should perform alcohol-based hand rubbing before entering the room. b. Gloves must be removed before leaving the room. c. The room door should be opened after performing alcohol-based hand rubbing. d. Alcohol-based hand rubbing is only necessary in contact isolation. e. Gloves are only necessary in contact isolation.
18	Studies show that:	a. Alcohol-based hand rubbing is better tolerated than antiseptic handwashing. b. Antiseptic handwashing is more effective than alcohol-based hand rubbing. c. Alcohol-based hand rubbing is more effective than simple handwashing. d. Simple handwashing should last between 30 and 60 seconds. e. Alcohol-based hand rubbing should last at least 30 seconds.
19	Which of the following bacteria are part of the normal hand flora?	a. <i>Corynebacterium</i> spp. b. <i>Staphylococcus aureus</i> . c. <i>Staphylococcus epidermidis</i> . d. <i>Escherichia coli</i> . e. <i>Enterococcus faecalis</i> .
20	Regarding compliance with hand hygiene recommendations, it is generally accepted that:	a. Average compliance observed in audits is approximately 40%. b. Wearing gloves improves compliance. c. The highest compliance rates are observed among nursing staff. d. Compliance is inversely proportional to the number of hand hygiene opportunities. e. Information and awareness campaigns always improve compliance rates.

Annex 3: objective structured clinical examinations hand washing		
OSCE hand washing: if the learner performs the gesture correctly, he gets 1; otherwise he gets 0		
	Hand washing with gel alcohol	
1	Apply a palmful of rubbing alcohol to your cupped hand	
2	Rub your hands together, palm to palm	
3	Rub your right palm over the back of your left hand, interlacing your fingers and vice versa	
4	Rub your hands together, palm to palm, fingers interlaced	
5	Rub the back of your fingers over the palm of the other hand with your interlaced fingers and vice versa	
6	Place the left thumb in the palm of the right hand and rub it by rotating it, then repeat the operation. Repeat using right thumb and closed left palm	
7	Rotate the crossed fingers of the right hand in the palm of the left hand and vice versa	
8	Let your hands dry completely	
	Washing hands with soap and water	
1	Wet your hands with tap water	
2	Apply enough soap to cover all the surfaces of your hands	
3	Rub your hands together, palm to palm	
4	Rub your right palm over the back of your left hand, interlacing your fingers and vice versa	
5	Rub your hands together, palm to palm, fingers interlaced	
6	Rub the back of your fingers over the palm of the other hand with your interlaced fingers and vice versa	
7	Place the left thumb in the palm of the right hand and rub it by rotating it, then repeat the operation using the right thumb and the closed left palm	
8	Rotate the closed fingers of the right hand in the left palm and vice versa	
9	Rinse hands with tap water	
10	Dry your hands thoroughly with a single-use paper towel	
11	Use the paper towel to turn off the tap	