



RESEARCH ARTICLE

EVALUATION OF SURGICAL TECHNIQUE AND IDENTIFICATION OF BACTERIAL GROWTH IN THE HANDS OF THE SURGICAL STAFF OF THE NAVAL MEDICAL

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ABSTRACT

Introduction: The correct hand washing technique remains one of the important practices in the area of health, in the operating room this routine practice becomes essential because we avoid infections at the surgical site and the goal is to evaluate the staff health that performs the surgical hand washing technique in the area of operating rooms, through an observational instrument and the realization of taking hand cultures after performing this procedure. **Materials and methods:** A checklist of 8 items was carried out and applied by observation to the staff performing surgical hand washing. Subsequently crops were taken in two times, the first in the palm of the hand and in the nail bed of the 3 interdigital space of the right hand, the second crop was taken at 30min of initiated surgery in the same sites. **Results:** out of 71 (100%) health people who have the checklist applied, it was obtained that the staff (85%), perform the surgical technique of hand washing correctly and 14.9% skip some steps of this technique. As for the microbiological samples (cultures) taken to staff (35) were reported without development of aerobic mesophilics, without coliform development and without development for fungi in the staff. **Conclusions:** Although the WHO-proposed handwashing surgical technique differs from some points of the technique performed at CEMENAV, staff know the importance of the attachment of this technique and practice it with mostly respect ingestry the principles of asepsis, and it was possible to corroborate with the microbiological tests that were performed on the personnel, that there is no development of microorganisms after carrying out the two tests.

INTRODUCTION

Hands are the most common vehicle for transmitting infections; it is therefore imperative that the population understands the importance of washing their hands (1). It is the most effective and economical universal measure known to prevent the transmission of infectious diseases. Lack of adheren to LM in hospitals is a global problem, there are reports of compliance with this practice below 10% and at best 70% (2,3). Previous studies have identified health care-associated infections (IAAS) as one of the most at-risk complications in hospital facilities despite rigorous infection control programs. This happens for several reasons: longer stays, increased invasive procedures generate greater physical contact of the health worker with patients, in addition to the manipulation of medical equipment or products. All these reasons make Aseptic Technique procedures an important strategy to prevent nosocomial infections, within which handwashing continues to be the undeniably most important practice, and where they should efforts are made to make the Health Team strongly adhering to this practice (4). Surgical wound infection is the second indicator of quality of care to patients in developed countries, this frequently used data can be used to obtain comparisons between centers, health systems or countries (5).

The most frequently involved microorganisms are *Staphylococcus aureus* (30.4%), *Staphylococcus coagulase negative* (11.7%), *Escherichia coli* (9.4%) and *Enterococcus faecalis* (5) To decrease the risk factors for infections at the surgical site the ideal is to minimize the amount of bacteria in the hands of the surgeon or surgical team, prior to surgery, and prevent the proliferation of microorganisms below the gloves. (5). Studies show that brush surgical hand washing is as effective as brushless in terms of decreasing the skin surface bacterial load of health personnel in operating rooms. However, it is important to note that the brushless technique prevents repetitive trauma to the deep layers of the skin, which has an on-risk risk of surgical wound infection. (6) The goal of surgical hand washing is to reduce the number of resident and transient microorganisms on the skin, up to an absolute minimum (7). Human skin is colonized by microorganisms that live as saprophyes on the surface, in the fissures between the scales of the corneum stratum and within the hair follicles, and can sometimes become pathogenic. The skin microbiota is made up of bacteria, fungi and parasites, and is divided into two large groups, resident and transient microbiota (8). The skin microbiota has multiple important functions of homeostasis, intervenes in the defense against bacterial infections by means of bacterial interference, has activity on the degradation of lipids of the skin surface favoring the skin barrier function, in addition to being directly responsible for odor production by degrading components of apocrine sweat.

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No	Procedimiento	REALIZA EL PROCEDIMIENTO										TOTAL			
		Medico especialista		Personal de enfermería		Residentes de medicina		Residentes de enfermería		Instrumentista de casa comercial		SI	%	NO	%
		SI	NO	SI	NO	SI	NO	SI	NO	SI	NO				
1	Retira todas las joyas (anillos, relojes y pulseras)	12	4	20	0	18	2	10	0	5	0	65	91.5	6	8.451
2	Utiliza cepillo quirúrgico con clorhexidina para el lavado de manos.	16	0	20	0	20	0	10	0	5	0	71	100	0	0
3	Frota entre las uñas, cada lado de cada dedo, entre los dedos, la parte posterior y delantera de la mano durante 2 minutos.	12	4	18	2	16	4	8	2	2	3	56	78.9	15	21.13
4	Procede a frotar los brazos, manteniendo la mano más alta que el brazo en todo momento	14	2	19	1	19	1	9	1	3	2	64	90.1	7	9.859
5	Lava cada lado del brazo desde la muñeca hasta el codo durante un minuto.	16	0	20	0	20	0	10	0	5	0	71	100	0	0
6	Repite el procedimiento en la otra mano y brazo, manteniendo la mano por encima de los codos en todo momento	12	4	20		18	2	10	0	3	2	63	88.7	8	11.27
7	Enjuaga las manos y los brazos pasándolos a través del agua en una sola dirección, desde las yemas de los dedos hasta el codo. No mueve el brazo hacia adelante y hacia atrás del agua	12	4	18	2	14	6	8	2	2	3	54	76.1	17	23.94
8	Se dirige a la sala de operaciones con las manos por encima de los codos	16	0	20	0	20	0	10	0	5	0	71	100	0	0
TOTAL		85.9		97.1		78.1		93.75		75		85.9		14.9	

Source: Data collection format.

Table No. 2.

Control Microbiológico	Después de realizar el lavado de manos quirúrgico con cepillo	Después de 30 minutos de haber iniciado el procedimiento quirúrgico
35 muestras	Sitio ungueal del 2do. Espacio Palma de la mano interdigital	Sitio ungueal del 2do. Espacio interdigital
RESULTADOS	Sin desarrollo de microorganismos.	

(9). Resident microbiota: They are microorganisms that are located in the deeper layers of the skin, can be isolated in similar numbers in most individuals. They correspond to diner microorganisms that protect the host from infections by competing for tissue substrates and receptors. They are firmly bonded, so they are resistant to mechanical removal and are far from the reach of antiseptic solutions. One of the goals of aseptic technique is related to minimizing resident microbiota. (9)

They are part of this flora:

- Staphylococci coagulasa (-) (S. epidermidis > 90% of aerobic residents).
- Anaerobic difteroidis (P. acnes).
- Gram (-): small portion in wet intertriginous areas (Enterobacter, Klebsiella, Escherichia coli, Proteus).
- Family of malasseziae and candidae.

Transient microbiota: It is that population of microorganisms acquired through contact with people, animals, objects or the environment. They are poorly attached to the skin, so they are susceptible to washing removal. They cause most Surgical Site Infections (SSI), with the patient's nasopharyngeal or skin endogenous microbiota being the main source.

There are also exogenous sources such as health personnel, instruments and surgical equipment.

They're part of this microbiota

- Staphylococcus aureus: is the most common agent of surgical site infection.
- Others: Staphylococcus coagulasa negative, Enterocococuse spp, E. coli, Streptococcus group A and Pseudomona aeruginosa.

MATERIALS AND METHODS

This observational, descriptive and prospective study was conducted. Included for this study of medical specialists (16), nurses (20), medical residents of different specialties (20) and surgical nursing (10), as well as external staff (instrumentalists) of commercial houses (5), who have a direct involvement in surgical procedures and performing the surgical hand washing technique, in the oquirtan area of the Naval Medical Center. For the calculation of the sample size a formula was used for finite populations, with confidence interval 95% and a margin of error of 3%, with a final sample of 66 people.

The assessment of the attachment of hand washing technique was carried out with the application of a checklist of 8 items, it was applied to the staff of different shifts who performed this procedure with the method of observation, without realizing that they were being Evaluated. Subsequently, crops were taken on the hands in 2 strokes at 50% (35) random surgical personnel, the first time was taken immediately after each surgical hand wash with sterile swab in the palm of the hand and the nail bed of the middle finger both of the m m right anus, new samples will be taken at the same sites at 30 min after the gloves are placed. The swabs were kept in a thermos that were subsequently sent to the laboratory where a Triptein Soya Agar culture medium was used to identify the existence of microorganisms in the hands of the staff involved in the research, and for the fungal identification will be used a fungal culture.

RESULTS

The results obtained from microbial culture demonstrates good surgical hand washing practice, therefore no statistical correlation tests were applied due to direct findings in the elimination of microorganisms in the sample. As for the application of the observation guide, 85.90% were obtained that the surgical technique of hands is performed correctly and 14.90% do not. In terms of specialties it is described that surgical nurse residents are the ones who are most in love with performing this practice correctly. As for the staff who had poor surgical handwashing technique were commercial houses. Table No. 1 Checklist proposed by WHO, which was applied to surgical personnel who performed cemeNAV's handwashing surgical technique. The following table shows the result of microbiological samples (cultures) taken in the hands of health personnel in the CEMENAV operating room area.

DISCUSSION

Health personnel working in the operating room were shown to be knowledgeable on how to perform this procedure in compliance with all areas described in WHO's guide to surgical hand washing. It was also shown that the antiseptic used was effective in yielding negative results in the samples (cultures) taken.

Conclusion

After verifying that the personnel participating in this work correctly perform the surgical washing and take the microbiological tests (cultures) of hands and ungueal site, we can conclude that the checklist applied was useful to determine, that the participating personnel of this Naval Medical Center if they have the correct attachment mostly to the SURGICAL handwashing technique proposed by WHO, it was also found that the personnel after performing the surgical wash do not have microorganises in our hands.

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