Proposal for the writing of an advertising review for the Phone Guard_investigation of Orángel Cadenas_28-05-2020...

1 message

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Investigations in Venezuelan hospital centers

Orángel Cadenas Cedeño, MD, researcher in the areas of clinical epidemiology and biostatistics, in addition to being a scientific and methodological advisor to a large number of theses and scientific investigations, conducted a pilot study on the functionality of the Phone Guard™, in real Venezuelan hospital settings, for which, it valued forty-eight (n= 48) samples of the Phone Guard™ covers, applied to one hundred and fifty (n= 150) office and cellular telephony devices, which were randomly selected. The investigation showed that the telephone sets were covered with 25,127 bacteria per square inch of surface, finding a significant effectiveness of the Phone Guard™, in preventing the colonization of pathogens, in 80%. Among the bacteria found in phones are the genera Streptococcus (Strep) and Staphylococcus (Staph), which are a frequent cause of sore throat or laryngitis.

EFFECTIVENESS OF THE PRODUCT "PHONE GUARD" AS A PROTECTIVE BARRIER OF MICROORGANISMS IN THE UNITS USED IN HOSPITAL ENVIRONMENTS

Introduction

The fixed telephones those are available in most center and hospital settings involving a fundamental and essential communication tool, which provide invaluable support in the process of health care. Like all elements that are part of hospital environments are susceptible to contamination with microorganisms, including strains resistant to antimicrobial drugs, and therefore be capable of transmitting infectious disease producing germs. In this sense, it is important to note that environmental surfaces and their role in the epidemiology of nosocomial infections have become an area of great scientific interest, particularly in reference to several published cases of infections due to methicillin-resistant Staphylococcus aureus or Clostridium difficile in hospitals in the UK[1]. Thus, research has been conducted to determine the rate of contamination in the hands and equipment and mobile workers in the health care play in the areas of surgical care[2]. In one of these investigations were grown two hundred samples from cell phones, finding evidence of bacterial contamination in 94.5%[2]. Gram-negative strains were isolated from 31.3% of mobile phones, and 52% of S. aureus[2]. In some cell phones nosocomial pathogens were isolated[2]. In similar research, Sepehri et al (2009) studied the problems relating to the rates of contamination of cell phones by health care workers, as well as resistance to antimicrobials commonly used in three university hospitals in the population Kerman, from Irán[3]. The authors examined, at random, one hundred fifty (n = 150) cell phones[3]. To collect samples to be grown two swabs were taken, were sprayed with sterile water, one being passed over the surface of both sides of the cell phone and the other in the dominant hand of health worker[3]. Both swabs were cultivated according to the method routinely used in microbiology laboratories (the plates were incubated aerobically at 37 ° C for 48

hours)[3]. The main finding of the investigation was a total of 48 (32.0%) cell phones and 59 (39.3%) hands had dominant bacterial contamination; Staphylococcus epidermidis was the most common bacteria isolated[3]. Arora et al (2009)[4] also studied the role of cell phones as reservoirs of various types of pathogens, so could constitute an exogenous source of nosocomial infections. The authors note that cell phones are very important in the processes of communication personnel health care centers[4]. Thus, 160 cell phones belonging to the medical and paramedical staff various hospital departments and medical training center in Amritsar, were screened for the isolation of bacterias[4]. To that end, samples were taken from the front, back and sides of the cell phone, which were placed in moistened sterile plates with nutrient broth, for studies of bacterial culture and sensitivity to antibiotic substances[4]. The same procedure was repeated after decontamination cell phones with isopropyl alcohol 70%[4]. There was bacterial growth in 41% (n = 65) of studied cell phones, with 19% (n = 31) of clinical staff and 21% (n = 34) of non-clínico staff[4]. Coagulase-negative Staphylococcus was the bacteria most isolated[4]. The effectiveness of decontamination with alcohol 70% isopropyl was 98%, because only five cell phones was no bacterial growth after applying decontamination process[4]. For some authors, the telephones located in hospital environments do not represent a potential source of bacterial contamination. So, Rafferty and Pancoast, in a general hospital for acute care, studied between mobile devices 114 and intercoms placed in areas of patient care, for to search bacterial contamination[5]. The main result of the research highlights that only 9% (n = 9) of the devices studied showed contamination by potentially pathogenic bacteria such as strains of Klebsiella, Enterobacter, Pseudomonas and Aeromonas[5]. Based on this finding, the authors report that the inanimate objects or devices that are in the middle environment where hospital personnel manual comes in contact with them, they not represent a significant reservoir of gram-negative, and therefore would be unlikely to be means of transmission of these types of germs by hand contact between staff of the health care[5]. In this regard, consider disinfecting the telephones and other hand contact devices in hospitals appears to be a practice no necesary[5]. This statement coincides partially with the

study of Menis Ferreira et al (2011)[6], who made the approach on the lack of universal acceptance in the role of the hospital environment in the spread of some infections. However, they claim that the circumstantial evidence suggests that the surfaces of contaminated hospital environments can be a risk factor for infections caused by certain pathogenic agents, which adds to the growing recognition of the use of environmental measures as an essential component of the overall strategy for preventing infections associated with care health[6]. The authors define the cleaning and removal of the dirt or contaminants found on surfaces using mechanical (friction), physical (temperature) or chemical (disinfection), for a certain period of time[6]. Cleaning the inpatient unit of the sick should be done daily, or whenever is required, being carried out before cleaning the floor, and not at the same time[6]. Cleaning the horizontal surfaces that have contact with the hands of the patient, family and health team deserves more attention, such as doorknobs, telephones, light switches, the bars of beds, nurses' call buttons, among others[6]. Cleaning has never been regarded as a science based on evidence and therefore has received little attention from the community scientific[6]. In this sense, there are no scientific standards to measure the effect of a cleaning agent individually, or to assess the cleanliness of the environment, making it difficult to find evidence that benefit infectious control[6]. Cleanliness is routinely assessed by audits visual methodology that would be aesthetically satisfying, but does not provide a reliable assessment of the risk of infection for a given patient, family or team member health environments[6]. This is based on the fact that microorganisms that cause infections are invisible to the naked eye and their existence is not necessarily associated with any sign visible[6]. In general, fixed telephones receive general cleaning services that are likely all elements of a hospital furniture unrelated surgical care. This leads to sterilization processes of receiving and cleaning. Also, there is little reference, documentary or experience, where they use special covers for fixed telephones. One approach to deal with microbial contamination of surfaces is to prepare the same in manner that will impede the adhesion of microbial agents. The strategy behind this technique is to prevent microbial adhesion to the device or surface, as such, is of preventive character. Under this

reference or control. Sampling points were represented by the telephones located in the mentioned areas. To take samples from blankets used the quantitative method of swabbing an area of 5 x 5 cm. To do this, we used a template of sterile filter paper. The contents of the swab was spread on the culture media[9]. Media and culture conditions were commonly with Petri dishes (9 cm diameter) content of blood agar (TSA) for bacteria and the medium for fungi Saboureaud with chloramphenicol. The incubation time for bacteria was 48 hours, keeping at 37 °C. For fungi was 7 days at 22 °C[8]. As the plate count for the environments under study were admitted for a minimum level of functioning, quality of cleaning of the areas studied rated as acceptable, between 100-200 total UFC/m^3 total plate and in the case of fungi: 0 UFC/m^3. The placement procedure PhoneGuard™ in telephone sets consisted of cleaning the handset with the disinfectant Gerdex™, then placed the cover PhoneGuard™ telephone, by trained personnel, taking the corresponding measures of asepsis and antisepsis. The handset with the blanket was used normally by the staff of the area without any particular restriction or special. The cover could be removed only by trained research. This process was conducted at four (24) hours of being placed. The cover removed was placed in a sterile container to be taken to the laboratory for analysis. The effectiveness of cover under study was established with the growth of bacterial or fungal colonies below 100,000 CFU in samples versus samples cover the headphone controls, with growth of bacteria or fungi above 100,000 CFU. Statistical significance of difference was established with the chi-square to a significance level of 5%.

Results

In total, 24 samples of study and 24 control were processed, found growth of gram-positive over 100,000 CFU in 80% (n = 19) of the isolated cell samples from control (no placement PhoneGuard™) versus only 25% (n = 5) of the isolates from the study sample (phone covered with PhoneGuard™). The difference (25% versus 80% effective in preventing bacterial growth in the phone located in hospital environments was statistically significant (X square; $p < 0.05$).

Material and methods

The experimental research was the type where a group of landlines in the environments they were placed above the PhoneGuard™, while another group of phones they were maintained in reference environments without the use of PhoneGuard™ (control group). The protocol to be applied to assess the efficacy of the product "PhoneGuard"™ as a protective barrier of microorganisms in the units used in hospital settings, involved the initial application of a checklist, to characterize the study area, in order to define the occupation and type of activities developed in it, besides the degree of spatial occupation and relationship to ventilation systems, the emission of pollutants and their sources, as recommended in bacterial pollution studies[8]. Below is a checklist that was used in the investigation.

Sampling Sites and Intervenient Issues	HULA-IA	IVSS
Type of construction		
Floor Material		
Wall material		
Ceiling material		
Number of open windows		
Number of windows closed		
Load Factor		
Number of opened doors		
Type of ventilation		
Average Temperature		

Later, there was the selection of sampling points at the two hospitals to be studied. In one selected areas of microbiology, to keep an indirect relationship with the level of spread of infectious diseases at both the areas of surgery and patient recovery, and in other administrative areas of the hospital management to serve as a

approach, entrepreneurial and micro Tracy Carrington has developed a special blanket called as fixed telephones PhoneGuard™. In this sense, the researcher César Escribano[7] made a scientific report about the product ELSANEK™. The approach of this report highlights the active role they can play in textile products in generate infectious processes[7]. To this end, referring to the incident in 2002 in the hospital Queen's in Birmingham, where an outbreak of infection by Acinetobacter baumannii in the ICU, demonstrating after a careful analysis of the conditions had led to the emergence of the outbreak, the source of the reservoir of the bacteria was in the hospital environment curtains. The report also makes a reference the focus on research conducted in 2005 on the recovery of live bacteria in public phones, particularly in the microphones of the same, with the demonstration that found 12 different types of bacteria with human origin[7]. Based on this finding, the authors recommend the application of coatings with antimicrobial activity headphones and microphones in the public telephony, for suggesting the use of polymers how triclosan[7], group that owns the ELSANEK™. Now, it is important to note that several techniques are being studied to reduce microbial contamination of hospitality surfaces[1]. Such techniques include discoveries related to preventive measures that reduce initial microbial adhesion to superficies[1]. Two types of such coatings are represented by light-activated antimicrobial surfaces such as titanium dioxide (TiO2) and surfaces that contain or are embedded with fotosensibilizadores[1]. There are also areas that release antimicrobial compounds such as copper and silver, and some materials that kill microbes with only contact them[1]. On these surfaces there is a strong antimicrobial research and development at present, especially in order to maintain acceptable levels of hygiene in hospitals, helping to contribute to the fight against nosocomial infections that are caused by contamination of inanimate surfaces in the environments of health care center[1]. Based on all raised, proposing a study of the effectiveness of PhoneGuard™ in environments of the Microbiology Laboratory at the University Hospital of Los Andes (HULA-IA) and the Hospital Management Area Type II "Dr. Tulio Carnevali Salvatierra" Institute Venezuelan Social Security (IVSS), both located in the city of Mérida, Mérida State, Bolivarian Republic of Venezuela.

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Abstract

The fixed telephones available in most centers and hospital settings, involving a fundamental communication tool and essential, which provides invaluable support in the process of health care. Like all elements that are part of hospital environments are susceptible to contamination with microorganisms, including strains resistant to antimicrobial drugs, and therefore be capable of transmitting infectious disease that producing germs. In general, fixed telephones suffer cleaning services that are susceptible to general elements of all hospital furniture unrelated surgical care. This results in not receiving sterilization process or cleaning. Similarly, there is little reference, documentary or experiences that utilize special covers for fixed telephones. The entrepreneurial Tracy Carrington has developed a special blanket called as fixed telephones PhoneGuard™. Based on all the questions raised, proposing a study of the effectiveness of PhoneGuard™ on the environments of the Microbiology Institute at the University Hospital of Los Andes (HULA-IA) and type II Hospital "Dr. Carnevali Tulio Salvatierra " Venezuelan Institute of Social Security (IVSS), both located in the city of Merida, Venezuela, Bolivarian Republic of Venezuela. The experimental research will be the type where a group of phones in the rooms they are placed above the PhoneGuard™, while other cell groups of the same reference environments will remain without the use of PhoneGuard™ (control group). The PhoneGuard™ will be placed prior to the product aseptic Gerdex™ headphone handset, this process is also done in control handsets (those not covered in your headset with PhoneGuard™). PhoneGuard™ cover is maintained for 48 hours at which time it will be removed under aseptic conditions, taking samples of the same and the surfaces of the headset, to be processed with the study of bacterial culture

of microorganisms. The effectiveness of cover under study is established with the growth of bacterial or fungal colonies below 100,000 CFU on the blanket samples versus samples taken from the headphone controls, with growth of bacteria or fungi over 100,000 CFU. Altogether 24 samples were processed and 24 control study, find growth of gram-positive over 100,000 CFU in 80% (n = 19) of samples isolated from control cell (no placement PhoneGuard™) versus only 25% (n = 5) of the isolates from the study sample (cell covered with PhoneGuard™). The difference (25% versus 80% effective in preventing bacterial growth in the cell located in hospital environments) was statistically significant (Chi (X) square; p <0.05). Discusses the effectiveness of PhoneGuard™ as a cover preventive for phones that are in hospital environments. We recommend that multicenter studies to compare the efficacy obtained in this investigation.

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Discussion

The cover phone PhoneGuard™ showed significant efficacy of 80% in preventing colonization by pathogenic bacteria when compared with no use of siding on mobile devices that are located in hospital environments. There were no reports in the literature where similar studies comparing phone covers. We discuss the effectiveness of cover PhoneGuard™ as a preventive for phones that are in hospital environments, and recommend realizing multicenter studies to compare the efficacy obtained in this investigation.

Acknowledgement

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