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Research Article

THE EFFICACY OF DECONEX-53 PLUS 2% DISTILLATION SOLUTION TO REDUCE THE CHANCES OF INFECTION ON MEDICAL EQUIPMENT USED IN UROLOGY PROCEDURES**Dr. Muhammad Usman Ashraf, Dr. Abdul Wahab Nawaz, Dr. Ghanwa Manzoor**
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Abstract:

Background: There are no harmful effects of detergent solution (Deconex-53 Plus) on the human body; for instance, on respiratory systems. It carries strong cleansing features, anti-corrosion characteristics which can remove corrosion from instruments and tools and effective concentration percentage against HBV, HIV, fungal, bacterial and microbial viruses for fifteen minutes. We can use Deconex-53 Plus for surgical instruments decontamination and also for the non-flexible and flexible endoscopes.

Objective: The objective of this research is to prove the effectiveness of Deconex-53 plus (2%) disinfectant solution to reduce medical instruments and equipment used in the urology department for different procedures.

Materials and Methods: We carried out this research at Mayo Hospital, Lahore from October 2017 to June 2018. The research primarily aimed at the investigation of surgical procedures effects on the management of different infectious diseases along with pre & post infection and procedure cost. We dealt with the five most common bacteria which were commonly faced in the hospital. For the determination of the disinfection effect, the sampling was conducted before and after medical equipment disinfection in the urology department and collected data were analyzed through SPSS software.

Results: Before intervention the product contamination by treating with disinfectant solution (Deconex-53 plus 2%) was 28% for Escherichia coli, 21% for Pseudomonas, 21% for Citrobacter, 18% for Staphylococcus aureus and 12% for Klebsiella. Data was also documented for decontamination of the equipment disinfection by (Deconex-53 plus 2%).

Conclusion: Pre-disinfection outcomes show that medical equipment was clear and there was no bacterial growth on the instruments. Moreover, contamination reduction percentage with gram-positive & negative microorganisms was also reduced significantly after disinfection.

Key Words: Disinfection, Contamination, Tools, Instruments, Equipment, Urology, Deconex-53 Plus and Solution.

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INTRODUCTION:

Joseph Lister reported an association between infection process and germ theory and he believed that carbolic acid sparkle and fluid are suitable for disinfection of wounds, hands, sutures, surgery rooms and dressings. The application of these methods reduced the rate of mortality in the surgical procedures from 45% to a minimum of 15% which also gave a guiding path to the modern surgical disinfection. It also improved wound care and solved major health care challenges which hindered surgical interventions by reducing contagious diseases and mortality [1].

The income generating hospitals need to improve themselves in terms of quality and quantity through improved performance which produces positive effects. The issue of infection has always been a grave issue in the medical field. Even in the presence of a number of sterilizing devices and antimicrobial disinfectants the occurrence of infection is still at rising. Hospitals are very much sensitive about the onset of infection. Prevention of infection is a least expensive and most effective way to control infection in the hospitals. Lack of compliance with the methods and principles is a major issue in the operating rooms which increases the chances of infection spread. Infection control is a paramount job for any operating room. Infectious agents develop microorganisms which spread and transmit through to others in the hospital and vicinity. The hospital's environment suffers a lot due to the infectious agents spread. Operating room has a complex role in the working environment of any hospital which affects patient and treatment protocols [2]. It is important to curb the contamination sources which spread or transmit as an outcome of standard approaches and principles [3]. Hospital induced complications reduce health status and also affect the community. The patients and community face issues like loss of trust from the hospitals and healthcare institutions, prolonged hospitalization, fee burden, disease burden, overcrowded hospitals, disturbed management, failed planning, increased antibiotics intake, microbial resistance establishment, care process implementation, staff workload, fatigued nursing staff and inconsistent treatment team [4].

As the awareness about hospital-oriented pathogens is increasing along with awareness about microbial resistant pattern and route of transmission the use of disinfectant, preventive approaches and sterilization methods are also increasing in practice. Various hospitals have launched infection control activities along with the establishment of hospital infection control committees [5]. It is necessary to control the

infection spread through such steps in order to protect patients and employees both of which will improve the overall environment of the hospital. It will also increase the trust of the patients in the hospital and reduce treatment costs. Such programs include risk factor evaluation and culminate on the implementation design which includes execution of proper infection controls policies and approaches [6, 7].

There are no harmful effects of detergent solution (Deconex-53 Plus) on the human body; for instance, on respiratory systems. It carries strong cleansing features, anti-corrosion characteristics which can remove corrosion from instruments and tools and effective concentration percentage against HBV, HIV, fungal, bacterial and microbial viruses for fifteen minutes. We can use Deconex-53 Plus for surgical instruments decontamination and also for the non-flexible and flexible endoscopes along with rubber parts, plastic parts, suction, benthic tubes, anaesthetics, kidney tubes and various types of digestive, respiratory and skin infected instruments [8 – 10]. Therefore, the objective of our research is to prove the effectiveness of Deconex-53 plus (2%) disinfectant solution to reduce medical instruments and equipment used in the urology department for different procedures.

MATERIALS AND METHODS:

We carried out this research at Mayo Hospital, Lahore from October 2017 to June 2018. The research primarily aimed at the investigation of surgical procedures effects on the management of different infectious diseases along with pre & post infection and procedure cost. We dealt with five most common bacteria (Citrobacter, Staphylococcus aureus, Pseudomonas aeruginosa, Klebsiella and Escherichia coli) which were commonly faced in the hospital. For the determination of the disinfection effect, the sampling was conducted before and after medical equipment disinfection in the urology department and collected data were analyzed through SPSS software.

RESULTS:

Before intervention, the product contamination by treating with disinfectant solution (Deconex-53 plus 2%) was 28% for Escherichia coli, 21% for Pseudomonas, 21% for Citrobacter, 18% for Staphylococcus aureus and 12% for Klebsiella. Data was also documented for decontamination of the equipment disinfection by (Deconex-53 plus 2%). The distribution of disinfectants was as Staphylococcus aureus (42), Citrobacter (48), Pseudomonas aeruginosa (48), Escherichia coli (66) and Klebsiella (29).

The outcomes about the decontamination of medical equipment before and after disinfection through (Deconex-53 plus 2%) for Staphylococcus aureus bacterial infection, Citrobacter bacterial infection,

Cytotoxin bacterial infection, Pseudomonas aeruginosa bacterial infection, Escherichia coli (E. Coli) bacterial infection and Klebsiella bacterial infection are given in Table – I & II.

Table – I: Various Disinfectants

Disinfectant	Deconex-53 plus 2%	
	Number	Percentage
Staphylococcus aureus	42	18
Citrobacter	48	21
Pseudomonas aeruginosa	48	21
Escherichia coli	66	28
Klebsiella	29	12
Total	233	100

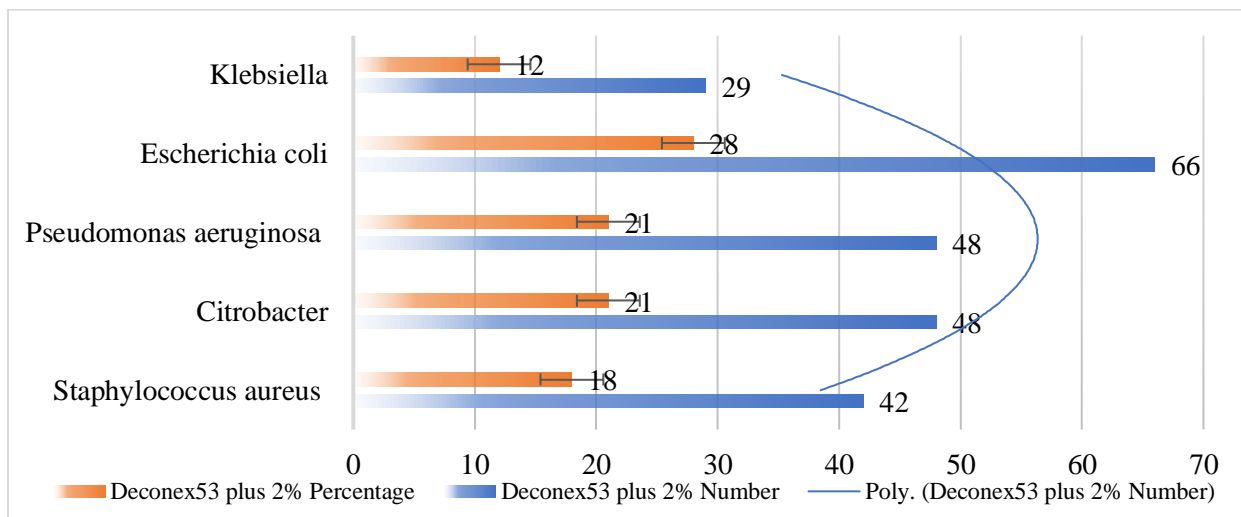
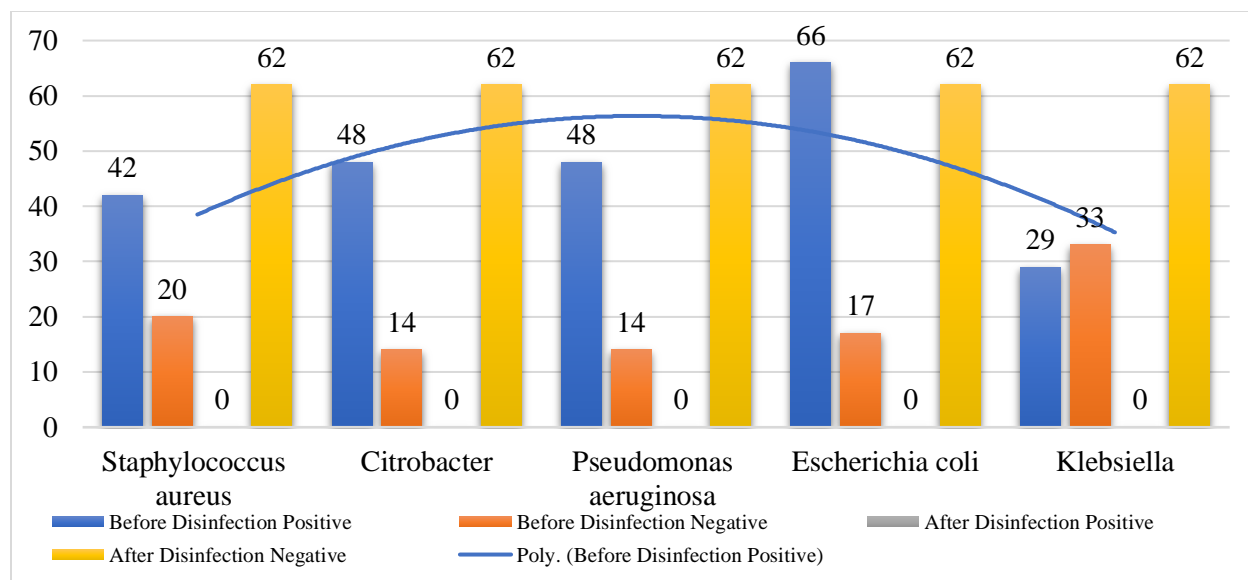


Table – II: Medical Equipment Contamination Before and After Disinfection

Disinfectant	Deconex53 plus 2% (62)			
	Before Disinfection		After Disinfection	
	Positive	Negative	Positive	Negative
Staphylococcus aureus	42	20	0	62
Citrobacter	48	14	0	62
Pseudomonas aeruginosa	48	14	0	62
Escherichia coli	66	17	0	62
Klebsiella	29	33	0	62



DISCUSSION:

The objective of this research is to prove the effectiveness of Deconex-53 plus (2%) disinfectant solution to reduce medical instruments and equipment used in the urology department for different procedures. We carried out this research at Mayo Hospital, Lahore from October 2017 to June 2018. The research primarily aimed at the investigation of surgical procedures effects on the management of different infectious diseases along with pre & post infection and procedure cost. We dealt with five most common bacteria (Citrobacter, Staphylococcus aureus, Pseudomonas aeruginosa, Klebsiella and Escherichia coli) which were commonly faced in the hospital. Before intervention, the product contamination by treating with disinfectant solution (Deconex-53 plus 2%) was 28% for Escherichia coli, 21% for Pseudomonas, 21% for Citrobacter, 18% for Staphylococcus aureus and 12% for Klebsiella. Data was also documented for decontamination of the equipment disinfection by (Deconex-53 plus 2%). Another research also studies the same topic and compared the effects of Solon, Saidox and Peroxidedis infections on different amount and type of respiratory tract for mechanical ventilation devices contamination used in the ICU of different hospitals. This research used twenty different tubes for the pre and post-disinfection evaluation after being treated with decontaminating material [12].

The outcomes show that after being disinfected all the cultures were negative which shows a positive and effective outcome of the solution against pathogens. Our outcomes are also supported by

another author who studies microtonal, glutaraldehyde 2% and Deconex-2% for antimicrobial effects against Staphylococcus aureus bacteria and showed zero counts of bacterial colony formation after the process of disinfection [11].

CONCLUSION:

Generally, the outcomes were significant between average pathogen count before and after disinfection. Pre disinfection outcomes show that medical equipment was clear and there was no bacterial growth on the instruments. Moreover, contamination reduction percentage with gram-positive & negative microorganisms was also reduced significantly after disinfection.

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