



## **Use of Chlorhexidine on Umbilicus in Prevention of Neonatal Sepsis**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Objectives:** The main objective of the study is to analyse the use of chlorhexidine on umbilicus in prevention of neonatal sepsis.

**Materials and Methods:** This cross sectional study was conducted in Sheikh Zaid hospital Rahim Yaar Khan during March 2020 till September 2020. The data was collected through non-probability consecutive sampling technique. The data was collected from 100 infants. Arrangements with a grouping of 4.0% free chlorhexidine were set up by weakening 20% chlorhexidine digluconate to the proper fixation with cleaned water.

**Results:** The data was collected from 100 neonates. All the demographic values which include age, gender, gestational age and mode of delivery were calculated. According to baseline values the birth weight of chlorhexidine group was  $1.87 \pm 0.463$  kg and dry cord group was  $1.69 \pm 0.421$  kg. Umbilical sepsis is observed in only 1 patient in group I and in 3 patients in group II. Only single mortality was observed in group I and in 6 neonates in group II.

**Conclusion:** It is concluded that chlorhexidine umbilical cord care is more appropriate than the currently WHO recommended dry cord care.

*Keywords: Sepsis; WHO; neonatal; mortality.*

## 1. INTRODUCTION

Neonatal mortality is still high in Pakistan at 55 neonatal deaths per 1000 live births (DHS 2012–13). Each year, approximately 202,000 newborns die within 28 days of birth in Pakistan. Tainting of the umbilical line can prompt omphalitis, portrayed by discharge, stomach erythema, or expanding [1]. Sterile conveyance and postnatal-care rehearses are broadly elevated as significant intercessions to lessen danger of omphalitis and passing. There are not many explicit data, notwithstanding, on omphalitis rate and little proof for ideal rope care practices to forestall string diseases and mortality locally, so better examinations are desperately needed [2].

Examiners in clinic based examinations in agricultural nations have portrayed the attributes of omphalitis, and revealed a scope of occurrence gauges (2–77 per 1000 medical clinic conceived newborn children). Locally, where irresistible test is higher and numerous cases go unrecognized, danger could be higher. Local area based case-control examines have zeroed in on danger factors for neonatal lockjaw, and give some proof that effective cleaning agents on the string are protective [3]. In settings where neonatal lockjaw has been killed yet unhygienic string rehearses keep on putting infants in danger, effective germ-killers may ensure against infection [4].

In the agricultural nations, where incompetent and unhygienic neonatal care rehearses are normal, there is a consistent prerequisite of reasonable and safe local area based mediations with demonstrated adequacy to forestall contamination in babies. Since umbilical stump diseases may quickly advance to foundational sepsis, ideal line care is particularly significant in anticipation of neonatal sepsis. Without adequate proof preferring job of effective anti-microbials in counteraction of sepsis, dry rope care is for the most part suggested. Chlorhexidine effective application on string stump has been appeared to diminish umbilical colonization, umbilical sepsis and consequently potentially foundational sepsis [5].

### 1.1 Objectives

The main objective of the study is to analyse the use of chlorhexidine on umbilicus in prevention of neonatal sepsis.

## 2. MATERIALS AND METHODS

This cross sectional study was conducted in Sheikh Zaid hospital Rahim Yaar Khan during March 2020 till September 2020. The data was collected through non-probability consecutive sampling technique.

### 2.1 Data Collection

The data was collected from 100 infants. Arrangements with a grouping of 4.0% free chlorhexidine were set up by weakening 20% chlorhexidine digluconate to the proper fixation with cleaned water. The cleanser and water purifying arrangement was set up by weakening Ivory Liqui-Gel, a gentle purging specialist reasonable for infant skin, with filtered water. In groups relegated to chlorhexidine or cleanser and water purging, guardians got instructive messages at each visit inside the initial 10 days of life. Subsequent to washing their hands with cleanser and water, the specialist dampened a cotton ball with arrangement and tenderly spotted the umbilical rope stump. Data were additionally gathered on birth history, parental proficiency, and occupation. The essential results for the line purifying intercession study were occurrence of neonatal omphalitis and neonatal mortality.

### 2.2 Statistical Analysis

The data was collected and analysed using SPSS version 19. All the values were expressed in mean and standard deviation.

## 3. RESULTS

The data was collected from 100 neonates. All the demographic values which include age, gender, gestational age and mode of delivery were calculated. According to baseline values the birth weight of chlorhexidine group was  $1.87 \pm 0.463$ kg and dry cord group was  $1.69 \pm 0.421$  kg. All the values is present in Table 1.

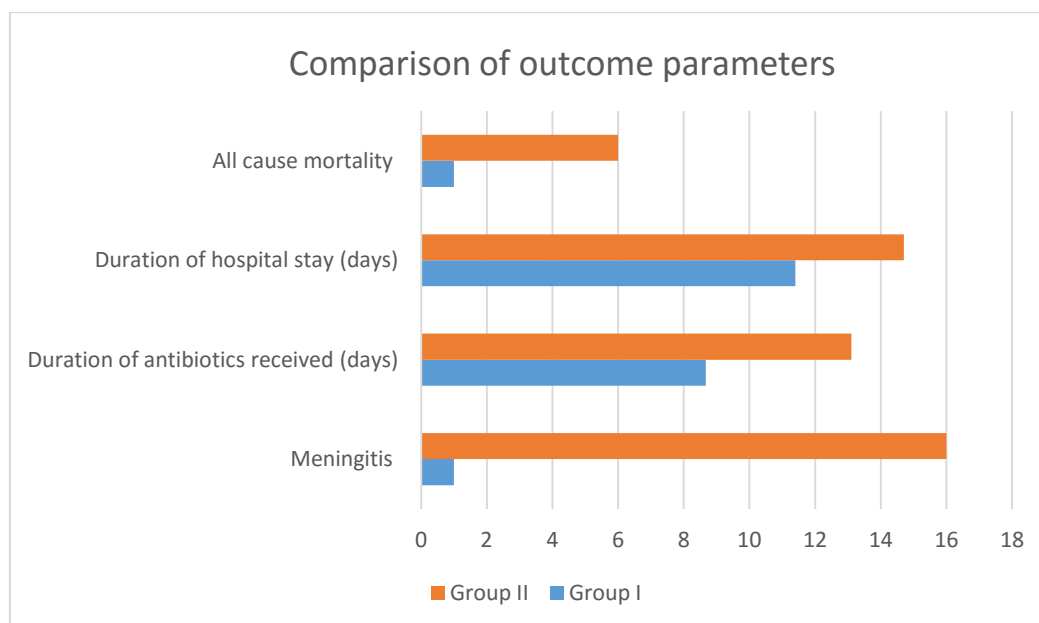
Table 2 shows the comparison of outcomes of group I and group II. Time of cord separation in group I is  $7.82 \pm 2.67$  and  $10.31 \pm 3.23$  in group II. Umbilical sepsis is observed in only 1 patient in group I and in 3 patients in group II. Only single mortality was observed in group I and in 6 neonates in group II.

**Table 1. Baseline characteristics of selected patients**

Parameter	Group I Chlorhexidine group	Group II Dry cord care group
<b>Neonatal parameters</b>		
Birth weight (kg)	1.87 ± 0.463	1.69 ± 0.421
Period of gestation (weeks)	32.35 ± 1.64	33.87 ± 1.81
Male/female	23/27	39/11
Cesarean delivery	49	51
Premature rupture of membranes	13	25
UTI	0	1
Fever in last trimester	2	3

**Table 2. Comparison of outcome parameters**

Parameter	Group I	Group II	p value
Time of cord separation (days)	7.82 ± 2.67	10.31 ± 3.23	0.02
Umbilical sepsis	1	3	–
Probable sepsis	20	5	0.043
Culture-proven sepsis	2	15	0.001
Meningitis	1	16	0.060
Duration of antibiotics received (days)	8.67 ± 5.61	13.1 ± 6.78	0.04
Duration of hospital stay (days)	11.4 ± 5.16	14.7 ± 6.62	0.04
All cause mortality	1	6	0.03



**Fig. 1. Comparison of outcome parameters**

#### 4. DISCUSSION

Our discoveries propose the part of chlorhexidine neighborhood application as a straightforward, reasonable and effectively accessible mediation for counteraction of culture-demonstrated neonatal sepsis in an asset helpless setting;

nonetheless, slight alert is prompted while summing up our outcome to the populace at large [6]. The subjects in our investigation were conveyed and overseen at a tertiary care reference setting with a recognized setting of microbiological verdure, openings to intercessions, accessibility of types of gear,

techniques and conventions, significantly unique in relation to a typical local area neonatal care setting [7].

In Germany, Kapellen et al. directed randomized controlled investigation to think about adequacy and security of chlorhexidine (CX) powder versus dry care (DC) in umbilical rope care of infant [8]. In an emergency clinic based examination from New Zealand assessing the effect of day by day rope purifying in 234 children, it was seen that string detachment happened at a mean of 10 days with Iodosan and 20 days with chlorhexidine. Meberg et al. (1990) saw that partition of the umbilical line happened altogether later in the hydrophobic material gathering than in the chlorhexidine-ethanol gathering ( $6.2 \pm 2.2$  versus  $5.8 \pm 2.1$  days). Bhutta et al. (2010), in an enormous local area based bunch randomized controlled preliminary, announced the mean line partition time as 7 days in chlorhexidine group [9-12].

Jean et al., 2012 also explained that Chlorhexidine-impregnated and strongly adherent dressings may decrease catheter colonization and CRI rates.

## 5. CONCLUSION

It is concluded that chlorhexidine umbilical cord care is more appropriate than the currently WHO recommended dry cord care. It is a basic do-capable mediation that could well add to diminishing neonatal sepsis, a significant supporter of neonatal mortality in our country. This modest and straightforward intercession can save countless infant lives in agricultural nations.

## DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

## CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

As per international standard or university standard ethical approval has been collected and preserved by the authors.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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