

Original Research

To evaluate the role of implementing sterility techniques for prevention and transmission of infections in Labor Room

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ABSTRACT:

Aim: To evaluate the role of implementing sterility techniques for prevention and transmission of infections in Labor Room.

Methods: The prospective observational study was conducted in the reputed hospital of Kota Rajasthan, India. This study was done at labor room through implementation of infection control rules. To assess the efficacy of infection control practices various factors were considered and analyzed before and after implementation of infection control policies and practices. Various aspects observed were environmental surveillance reports, clinically suspected or confirmed infections of patients in labor, needle stick injuries incidence, puerperal infections rate, neonatal infections, hand hygiene compliance.

Results: Environmental surveillance was done by sending swabs from labor room to microbiology for sterility check by culture. 8 were reported as positive for bacteria before implementing policies, whereas no organisms were reported after. Needle stick injury exposure also decreased from 15% to 4% members among staff involved in labor room works. Number of Clinically suspected or confirmed infection patients were almost same around 60% before and 40% after implementing policies, but the incidence of puerperal infections and neonatal infections reduced by proper following of implemented policies. Puerperal and Neonatal infections were noted as 33% and 39% before, 11% and 16% after introducing proper infection control guidelines. Hand hygiene compliance was observed randomly among different staff members including doctors, interns, nurses, students, biomedical management staff. Compliance decreased from 25% to 5% after introducing mandatory hand hygiene guidelines. Adherence to guidelines of personal protective equipment were observed in labor room. 40% and 81% were using PPE according to protocol before and after implementing protocols respectively. **Conclusion:** We concluded that the health care personnel are required to adhere to standard precautions and infection control guidelines and all should undergo pre employment check up to avoid transmission of infections. Participation in at least one Infection control education activities has to make compulsory for all health care personnel.

Keywords: labour, child-birth, infection prevention and control, hand hygiene

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INTRODUCTION

Sepsis is a key contributor to both maternal and neonatal mortality, accounting for 15% of all neonatal deaths and 1 in every 10 maternal deaths.^{1,2} Maternal sepsis is defined as a life-threatening organ dysfunction resulting from infection during pregnancy, childbirth, post-abortion, or postpartum period.³ Neonatal sepsis, particularly early onset neonatal sepsis (within the first 7 days of life), is an infection in the blood of the newborn transmitted from mother to child during childbirth or in the care-giving environment after birth.⁴ Although the evidence is limited or of low quality, techniques to ensure births are clean and hygienic have been associated with

decreases in all-cause neonatal mortality, infection-related mortality, and infections of the umbilical cord.⁵ The hand hygiene of healthcare workers (HCWs) is the cornerstone of these practices. Quality of care assessments have demonstrated that compliance with hand hygiene protocols is often far lower than for other evidence-based quality of care interventions.⁶ Poor compliance with hand hygiene protocols is often strongly associated with structural barriers, including overcrowding, high patient loads and understaffing, limited time and inadequate infrastructure.⁷ Gaps in institutional culture such as a lack of institutional guidelines⁸ and widespread use of gloves alone for hand hygiene have also been cited as

barriers to hand hygiene. More complex patient care processes such as labour and delivery which require a greater frequency of hand hygiene actions than other patient care procedures are associated with an increased reduction in adherence to hand hygiene protocol.⁹

The WHO-recommended hand hygiene protocol for HCWs centres around 5 moments, before touching a patient; before an aseptic/clean procedure; after exposure to bodily fluids; after touching a patient; and after touching a patient's surroundings.⁹ Childbirth constitutes multiple overlapping procedures and exposures over an indefinite period of time, often resulting in more than one "moment" presenting simultaneously. However, studies that focus on hygiene compliance often reduce assessments to a dyadic relationship between hygiene actions and individual procedures, such as handwashing with soap (HWWS) and glove use prior to preparing for the birth.¹⁰ These assessment methods do not capture the shifting dynamics of risk inherent in childbirth.

Aseptic technique is a set of specific practices and procedures performed under carefully controlled conditions with goal of minimizing contamination by pathogens.¹¹ The effectiveness of infection control practices depends on nurse's conscientiousness and consistency in using effective aseptic technique. It is human nature to forget key procedural steps, or when hurried, to take short cuts that break aseptic procedures. However, failure to comply with basic procedures places the client at risk for an infection that can seriously impair recovery or lead to death.¹² Staff nurses play an important role in risk reduction by careful attention to hand washing and by following guidelines to reduce technical risks associated with patient care.¹³

MATERIAL AND METHODS

The prospective observational study was conducted in the reputed hospital of Kota Rajasthan, India, after taking the approval of the protocol review committee and hospital ethics committee. This study was done at labor room through implementation of infection control rules.

PROCEDURES WERE IMPLEMENTED IN THE LABOR ROOM

- Mandatory hand hygiene policies
- Education training for safe handling and disposal of sharp objects
- Usage of protective PPE
- Hand wash before touching newborn babies
- Should wear sterilized sandals in labor room
- Visitors are not allowed
- Strict aseptic precautions to be followed during labor

- Regular environmental surveillance (every 15 days swabs from various places in labor room sent for sterility check)
- Spread sheets on labor stretch should change for each patient.
- Separate delivery stretches for infectious suspected/confirmed persons.
- Separate units in NICU for babies born to infectious mothers.

To assess the efficacy of infection control practices various factors were considered and analyzed before and after implementation of infection control policies and practices. Various aspects observed were environmental surveillance reports, clinically suspected or confirmed infections of patients in labor, needle stick injuries incidence, puerperal infections rate, neonatal infections, hand hygiene compliance. Here infection control indicator rates were collected and analyzed representing in the form of percentages.

RESULTS

Among various Infection control indicator rates, we have selected indicators pertaining to environmental surveillance reports, clinically suspected or confirmed infections of patients in labor, needle stick injuries incidence, puerperal infections rate, neonatal infections, hand hygiene compliance to do this study. Infection control indicators were analyzed before and after implementation of various rules and regulations in labor room, which are depicted in table1. Environmental surveillance was done by sending swabs from labor room to microbiology for sterility check by culture. 8 were reported as positive for bacteria before implementing policies, whereas no organisms were reported after. Needle stick injury exposure also decreased from 15 to 4 out of 100 members among staff involved in labor room works. Number of Clinically suspected or confirmed infection patients were almost same around 60% before and 40% after implementing policies, but the incidence of puerperal infections and neonatal infections reduced by proper following of implemented policies. Puerperal and Neonatal infections were noted as 33% and 39% before, 11% and 16% after introducing proper infection control guidelines. Hand hygiene compliance was observed randomly among different staff members including doctors, interns, nurses, students, biomedical management staff. Compliance decreased from 25% to 5% after introducing mandatory hand hygiene guidelines. Adherence to guidelines of personal protective equipment were observed in labor room. 40% and 81% were using PPE according to protocol before and after implementing protocols respectively

Table 1. Parameter before and after infection controls

Parameter	Before infection control	After infection control
Surveillance	8/100	0/100
Infection	55/100	46/100
NSI	15/100	4/100
Puerperal infection	33/100	16/100
Neonatal infection	39/100	11/100
Hand hygiene compliance	25/100	5/100

DISCUSSION

Well-conceived and carefully implemented infection control (IC) programs reduce illness, prevent death and save money.¹⁴ The most important feature of a successful IC program is a supportive organizational structure emphasizing a commitment to a culture of safety that allows for successful monitoring of the appropriate components of IC.⁹⁻¹³ In the acute care setting, good evidence demonstrates that nosocomial infections are significantly reduced by IC programs that include trained personnel.¹⁵

Attention to hand hygiene prevents many healthcare-associated infections. A recent review documented more than 20 studies in the acute care setting in which improved hand hygiene was associated with measurable reductions in carefully defined hospital-associated infections. Hand hygiene is an important component of the infection control “bundles” which have proven efficacy for the prevention of catheter-related infections, ventilator-associated pneumonias, and urinary catheter sepsis. Although the best efficacy measurements have occurred in the hospital setting where endpoints such as bacteremia are more easily detected and measured, improved hand hygiene is also associated with significant reductions in diarrheal and respiratory illnesses. In the outpatient setting, alcohol and chlorhexidine-based products are more effective than soap and water for removing bacteria from hands, but soap and clean water remain important interventions.^{16,17}

Awareness pertaining to infections during pregnancy and labor increased among women and also due to increased health care facilities and various health education programmes in India, many women are availing the benefits of institutional delivery and neonatal care. Infections are contracting through unhygienic delivery practices at home, but poor infection control practices at labor rooms increases the chances of puerperal infections and neonatal infections. So there is a very much need to maintain labor and delivery units with proper sterility techniques and following infection control guidelines. Infection is a common issue in the hospital setting and we tried to assess the factors of infection in the labor room. Hand hygiene compliance decreased from 25 to 5 persons after introducing mandatory hand hygiene guidelines. Adherence to guidelines of personal protective equipment were observed in labor room. 40% and 81% were using PPE according to protocol before and after implementing protocols respectively.

Many of the hospital authorities are providing enough facilities to reduce infection rate, but health care personnel were not utilizing those facilities properly because of high work load, have to finish their works within turnaround time in busy hospitals. In contrast, government hospitals facing many problems for providing better healthcare facilities due to lack of resources or funds, high patient load because of low cost and incentive benefits, unhygienic practices at hospital surroundings and less availability of faculty in rural health settings.¹⁸

Puerperal and Neonatal infections were noted as 33% and 39% before, 11% and 16% after introducing proper infection control guidelines. Puerperal sepsis accounts for approximately 15% of all maternal deaths, which is the second most common cause after hemorrhage in India.¹⁹ World Health Organization provides guidelines for clean practices, clean equipment, a clean environment and the availability of diagnostics and treatment.²⁰⁻²² Child survival and safe Motherhood programme has started many advantages to children and pregnant women in terms of Immunization and anemia prophylaxis, ante natal checkup, new born care at home, vitamin A prophylaxis, care at birth, promotion of clean delivery and also stated that maternal mortality can be reduced to a great extent provided adequate care is ensured to women during pregnancy and delivery. The National Rural Health Mission (2005-2012) main objective was the continued promotion of institutional deliveries.²³

CONCLUSION

All health care personnel are required to adhere to standard precautions and infection control guidelines and all should undergo pre employment check up to avoid transmission of infections. Participation in at least one Infection control education activities has to make compulsory for all health care personnel.

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