Dear Editor,

The microbiological pattern of early onset neonatal sepsis (EONS) is different from late onset sepsis and is associated with several peri-natal risk factors. In view of the high mortality associated with this condition septic screening is carried out and empirical treatment with antibiotics started in the presence of two or more of these risk factors, resulting in a large number of babies receiving unnecessary antibiotics.

In order to identify these risk factors and the infective organisms so that empirical treatment with antibiotics could be more focused in our hospital, (a private sector teaching hospital providing level III care) a small case control study was carried out. The study group comprised of 32 consecutive babies with clinical features of sepsis and less than seven days of age and 60 randomly selected well babies discharged without any clinical evidence of sepsis during the same period formed the controls. Blood culture was sent for all babies and C reactive protein for 25 babies suspected to have sepsis. Other relevant investigations were done as needed.

The incidence of EONS in the study period was 34/1000. A positive blood culture was obtained in 13 babies with sepsis (40.6%) which is similar to that reported by Kaushik and Rao but lower than that observed by Tallur. C reactive protein was positive (more than 8mg/dl) in 32% (8/25). The most common pathogen identified in our study was Klebsiella pneumoniae (6/13) which is similar to that reported by others. However, group B streptococci and E. coli, which are common pathogens, causing early neonatal sepsis in the western countries were not seen in this study. Other organisms isolated were coagulase negative Staphylococcus (3/13), Pseudomonas spp (2/13), Micrococci spp (1/13) and A fecalis (1/13). The parameters considered for analysis of risk factors were antenatal care, birth order, birth weight, gestational age, gender, maternal fever, premature rupture of membranes (PROM), mode of delivery, birth asphyxia and meconium-stained liquor. Significant risk factors for EONS identified in this study by uni-variate analysis were pre-term and low birth weight babies, gravida less than or equal to two, maternal fever and PROM for more than 16 hours while multivariate analysis showed only pre-term delivery and PROM for more than16 hours to be significant risk factors which is similar to the observations of other investigators.

An interesting observation was that out of five mothers who had fever at the time of delivery, four had babies with a positive blood culture. Likewise, out of eight babies who had a positive CRP, six had a positive blood culture. However, this association between maternal fever, positive CRP and positive blood cultures is not statistically significant and needs a larger study to substantiate the observation.

In conclusion, significant peri-natal risk factors for EONS, identified in this study, were prematurity and rupture of membranes more than 16 hours and the most common infective organism was Klebsiella pneumoniae.

**References**


**Bacterial Contamination of Mobile Phones of Health Care Workers**

Dear Editor,

Nosocomial infections continue to pose risks of increased mortality and morbidity in patients. The hands of healthcare workers (HCWs) play an important role in
transmission of this infection. Over the past decade, mobile phones (MPs) have become an essential accessory in our social and professional life. The mobile phones of HCWs harbour many harmful pathogens which serve as a reservoir for nosocomial infections. Thus the etiological agents of nosocomial infection have found a significant, unique and perfect way to spread in our hospital. In this study we investigated the rate of bacterial contamination of mobile phones of HCWs employed in our tertiary healthcare teaching hospital, located in Chandigarh, India. We compared this contamination rate with that of our control group. Attendants of patients in OPDs, not working in any healthcare setting, formed our control group.

Random sampling of 200 HCWs, from December 2007 to February 2008., was carried out. Various areas of the hospital included were OPDs, wards, ICUs, CCU, burn wards and laboratories. A sterile swab moistened with sterile demineralised water was rotated on the sides and over the keypad of mobile phone. The swabs were immediately inoculated and streaked onto five per cent sheep blood agar and eosin methylene blue agar (Hi-Media, India). Plates were incubated aerobically at 37°C for 24 hours. Isolated organisms was processed according to colony morphology and gram stain. Bacteria were identified according to standard protocol (Mackie and McCartney). Tests for identification of gram positive cocci included catalase, Oxidative/ Fermentative test, anaerobic mannitol fermentation and coagulase production. Oxacillin sensitivity of *Staphylococcus aureus* was carried out by using oxacillin disk diffusion test.

In total, 200 HCWs, 97 doctors, 55 nurses, 42 laboratory technicians and 6 safai karamcharis were included. Area wise distribution of test sample were as follows; 71 from OPDs [paediatrics (9), gynaecology (10), medicine (11), dermatology (4), ophthalmology (10), pulmonary medicine (5), psychiatry (3), surgery (8), otolaryngology (4) and dental (7)], 55 from wards [paediatrics (5), gynaecology (7), labor room (6), medicine (8), ophthalmology (4), pulmonary medicine (5), surgery (5), burn (7), orthopaedics (5) and blood bank (3)], 21 from laboratories (microbiology, pathology, biochemistry) and 53 from high risk areas [ICU (13), CCU(3), PICU(9) and emergency (28)].

Bacteriological analysis revealed that of the 200 MPs sampled, 144 (72%) were contaminated with bacteria. Among 144 bacterial isolates from mobile phones, the following number and type of bacteria were isolated: 26 methicillin resistant *Staphylococcus aureus* (MRSA), 46 methicillin sensitive *Staphylococcus aureus* (MSSA), 19 coagulase negative *Staphylococcus* (CONS), 4 *Micrococcus* spp., 2 viridans *Streptococci* and 47 aerobic spore bearers. Hence, 72(36%) of the mobile phones were contaminated with bacteria which are well known to be associated with hospital associated infections i.e. *Staphylococcus aureus*. These were defined as significant isolates i.e. the organisms commonly associated with nosocomial infections. MRSA was present on 18% mobile phones of HCWs in our health care settings. These deadly pathogens were found on the mobile phones of 12 doctors, six nurses, six laboratory attendants and two safai karamchari [Figure]. Area wise distribution of MRSA showed; 12 from HCWs working in OPDs, six from laboratories, five from wards, two from emergency and one from nursery.

A total of 50 control samples were taken. Five swabs from control group showed growth of Coagulase-negative *Staphylococcus* and the remaining were sterile. Gram-negative bacteria and *Enterococcus* species, surprisingly, were not isolated from any of the mobile phones. This could be because the hands of HCWs at our hospital setting are predominantly colonized with *Staphylococci*. Similar studies conducted by Brady RRW et al., UK and Karabay O et al., Turkey suggested that the isolation of gram negative bacilli from the mobile phones was less i.e. 4.76% and 7.2% respectively. Khivsara et al reported 40% contamination of mobile phones by *Staphylococcus* and MRSA from HCWs working in a Mangalore hospital. In a similar study from Turkey hospital, only 9% of mobile phones sampled showed contamination by bacteria associated with nosocomial infections. Similarly, Brady et al. said 14% of mobile phones showed growth of bacteria known to cause nosocomial infection. Comparing these studies with our study, a higher percentage (36%) of mobile phones sampled was contaminated and 18% HCWs had MRSA growing on their mobile phones and if we look at the rate of MRSA isolates amongst skin and soft tissue infections at our institute then it is about 23.08%.

This study highlights mobile phones as a potential threat in infection control practices and could exaggerate rate of healthcare – associated infections. Mobile phones were found to carry these bacteria because count of these bacteria increases in high temperature and our phones are ideal
breeding sites for these microbes as they are kept warm and snug in our pockets and handbags. Also, there are no guidelines for the care, cleaning and restriction of mobile phones in our health care settings. Hence, in a country like ours, mobile phones of HCWs play an important role in transmission of infection to patients, which can increase the burden of health care. In conclusion, it can be said that hand hygiene is greatly overlooked and under-emphasized in health care settings. Simple measures such as increasing hand hygiene and regular decontamination of mobile phones with alcohol disinfectant wipes may reduce the risk of cross-contamination caused by these devices.[3,7]

References


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