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## Original Article

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# Current Practice of Prevention and Management of RDS in Bangladesh

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***ABSTRACT***

***Objective:*** *To find out what obstetricians and neonatologists are doing to prevent and treat Respiratory Distress Syndrome right now.* ***Methods:*** *It was a cross-sectional survey research with participants from several teaching/referral hospitals around the nation.* ***Results:*** *46% of 150 doctors participated in this survey identified 10-30% of cases of premature births. The majority physicians (71.3 %) favoured use of antenatal corticosteroid (ACS) and 61.33% favoured four doses of Dexamethasone administered every 12 hours. The usage of repeated doses of corticosteroid was less prevalent (56.7%). RDS diagnosis was less prevalent among neonatologists (58%) and most diagnoses were made clinically. Nevertheless, compared to other industrialized nations, neonatologists utilized surfactant in 34.7% of the cases.* ***Conclusion:*** *Respiratory Distress Syndrome is one of the most important causes of neonatal mortality of preterm LBW in the community. Therefore a common protocol based approach for prevention and management of RDS may prove critical which is currently not in practice uniformly.*

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## INTRODUCTION

Prematurity is the leading cause of infant death and morbidity worldwide. Prematurity and low birth weight (<2500 g LBW) were the second biggest cause of new born mortality in 2005, accounting for

16.5% of all baby fatalities[1]. Respiratory distress syndrome (RDS) is the most prevalent cause of respiratory distress in preterm newborns, affecting approximately half of those born at less than 30 weeks of gestation [2]. With the development of Neonatal care, a growing proportion of preterm infants are surviving, despite the emergence of new morbidities.

Respiratory distress syndrome (RDS) of the newborn, also known as hyaline membrane disease, is a respiratory ailment that affects preterm infants frequently. Surfactant is a soap-like substance created in the lungs as the fetus grows in preparation for delivery and coats the alveoli, the tiny air-exchanging sacs of the lungs, in healthy newborns. If preterm infants have not yet developed sufficient surfactant, they cannot fully expand their lungs to breathe [3]. Respiratory distress syndrome (RDS) is the main cause of mortality in preterm infants[4], affecting around 1 percent of newborns. The risk of RDS increases as prematurity increases. 60 percent of infants born before 29 weeks of gestation have a probability of having RDS[5], but babies born at full term rarely develop this condition. Maternal risk factors for preterm birth include previous preterm birth, low maternal body mass, poor prenatal care and poverty[6].

The symptoms of respiratory distress in newborns begin soon after birth, worsen throughout the first few days of life, and then settle and go away by the seventh or eighth day. By reducing the number of preterm deliveries, RDS might be almost eradicated. The majority of preterm births may be avoided with proper prenatal care. Prenatal corticosteroid medication, which helps the fetus' lungs develop more quickly, should be administered if delivery can't be postponed past 34 weeks. It is imperative that a pediatric resuscitation team attends to high-risk and preterm newborns as soon as possible. The preterm newborn may be delivered and surfactant administered into the infant's airways either immediately after birth or after RDS is detected. Mechanical ventilators with continuous positive airway pressure (CPAP) intended to avoid alveolar collapse can provide respiratory assistance for infants. In NICUs, the prevention and treatment of RDS are laborious and expensive endeavors. Therefore, the purpose of this study is to assess the current practice and expertise of doctors in managing preterm in the context of RDS prevention.

## METHODS

A cross-sectional survey was carried out in 2020 among neonatologist, pediatricians and obstetricians who were employed at various institutes located throughout the country. Participants were given a premade questionnaire, which included questions such as how frequently they encountered preterm as well as RDS at their center, and what steps they used to take for the prevention of RDS. They were also asked what criteria they used to diagnose RDS and what the standard procedure was in their institution for administering surfactant. After collecting the sheetss, the data were analysed and presented in the form of percentages.

## RESULTS

The study included responses from a total of 150 medical professionals practicing one of the aforementioned specialties. Among those, neonatologists made up

61.3% (92) of the total. Approximately 46% of physicians reported finding 10-30% cases of preterm births in their institutions (Figure-1), and 71.33% of those physicians employed preventative measures for RDS such as ACS and Dexamethasone (Figure-2).

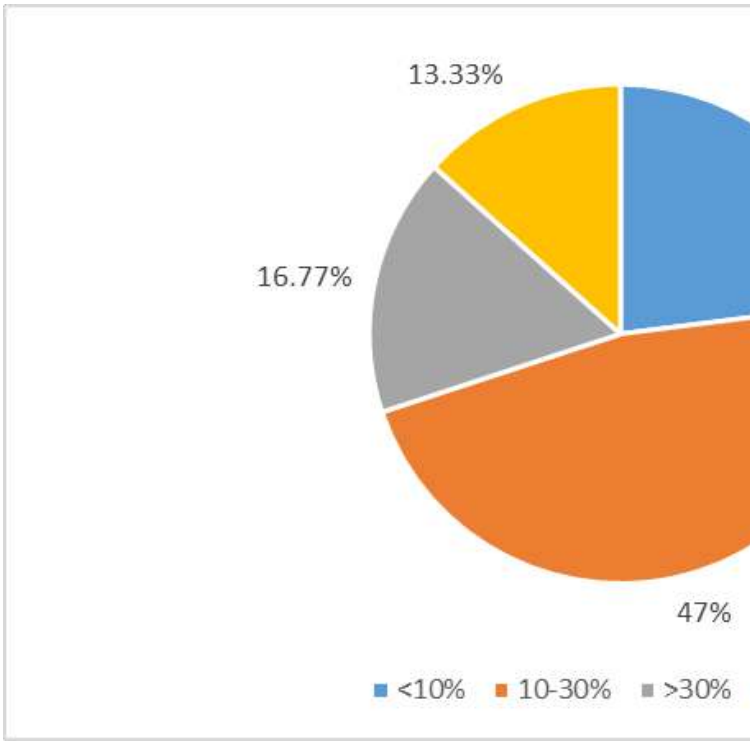



**Figure – 1: Incidence of Preterm Delivery**

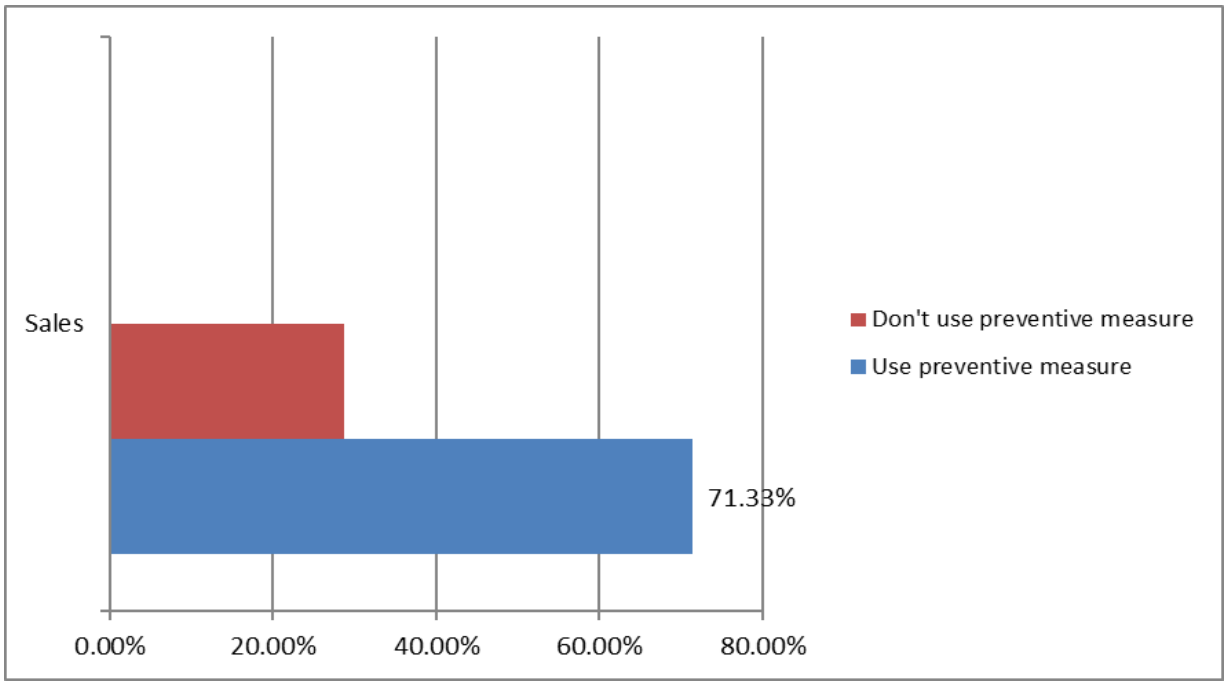



**Figure -2: Preventive measure for RDS**

About 64% physicians preferred four doses of Dexamethasone at 12 hours' interval for 48 hours (Figure-3).

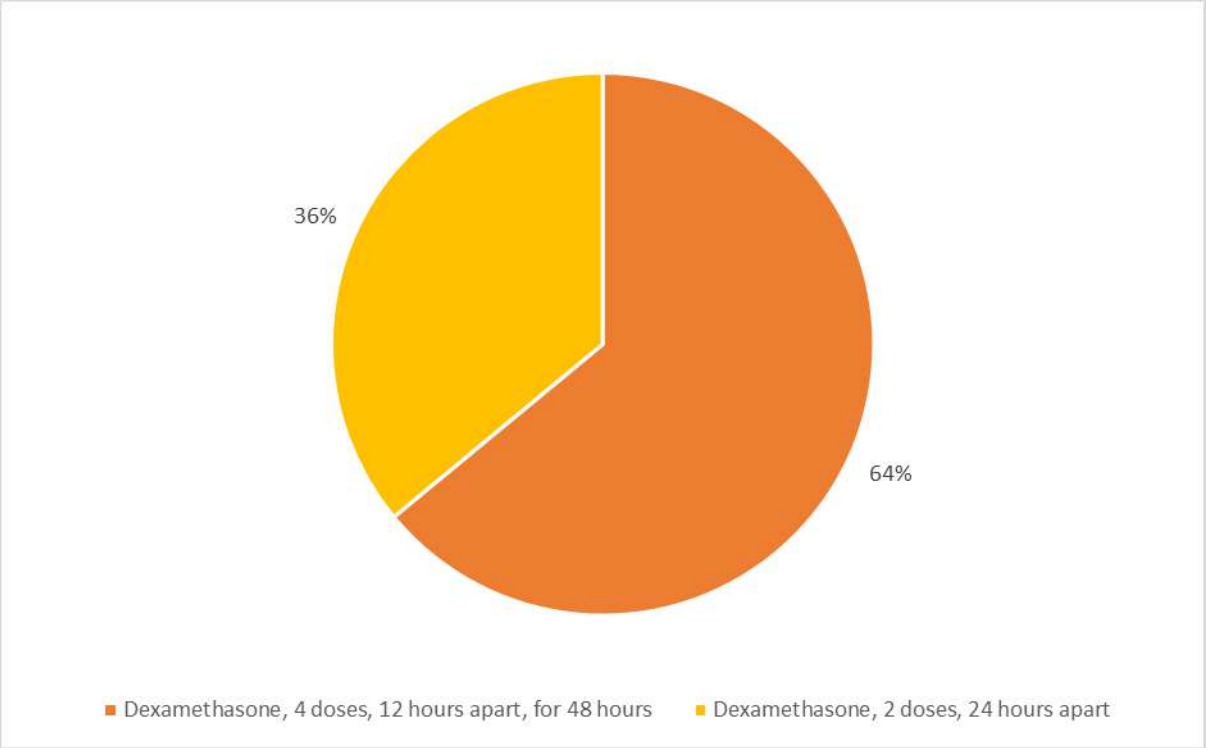



**Figure – 3 : dosage pattern used by the clinicians**

Fifty-seven percent physicians practiced of not giving repeat course of steroid if baby was delivered after 7 days (Figure-4).

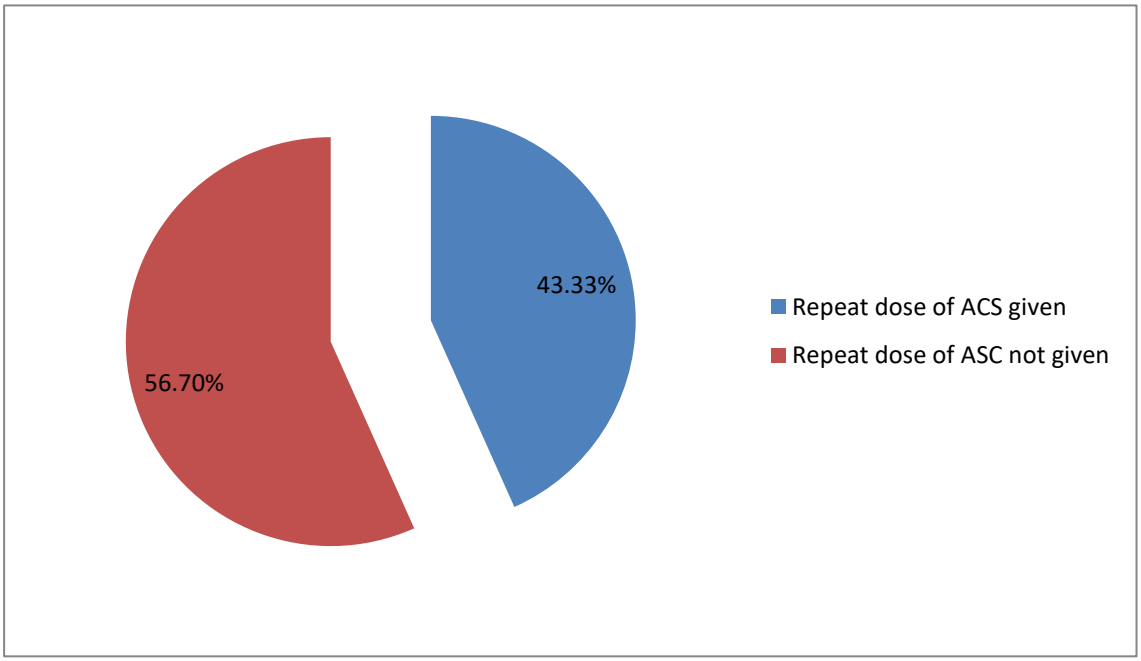
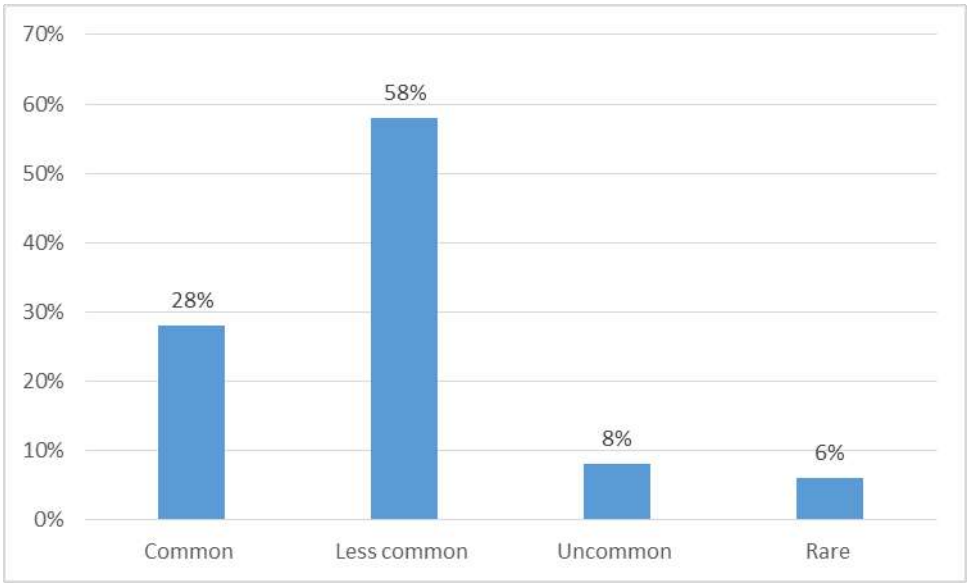



**Figure – 4 : Repeat dose of ACS**




For the neonatologists, ACS was found to be less common about 58% as shown in figure -4.

**Figure – 5: Severity of RDS**

They made a diagnosis of respiratory distress syndrome based on lung auscultation findings of tachypnoea, cyanosis, grunting, and crepitation. Sometimes they also took the results from chest X-rays and oxygen saturation into account (Figure 6). Premature children, children of diabetic mothers, and abnormal blood gas results were among the others (2.7%).

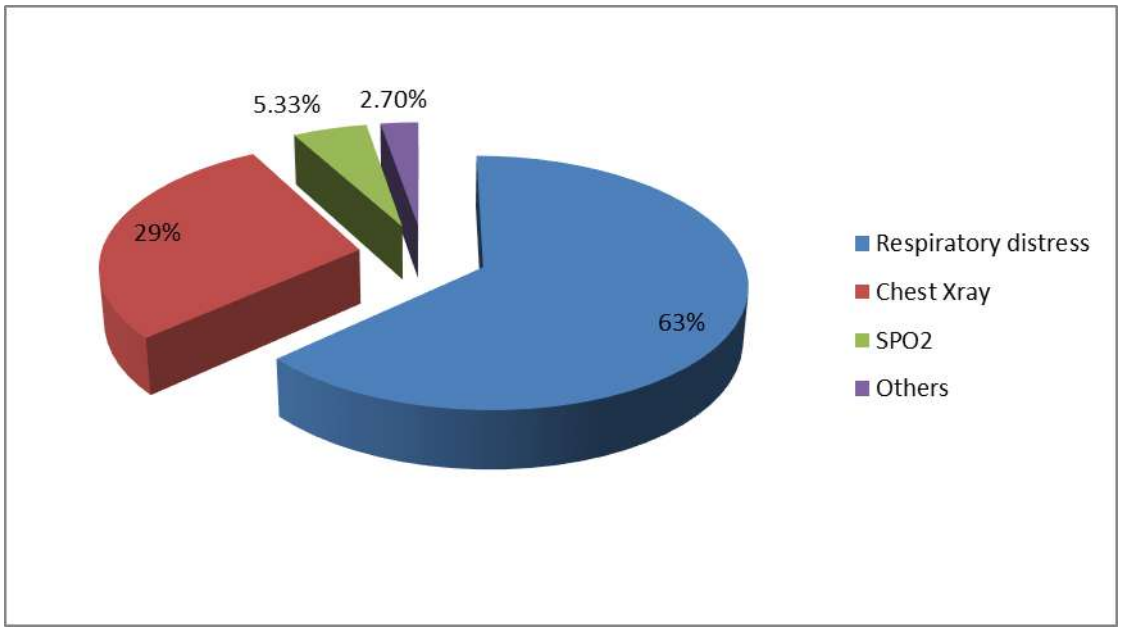



**Figure – 6: Diagnosis of RDS**

Though physicians in this conference belong with teaching hospitals of the country, but use of surfactant was still less, they used it occasionally (28%) shown in Figure-7.

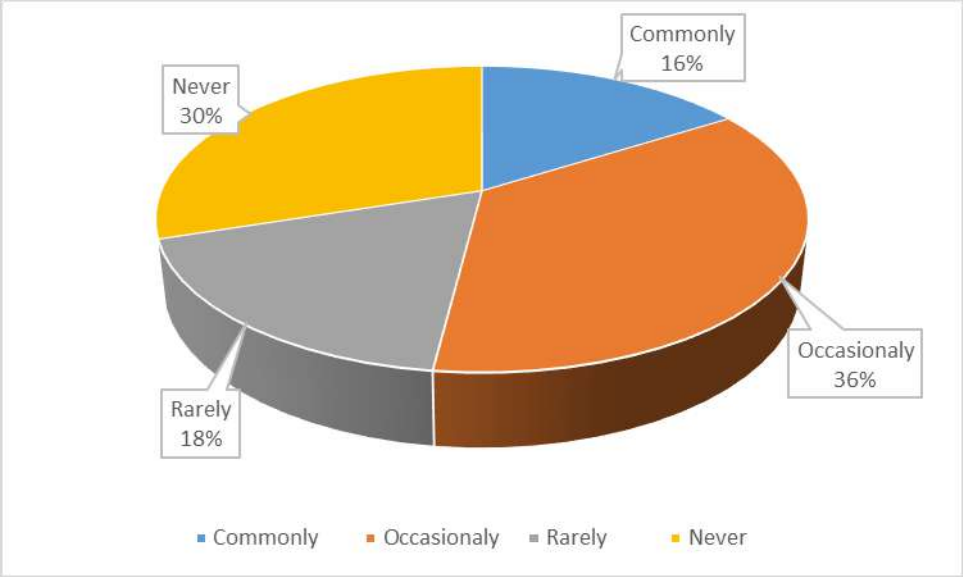



**Figure – 7: Practice of surfactant among physicians**

## DISCUSSION

In the present study participation of neonatologists were found to be more. Majority of the physicians thought that preterm deliveries occurred about 10-30% of the preterm babies in their institutions. Shah et al. in their Cohort study on preterm deliveries in Bangladesh found that 22.3% of the study population were delivered prior to 37 weeks of gestation (i.e. preterm**)** [7]. Antenatal corticosteroid as a preventive measure for RDS is preferred by 71.3% physicians like most of the studies. The 2006 Cochrane Review [8] stated in their conclusions that there is evidence to suggest benefit of Antenatal Corticosteroid (ACS) administration to a wide range of gestational ages from 26 to 34 weeks. This review also showed that RDS is reduced in all age subgroups above 26 weeks, and there is also a significant reduction in IVH and neonatal death in the subgroup from 26 to 29weeks. This survey revealed that 61.33 percent of physicians utilize corticosteroid, dexamethasone (4 doses, 12 hourly for 2 days). Dexamethasone and Betamethasone are the two steroid regimens that have been examined the most, however there are no randomized studies that directly compare these two medicines. Both treatments were shown to be equally effective against RDS [9]. However, in one recent study, Lee et al. found that betamethasone was associated with a greater reduction in risk of death than dexamethasone, corroborating Jobe's results in 2004[10]. Due to Betamethasone's unavailability in our nation, Dexamethasone was discovered to be used in our study. This study revealed that the majority of women (56.7%) do not receive a second dose of corticosteroid if delivery does not occur within seven days. Early trials[8,11,12] on the use of ACS did not show any benefit in primary outcomes for infants born more than 7 days after steroid administration, especially, no reduction in the incidence of RDS or neonatal mortality was demonstrated. This lack of benefit led to a common practice of repeating courses or doses of ACS in a non standerdized way[13]. Fifty-eight percent of attending neonatologists believed that RDS was less prevalent in their practice, however its

prevalence is significant internationally. The proportion of newborns hospitalized with RDS grew from 1.9% to 3.8% of the entire neonatal population and from 30% to 53% of all infants admitted to a neonatal unit throughout the thirty-year study period [14].

Similar to many other studies, physicians diagnose RDS based on symptoms of respiratory distress including as cyanosis in room air, grunting, tachypnea, low SPO2, and chest X-ray abnormalities[15]. The percentage of occasional users of surfactants was found to be higher (34.7%). 52% of preterm newborns in a 2008 research done in Dhaka utilized surfactant, which is a rather high percentage[16].

## CONCLUSION AND RECOMMENDATION

One of the most prevalent causes of death in newborns is the respiratory distress syndrome. Preventing and treating this widespread ailment, however, has been proven to have varying degrees of success. Having a set standard for diagnosis, prenatal steroid usage, and postnatal surfactant use is especially important in resource-poor nations like Bangladesh. In addition, the protocol should be adhered to reduce death rates associated with this prevalent issue.

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