

## Causes of Readmission of Newborns Within 7 Days Post Discharge from the Newborn Nursery 2010-2011

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### Abstract

*Background:* A complete evaluation for newborn should be done within 24 hours after birth. This evaluation, however, is intended to identify unwanted disorders and abnormalities that might have severe consequences on the newborn future life, e.g. Birth injuries, anomalies, jaundice, or cardiopulmonary disorders. *Objectives:* To determine the common causes of readmission of neonates after discharge from nursery within 7 days. *Methods:* Cross section study by reviewing the medical records of all newborns were discharged from neonatal nursery and readmitted to King Abdulaziz Medical City (KAMC) in Riyadh within 7 days after birth from 2010-2011. *Results:* Readmission rate for both years is 1.34 %. We found that the most common causes of Emergency Department (ER) visit/readmission include jaundice (38%), Genital genitourinary tract (GUT) (11.4%), gastrointestinal tract (GIT) (11.3%), respiratory (9.3%) and poor feeding (8.6%). *Conclusion:* The Jaundice was the most common cause of readmission in all age group of gestational age except in babies who were between (29-33) majority of them readmitted with GIT pathology and to rule out sepsis (R/O sepsis). Transcutaneous bilirubinometer (TcB) decrease ER visit due to jaundice from 30% to 22.4% ( $p < 0.001$ ).

**Keywords:** Newborns, Causes of Readmission, 7 Days, Post Discharge, Jaundice.

### INTRODUCTION

Comprehensive assessment for all newborns is one of the most important tasks of neonatologist; to make sure they are free from the most common diseases that may affect this age group as well as they do not have certain serious diseases that may threaten their life in their first days.

A review of the literature on the most common causes of readmission within neonatal period shows jaundice[1-5], feeding problems[6], respiratory distress and infants with gestational age <25 weeks[7] are the most common reasons of newborn re-hospitalization or Emergency Department (ER) visits. Also, some studies showed that late preterm and early term newborns had higher rates of readmission than term infants[6].

Increase in morbidity, may be a consequence of decreasing the length of the newborn inpatient period, as shown in a retrospective cohort study for infants born by uncomplicated vaginal delivery [8]. Other study found

that, early discharged for newborns less than 24 hours of life strongly associated with feeding problems like difficulty to establish a good breastfeeding which may lead to hyperbilirubinemia as a consequences [5, 9]. However, there is a study showed that the indirect hyperbilirubinemia is a common cause of readmission of the newborns after discharged from nursery in result of many complications of hyperbilirubinemia like: Glucose-6-phosphatase dehydrogenase (G6PD), dehydration, and ABO incompatibility[10].

On other hand, John R, and his colleagues evaluate the efficacy of using transcutaneous bilirubinometer (TcB) in prevention of newborn readmission. The most important finding of their study was that the number of hospital readmissions for clinically significant hyperbilirubinemia within 7 days of nursery discharge decreased. This decrease in readmission rate was most likely attributable to an increased number of babies undergoing phototherapy in the nursery. Increased use of phototherapy in the newborn nursery did not statistically significantly increase the overall length of stay (LOS) in the nursery. The most likely explanations for this are that the increase in the number of babies undergoing phototherapy was relatively small [11].

Since 1950s, the LOS for newborns after uncomplicated deliveries has steady decreasing. At that time, the average LOS was around 11 to 14 days were not unusual, while currently average stays of 3 days or less are common in many western countries [12]. In the United States, the mean length of stay reported in 1992 was 2.6 days and declined to 1.1 days in 1995 for vaginal deliveries [13]. This trend towards early newborn discharge has also been reported in 22 other countries [14]. However, the most important time period for postnatal care is the critical first 24 hours, when most newborn deaths occur [15]. Many cardiopulmonary problems related to the alteration from an intrauterine to an extra uterine environment usually become apparent during the first 12 hours after birth [16].

Therefore, this study will look for the causes of readmission after discharge from the newborn nursery within 7 days in King Fahad National Guard Hospital, which is part of King Abdulaziz Medical City (KAMC) in Riyadh from (2010–2011).

## **Objectives**

To determined the common causes of readmission of neonates after discharge from nursery within 7 days at KAMC from (2010 - 2011).

## **Study Area**

This study was conducted in newborn nursery department at King Fahad National Guard Hospital at KAMC in Riyadh, Saudi. At KAMC, the bed capacity increased to 690 beds in addition to 25 beds allocated for expected surgical operations in Ward 19, and 132 beds for admission of emergency cases. The bed capacity in nursery department that named as (Newborn Transitional Care) Level 1 –Neonatal Care is around 35 beds.

## **Methods**

A Retrospective cross section study by reviewing the medical records of all newborns were discharged from KAMC and readmitted within 7 days after birth from 1 January 2010 until 31 December 2011.

## **Data Collection Methods**

A retrospective study which done by reviewing the medical records of the patients. Collection of data done via a special form that describes reason of newborn readmission within 7 days that collected by the co-author. The form contains medical record number, age, sex, gestational age time of readmission, cause of readmission, and other information. The data analyzed by using SPSS software version 22.

## **RESULTS**

A total of 947 out of 16844 deliveries who were discharged either from Nursery or from NICU, in the period from the start of 2010 until the end of 2011 were either visit the ER or readmitted to the hospital within 7 days after discharge. Readmission rate for both years is 1.34 %. We found that the most common causes of ER visit/readmission include jaundice (38%), Genital genitourinary tract (GUT) (11.4%), gastrointestinal tract (GIT) (11.3%), respiratory (9.3%) and poor feeding (8.6%).

While The Jaundice comes first as a most common cause of readmission in all age group of gestational age we found that the babies who were between (29-33) majority of them readmitted with gastrointestinal pathology and to rule out sepsis (R/O sepsis).

Since the jaundice was most common cause of readmission of a lot of newborns in the early period of their lives, it is worth to identify the percentages of newborns who have returned during the seven days and determine whether they visited the ER and managed then discharged from there or they need further treatment in the pediatric wards in the hospital.

Fortunately, there is a large drop in the number of babies whom just visited the ER or need admission to the hospital because of jaundice seeking for treatment. The percentage of ER visits markedly decreased from 30% in 2010 to 22.4% in 2011. And readmission rate to the hospital drops from 15% in 2010 to %5.6 in 2011. That was one of the advantages of initiation of selective TcB screening for newborns as a policy of the hospital to measure the bilirubin level and then determine whether the baby need to undergo phototherapy or not ( $p < 0.001$ ).

## **DISCUSSION**

After extensive review of the literature, Izsak J, found out that jaundice is one of the common causes of readmission [17]. Also, early discharge from newborn nursery which might be a major cause of failure of establishing a good breastfeeding and hyperbilirubinemia [18], early severe weight Loss [19], and cardiac anomalies [20], were found to be another common causes of readmission. In addition, there is a study showed that the indirect hyperbilirubinemia is a common cause of readmission of the newborns after discharged from nursery in result of many complications of hyperbilirubinemia like: G6PD, dehydration, and ABO incompatibility [10].

Joe Jr, found that within the readmitted babies, the most common reasons of readmission were feeding problems (40.9%), jaundice (35.3%), respiratory distress (33%), potential sepsis (22.5%), and infection (21.2%)(6). The most important finding of our study is that the decrease in the of number of newborns who readmitted within 7 days after discharged from the hospital for significant hyperbilirubinemia, in results of initiation of selective TcB

screening for newborns as a policy of the hospital to measure the bilirubin level ( $p < 0.001$ ). This decrease in readmission rate is most likely attributable to an increased number of newborns undergoing phototherapy in the nursery.

### **Conclusion**

- ⊙ The Jaundice was the most common cause of readmission in all age group of gestational age except in babies who were between (29-33) majority of them readmitted with gastrointestinal pathology and R/O sepsis.
- ⊙ TcB decrease ER visit due to jaundice from 30% to 22.4% ( $p < 0.001$ ).
- ⊙ Readmission rate for both years is 1.34%.

### **Recommendations**

- ⊙ TcB screening is easy, simple, reliable and non-invasive and may reduce ER visits.
- ⊙ Make sure of adequate breast feeding.
- ⊙ Good newborn and maternal evaluation before discharge plus assessing home condition will have great effect in decreasing ER visit.
- ⊙ Hot line for parents to call the hospital for medical advice.
- ⊙ Respiratory syncytial virus immunoglobulin prophylaxis for preterm less than 33weeks.

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