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Importance of swallow assessment for preterm/high risk neonates important in NICU

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Abstract

Sheikh Shakhbout Medical City (SSMC), which was established in 2020, has made its footprint on the national and the regional stage as one of the largest hospitals providing world-class holistic healthcare service. In SSMC Neonatal Intensive Care Unit (NICU) is a Level-3 unit with 26 ICU cots managing complex medical and surgical neonatal cases including extreme premature babies as early as 22 weeks of gestation. Managing premature infants is a specialised field and challenging to clinicians as well as families due the complications post-delivery secondary to immaturity of body organs and their functions.

One of the specialized services provided at SSMC is swallow assessment and rehabilitation of feeding difficulties for preterm babies as well as high risk full term babies in NICU. This service was initiated in 2020 completely established in 2022 to till date with the support of Dr. Faisal Al Zidgali Chair of Neonatology along with Taniya Raj Senior Speech Language Pathologist (SLP).

Background: SLP at SSMC works as a part of NICU multidisplinary team and collaborates closely with physicians, nurses and lactation consultant nurses in weaning enteral feeds and achieving full oral feeding with no secondary complications such as aspiration for preterm and high risk babies. The clinical significance of this service includes the followings:

- **This is a unique service in UAE providing comprehensive approach of assessing and screening all preterm and at risk neonates for swallowing abilities which helps to minimize aspiration risk with oral feeds.**
- **This is a proactive and preventative approach where all preterm babies are referred to SLP before they become symptomatic with aspiration from oral feeding due to the swallow breathe incoordination.**
- **The service delivery encourages and supports breastfeeding by working closely with lactation team.**
- **Parents are educated on safe feeding strategies while oral feeding their babies during NICU stay thereby ensuring safe home discharge of these high-risk preterm babies.**
- **Reduces hospital readmission post-discharge due to aspiration or oral feeding difficulties.**
- **This is a high quality service with improvement measures in clinical outcome, patient safety and family centered patient care.**

The study concluded that feeding related complications and aspiration in preterm, term infants in NICU can be minimized with early identification of penetration or aspiration signs during the oral feeding rehabilitation provided by the SLP from 33 weeks of corrected gestation age. SLP's working in the NICU provides great contribution to train mothers/caregivers before discharge on safe feeding strategies to minimize aspiration while oral feeding post discharges.

Keywords: Neonatal Intensive Care Unit (NICU), Preterm babies, Video Fluoroscopic evaluation of Swallowing (VFSS).

List of Abbreviations:

Neonatal Intensive Care Unit (NICU); Sheikh Shakhbout Medical City (SSMC); Speech Language Pathologist (SLP); Video Fluoroscopic evaluation of Swallowing (VFSS); Last Menstrual Period (LMP); Humidified High-Flow Nasal Cannula (HHFNC); Hypoxic Ischemic Encephalopathy (HIE).

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Introduction

Establishing oral feeding in preterm babies are challenging in Neonatal Intensive Care Unit (NICU). Literature shows more than 70% of babies born as preterm have oral feeding difficulties and 40% of these babies have penetration or aspiration risk with initiation of oral feeds. Preterm babies in NICU experience lot of hurdles in making transition from enteral feeding to full oral feeding.

The involvement of Speech Language Pathologist (SPL) in the assessment as well as rehabilitation of these swallowing difficulties plays a vital role for safe discharge home. SLP uses different strategies to minimize aspiration risk with oral feeding. This in turn facilitates early discharge from the hospital, decreasing maternal and family stress as well as reducing financial burden due to the prolonged hospital stay [1].

Speech and Language Pathologist (SLP) pays close attention to the oral feeding readiness cues before weaning the preterm infants from enteral feeding. Oral feeding can be introduced by 33 weeks to 34 weeks corrected gestational age. In preterm babies weak sucking, delayed swallow and/or suck, and the swallow-respiration incoordination are a commonly seen cause that interferes in the transition to the safe full oral feeding.

Common symptoms of aspiration on oral feeding in preterm babies are gagging, hiccups, cyanosis, desaturations with oral feeding, coughing during oral feeding, apnea, bradycardia, wheezing, wet voice and noisy breathing during or post oral feeding [2]. Not all babies cough while oral feeding or exhibit respiratory symptoms when they aspirate thereby indicating risk for silent aspiration in preterm babies [3]. Silent aspiration mostly occur in preterm babies due to sensory immaturities which is identified by Video Fluoroscopic evaluation of Swallowing (VFSS), the most recommended instrumental swallow assessment when shown clinical signs of penetration/ aspiration on oral feeding trials at bedside during swallow rehabilitation.

High Risk Importance of Preterm and Neonates in NICU

Objective

The aim of the project is stated to; 1) To identify number of preterm babies referred for feeding or swallowing assessment in NICU between 2020 and 2021. 2) To identify percentage of preterm babies who needed Video fluoroscopic assessment of swallowing along with its findings between 2020 and 2021. 3) To determine percentage of readmission of preterm babies within 3 months of discharge from NICU for aspiration or other oral feeding concerns from 2020 to 2021.

Implementation

The main implementation stages of this project are discussed below:

A) Developing a departmental performance improvement proposal and evidence-based clinical practice guideline on neonatal oral feeding assessment and management in NICU which was approved by NICU multidisplinary team and the hospital practice subcommittee. Based on this guideline the SLP consult criteria were agreed between NICU physicians and are highlighted below which is also in accordance with international standards to early identify oral feeding difficulties as well as to provide early rehabilitation. SLP consultation was placed for all

- Premature babies from 33+ weeks with no ventilator support.
- Babies below 33 weeks would be considered in specific instances for oral feeding assessment when consulted by NICU physicians (such as if their gestation accuracy is +/-1 week from the estimated gestation from Last Menstrual Period (LMP) or/and antenatal scan dating as some of these babies are bigger and exhibit a lot of feeding readiness cues as early as 33 weeks).
- Babies greater than or equal to 35 weeks of age admitted to NICU requiring ≥ 72 hrs of stay with challenges in achieving full oral feeding.
- Babies with developmental concerns such as dysmorphic features, cleft lip-palate, Down syndrome, other syndromic or craniofacial disorders etc.
- Babies for oral feeding initiation post resuscitation, post extubation or weaned from Non-invasive ventilation as Humidified High-Flow Nasal Cannula (HHFNC).
- Full term babies in NICU who have desaturation or tachypnea or tachycardia on oral feeds.
- Full term babies with neurological concerns e.g. hypotonia, post cooling therapy for Hypoxic Ischemic Encephalopathy (HIE), seizures or congenital abnormalities like cardiac issues.

B) Training the NICU nurses through educational sessions to provide awareness on SLP referral criteria as well as to educate on safe feeding strategies to facilitate safe discharge and minimize aspiration risk. At least 3 educational sessions are given annually to NICU registered nurses coordinated with clinical resource nurse who facilitated nurses to place SLP consults in timely manner and in par with departmental clinical guidelines.

C) Clinical bedside swallow/feeding assessment are done for SLP consulted preterm and high risk babies to assess safety of oral feeding as well as to provide further rehabilitation as needed to minimize aspiration risk and safe discharge. Parents are educated with safe feeding strategies during NICU stay to prepare parents for safe discharge as well as to minimize readmission.

D) Closed file audit done by SLPs to identify any readmission within 3 months following NICU discharge from 2020-2021 to determine efficacy of SLP service delivery in NICU.

Results

The results showed that 348/906 babies were consulted to SLP services for swallowing/feeding assessment as well as further rehabilitation in NICU between 2020 and 2021. Taking into consideration the exclusion criteria, 56% of total admitted babies were consulted for feeding/swallowing disorders among preterm and high risk NICU babies. Of which the consults were mainly for extreme preterm babies and moderate preterm babies. Few full term babies with syndromic features as well as neurological causes were consulted to assess the swallowing safety while oral feeding.

5.4% (18/328) of babies needed instrumental swallow assessment i.e. Video Fluoroscopic Evaluation of Swallowing (VFSS) as clinical bedside swallow assessment indicated penetration/aspiration risk. Among the 18 babies who had VFSS, 3 babies had silent aspiration even with safe feeding strategies thereby was recommended to remain nil by mouth and to continue enteral feeding for nutritional needs. 44.4% (8/18) of preterm and full term babies in NICU had penetrations on successive sucking thereby specialized feeding devices as well as slow flow nipples were used along with pacing strategies to minimize aspiration risk. Seven out of eighteen (7/18) babies had no aspiration which constituted 39%.

Our data showed that only 7 out 328 babies had readmission due to feeding related concerns such as vomiting due to over feeding, coughing from fast flow nipple use, and suspected aspiration pneumonia with RSV bronchiolitis. Thereby only less than 1% of babies had readmission within 3 months of discharge for feeding related issues. 99% of the preterm and high risk babies had no readmission to hospital within 3 months of discharge due to oral feeding related concerns (aspiration pneumonia, chocking, cough or cyanosis with oral feeding) which was remarkable considering international standards. The common causes for readmission to hospital were interestingly for bronchiolitis, diarrhea/vomiting/ constipation, RSV infection, COVID infection, hernia, running nose with URTI, need for blood transfusion, identified jaundice, and gastroenteritis.

Discussion

Most of the preterm babies had delayed pharyngeal swallow inducing penetration risk when fed from fast flow nipple as well as on successive sucking. In 2020-2021 during the COVID pandemic the SLP NICU consultation volume were 56% with less than 1% of readmission rate post discharge for oral feeding related concerns. Our current data from 2022-2023 shows that the SLP consultation volume in NICU has increased significantly to 90% of the eligible babies with the clinical guidelines developed for oral feeding assessment and management of neonates in NCIU. Our 1% readmission rate is significantly low which is a great achievement comparing to the international benchmarking of 4%-7% among this high risk neonates for oral feeding related concerns [4]. This shows the efficacy of SLP service delivery in NICU for management of feeding and swallowing difficulties in preterm and high risk neonates.

In NICU prior to the discharge of preterm and high risk neonates, mothers were trained for safe feeding strategies from corrected age of 34 weeks while breast feeding as well as for bottle feeding with milk flow regulating specialized nipples. This approach gives parents the opportunities to identify the challenges while oral feeding their preterm babies as well as receiving advice from feeding specialists, nurses, and lactation team consults during the babies stays in NICU prior to discharge home from hospital. This has played a major role to minimize readmission to hospitals after discharge [5].

Impact on service delivery

Involving Speech and Language Pathologist (SLP) in the NICU service delivery can reduce aspiration while oral feeding not only during NICU hospital stay but also after discharge. Safe discharge to home with full oral feeds is significantly an important factor in NICU for preterm and high-risk neonates. With optimal parental education on safe feeding strategies and postural recommendations while oral feeding, readmission rate of these babies to hospital can be minimized in turn reducing the hospital cost [6].

We are thereby recommending this comprehensive management approach of havening swallow assessment and rehabilitation by SLP for these high risk newborns as a part of the standard care in the NICU with the aim of delivering high quality and family centered patient care [7].

Conclusion

The study concluded that feeding related complications and aspiration in preterm term infants while in the NICU can be minimized with early identification of penetration or aspiration signs during the oral feeding rehabilitation provided by the SLP from 33 weeks of corrected gestation age. SLP's who work in the NICU provides great contribution to train mothers/ caregivers before discharge on safe feeding strategies to minimize aspiration while oral feeding post discharges. Our unit had less than 1% hospital readmission rate which is significantly low comparing to international readmission rate of 4%-7% among this high risk group of patients.

Drawback

SLP consults were missed at 33 weeks-34 weeks as this was new practice change in 2020-2021 at SSMC NICU. Previously only high risk babies were consulted to SLP however with the clinical guidelines developed all preterm babies were consulted to SLP at 33 weeks-34 weeks.

Solutions

- Frequent reminders were given to the primary nurses from the charge nurses during morning rounds which facilitated change in practice and SLP consultation volumes were increasing in 2023 to till date.

- Education was given through presentations by SLP on SLP consultation criteria in par with the departmental guideline developed.
- Excel sheets were developed by unit clerk with corrected gestation age for each baby admitted in NICU which also added as a reminder for charge nurse to make SLP consultation on timely manner and SLP consultations were placed for preterm baby as they reach 33 weeks-34 weeks corrected age.

Drawback

SLP's trained to do swallow assessment and rehabilitation for neonates at SSMC were limited to only 2 SLP.

Solution

Up skilling training programme was done for the SLP's working at SSMC with pediatric skill base. These SLP's had to undergo standardized training with competency checklist completion developed in the department by senior SLP specific to skills required for swallow assessment and rehabilitation for neonates in NICU.

Future scope

- The future scope of this project is to periodically and annually monitor the readmission rate of preterm and high risk neonates getting discharged from SSMC NICU for oral feeding related concerns.
- To provide specialized training programme for Speech language Pathologist in UAE to assess and manage swallowing difficulties for preterm babies.
- To spread awareness to other hospitals by doing oral presentations, workshops and scientific writing to adopt this standard of care in NICU where all preterm babies are evaluated by SLP for early identification of oral feeding issues.

References

1. Breton S, Steinwender S. Timing introduction and transition to oral feeding in preterm infants: Current trends and practice. Newborn Infant Nurs Rev 2008;8:153–159.
2. Briere CE, McGrath J, Cong X, et al. State of the science: A contemporary review of feeding readiness in the preterm infant. J Perinat Neonatal Nurs 2014;28:51–58.
3. Chantry CJ, Howard CR. Clinical protocols for management of breastfeeding. Pediatr Clin North Am 2013;60:75–113.
4. Crouse-Hood JL. Implementing a cue based feeding protocol and staff education program in the neonatal intensive care unit. University of Delaware ProQuest Dissertations and Theses 2019;13426629.
5. Holloway EM. The dynamic process of assessing infant feeding readiness. Newborn Infant Nurs Rev 2014;14:119–123.
6. Willis CD, Saul J, Bevan H, et al. Sustaining organizational culture change in health systems. J Health Organ Manag 2016;30:2–30.
7. Whetten CH. Cue-based feeding in the NICU. Nurs Women's Health 2016;20:507–510.

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