The Speech Therapist in the Neonatal Intensive Care Unit: professional evolution in the multidisciplinary team

Sara Panizzolo [1]*; Alfredo Santantonio [2]; Giulia Nicolosi [3]

1. *Speech Therapist*
2. *1st Level Medical Director - Neonatologist UOC Neonatal Intensive Care Unit, AORN dei Colli - AO Monaldi , Naples(Italy)*
3. *Speech Therapist LP*

*Corresponding author panizzolosara@gmail.com

KeyWords:
Speech therapist in TIN, Prematurity, Oral functions, Oro-alimentary disorders, Neonatal dysphagia

Abstract

The increase in survival of premature newborns and newborns affected by clinically complex pathologies corresponds to an increase in the incidence of newborns showing signs of dysphagia. The article reports the progress of the speech therapist profession in the neonatal field and proposes a model of speech therapy intervention, built on the basis of information found in scientific literature and gained through clinical practice, specifically dedicated to prevention, evaluation and treatment activities for newborns who present oral feeding disorder or difficulties in the transition from enteral nutrition (nasogastric tube) to oral feeding (breastfeeding/baby bottle). The achievement of safe, effective and independent Full Oral Feeding represents one of the fundamental criteria for the discharge of the newborn from the NICU (AA, 2008-2018).

ESSAY

INTRODUCTION

If until the 90s only healthy premature infants survived, today, thanks to the progress of scientific research, cutting-edge technological tools, the definition of new treatment protocols (Golden Hour- SIN Guidelines, 2016) there is an increase in survival of newborns with clinically complex pathologies. This results in an increase in adverse outcomes to the primary clinical conditions and underlying disease, including an increased incidence of infants showing signs of dysphagia. Precisely because of the importance that the oral functions assume from birth and determine the quality of the evolutionary development course, the intervention of the Speech Therapist is already desirable in the neonatal period. The article intends to report the professional progress of the Speech Therapist who, in possession of specialist knowledge and skills, carries out prevention, evaluation and treatment activities for infants with dysphagia, i.e. difficulties in the transition from enteral nutrition (nasogastric tube) to oral feeding (breast/bottle feeding). The achievement of the Full Oral Feeding safe, effectiveness and independent represents one of the fundamental criteria for the discharge of the newborn from the NICU (AA, 2008-2018).

THE NEONATAL SPEECH THERAPIST

Already in 2004 The American Speech-Language Hearing Association (ASHA) has declined the knowledge, skills, role and responsibilities of the Speech Therapist who works in the Neonatal Intensive Care Units and divided the areas of intervention into six main areas: Communication and Cognition, Feeding and Swallowing, Education and Support. The communication/cognition/feeding/swallowing domains are closely interconnected because they are an integral part of the five neonatal subsystems (Synactive Theory H.ALS) whose evolution and interaction influence and determine the effectiveness of simple functions to progressively more complex ones. Nutritive Sucking (SN), a reflex primordial act linked to survival, it is a mechanical, dynamic, complex and multisystem neuro-sensory-motor process , in which the individual functions (sucking, swallowing, breathing) mature in different times and rhythms. The Suck-Swallow-Breathe (SDR) pattern matures around the 37th week GA and requires a sophisticated motor, praxic , rhythmic and temporally synchronized coordination (regulated by the Central Pattern Generator-CPG) of the organs involved in the functions: lips, jaw, cheeks , tongue, palate, pharynx, esophagus, respiratory rhythm. They must also coordinate with other complex systems represented by the Central Nervous System, the cardiorespiratory system, the motor-postural system, the gastrointestinal system, the behavioral system and regulation with the environment. It becomes understandable why for some frail newborns, achieving the FOF represents a great challenge to be faced in the hospitalization process. The complexity of this function is associated with further factors of intrinsic and extrinsic origin to the newborn: the underlying pathology (immaturity, disorganization and multi-organ dysfunction), therapeutic procedures (e.g. intubation, ventilatory support systems,

Citation: Panizzolo S, Santantonio A, Nicolosi G (2024). The speech therapist in the neonatal intensive care unit: professional evolution in the multidisciplinary team. JAHC 5:4

Received: 28/09/2023
Revised: 12/10/2023
Accepted: 17/10/2023

broncho- aspiration, the insertion of the naso-orogastric tube (NGS/SOG), with devices that focus on the naso-mouth-pharynx-esophagus area and cause a negative impact by inhibiting its movement and expected development (non-use dysphagia-oral aversion - hypersensitivity). Furthermore, the potential effect of sedative drugs used to control procedure pain (e.g. Fentanest) should not be underestimated . The factors external to the newborn are linked to the practice of variable or inappropriate dietary care models, to the use of food aids not suitable for the morphological and functional conformation of each newborn, for the multitude of caregivers who participate in the 24-hour food care, for the sometimes stressful environment linked to the peculiarities of the NICU . (fig.1)

Therefore, it was considered appropriate to build a speech therapy rehabilitative path , according to the principles characterizing the profession, which outlined the taking charge, the evaluation, the planning of the rehabilitation program, the objectives, the typologies, the steps , the verification of the treatment and counseling activities for the care of the infant with dysphagia. An intervention model was conceived characterized by a broad conceptual vision (derived from the synthesis of the numerous scientific paradigms) useful for formalizing a speech therapy approach from which to elaborate, from time to time, an individualized therapeutic treatment (fig.2) . The theoretical model considers the organizational system and the environmental typology of the TIN department, the sharing of deontological values, the exchange of specialist

*Fig.*1

MATERIALS AND METHODS

ORAL FEEDING DISORDER MANAGEMENT

To the Speech Therapist who works in the critical area specific knowledge and high skills are required (not exhaustive with only the first level university education) on issues concerning the stages of neonatal development, the pathologies that influence a normal evolution, the systems of state organization, the development of reflexes and primary oral functions (Oral Feeding Skills), readiness cues and communicative behaviors (Cue based Readiness , Cue Oral Feeeding), the different food care approaches (Volume Driven - Infant Driven- Coregulated Approach), the evaluation scales, the transition and progression algorithms, the methods and therapeutic intervention strategies. Due to the vastness of knowledge indispensable in clinical practice in the neonatal critical area, a scientific research study was launched in 2016 aimed at collecting articles, systematic reviews and meta-analyses. Numerous manuscripts have been found and translated for in- depth analysis concerning the specific topics described above as well as those connected to the principles of neonatal assistance (Developmental Care). The scientific production is copious but essentially centered on the description of individual aspects of treatment, experimental studies conducted by non-speech therapist researchers and on specific but rather limited populations of newborns.

knowledge, the integration of multi-professional acts , the adoption of recommendations and forms of communication useful for standardizing a clinical practice conducted in multidisciplinary synergy. The model includes the phase of intervention on the newborn through a Speech Therapy Treatment formally structured in two phases:

1) PRE FEEDING INTERVENTION: starting from 26-29 weeks of gestational age and on clinically stable newborns, it contemplates therapeutic activities aimed at recovering the behavioral signals of food readiness (Cue based Feeding), primary reflexes (Rooting Reflex , Non-Nutritive Suction) and oral functions (Oral Skills).

In experimental studies the widely used reference protocol is the oral stimulation program (Fucile, Gisel, Lau, 2002) which describes activities for the stimulation of the peri- and endo- oral sphere in order to normalize sensitivity, evoke reflexes and oromotor responses, favor the appearance of the sucking and swallowing reflex, and finally a training of Non Nutritive Suction (SNN) before the feeding session. The Training promotes strength, tone, precision, endurance and coordination of the lips, tongue, cheeks and jaw; it promotes digestion, decreases episodes of gastroesophageal reflux , improves oxygenation, organizes wakefulness and physiological stability, has a pacing effect on behavioral status. The entire protocol session lasts approximately 15 minutes and the program is administered 2 times per day. The Cochrane Systematic Review (Foster, 2016) also underlines that SNN is an excellent indicator of readiness, it is a necessary condition to activate SN, but by itself it is not

predictive of an effective and mature SN, which requires additional modalities and components. There are numerous experimental studies on the efficacy of oro-motor intervention programs and the conclusions report that, although there is no evidence of a high degree of evidence, it is strongly supported and recommended by all the authors for the beneficial effects it produces: it promotes SN in favor of the transitional period; it reduces hospitalization times and healthcare costs, the stress of the newborn and the family; increases the participation of the parent/ caregiver in the care of the newborn with a positive effect on the relationship and on development. The clinical reasoning that accompanies our intellectual profession on a daily basis, e he therefore guides us in decisions and actions, suggests, also in this case, that the oromotor intervention program could in some cases require a review of the type of activity and administration times, be adapted in the most appropriate forms to the peculiarities of the newborn and to our therapeutic objective, and be integrated by further specific therapeutic activities of the speech therapy discipline .

2) ORAL FEEDING INTERVENTION: starting from 33-34 weeks, it provides for a planned and individualized management in the start-up times and food progression, it follows a co-regulation approach in compliance with the principles of neuroprotection. On the basis of the nutritional indications indicated by the Neonatologist, the practical session is conducted in synergistic collaboration between the speech therapist/nurse/ mother and, depending on the needs, makes use of specific tools (e.g. bottles for babies with special needs, modulated flow teats) and therapeutic strategies (e.g. facilitating posture, chin and jaw support, paced technique bottle feeding , non-pharmacological measures for the containment of GER).

FEASIBILITY STUDY

The experimental studies were conducted only on groups of healthy premature infants, with a generalized exclusion criterion referring to all medically complex infants (sick premature infants, infants affected by cardiac, respiratory, gastrointestinal diseases, neurological damage, malformations and syndromes , comorbidity , undergoing particular medical procedures) . Even for this varied population, the TIN equally guarantees treatment and assistance, and consequently attention for cases that show dysphagia or eating difficulties. For this reason, in parallel with the definition of the conceptual intervention model, an informal feasibility study was started to verify that/if the conceived scheme had feasible characteristics, compatible with the environment and the organizational structure of the department, demonstrated therapeutic efficacy and the satisfaction of the expected results. In the period 2017-2022, at the UOC of Neonatal Intensive Care of the AO dei Colli - Monaldi of Naples, by the team of neonatologists and/ or by the nursing staff, 145 newborns were identified, with a gestational age between 29-34 weeks, suffering from dysphagia secondary to heterogeneous and multiform pathological pictures. After the speech therapy evaluation, they were included in a differentiated rehabilitation program according to the severity of the symptoms and conducted on the basis of the identified therapeutic objectives. Both stages of treatment were envisaged for infants who presented an absent or weak SNN and therefore difficulties in starting AOS . For these , in collaboration with the caregiver , the therapeutic principle of short (15 min.) and repeated (3-4 times) daily sessions was adopted, therefore differently from what was contemplated in the experimental studies of the scientific literature. On the other hand,

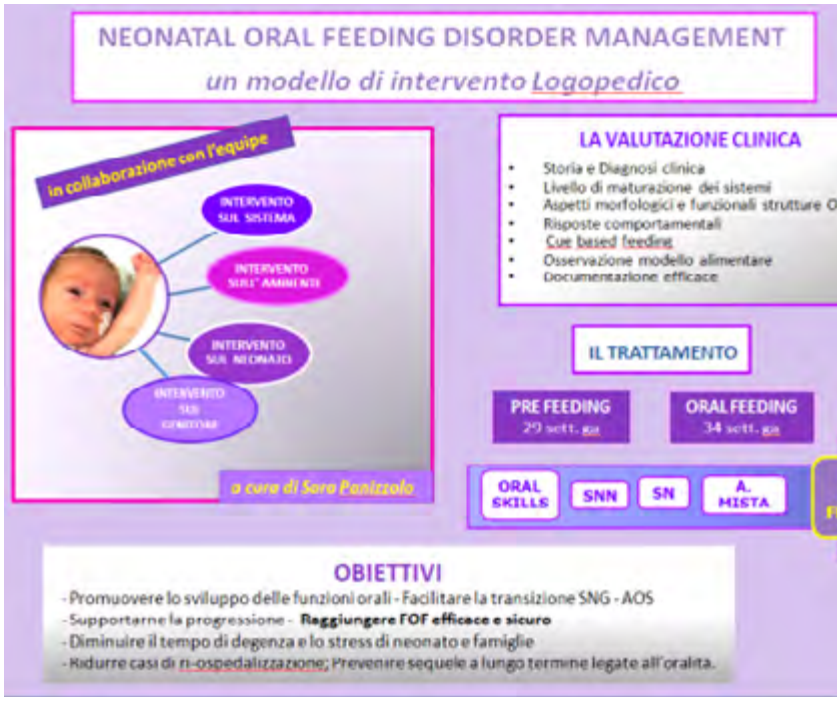

Fig.2

ESSAY

for infants who had been started on oral feeding, but remained on mixed feeding with difficulty in progressing, the treatment included only phase 2 and, if necessary, before feeding and for about 10 minutes, some activity from phase 1 specific to the enhancement of skills in terms of competence and resistance. The feeding session is generally conducted in synergy with the speech therapist / nurse / mother, follows a co-regulation approach , modulates contingent interventions based on the reading of neonatal behavioral responses (signs of well-being or stress), consolidates acquired skills, favors emerging ones , and offers, in qualitative terms, the necessary support for the achievement of the Full Oral Feeding . The intervention speech therapy had an average duration of about 9 -16 days, followed by a short period of medical and nursing monitoring for the purpose of discharge.

RESULTS

Speech therapy treatment based on a differentiated approach (on the basis of the variegated typology of newborns) showed, in 96% of cases, the desired results and comparable to those described in the literature: the recovery of oral functions (Reflexes, SNN, SN) , the reduction of the transition period from enteral nutrition to oral nutrition, the reduction of hospitalization time (and therefore of the stress of the newborn and the family), the achievement of Full Oral Effective and safe feeding , the improvement of the infant-caregiver relationship in terms of communication and participation in care. The treatment, although formally structured in two sequential and/or parallel phases, in clinical practice contemplates forms of flexibility (in the choice of therapeutic activities, in the identification of appropriate tools, and in the use of diversified therapeutic strategies) linked to the primary clinical characteristics and contingent of each newborn and to the multiple factors that influence the evolution of feeding performance. The guided learning activities aimed at the mother, in order to promote her knowledge and skills, have made it possible to create a form of therapeutic continuity (among other things not contemplated in the reference scientific literature) which has proved to be a fundamental element for improving quality of care and the implementation of a family-centred approach. The active participation of the mother in the daily continuation of the activities prescribed in the speech therapy program has contributed not only to the achievement of the therapeutic objectives but, in terms of long-term outcomes , has promoted greater parental safety, useful for the implementation of actions functional to the subsequent home educational care pathway.

CONCLUSIONS

Current progress in the field of neonatal critical care sees a greater survival of newborns presenting problems in the pre , peri and post natal period; it follows that, also due to the complexity of the alimentary gold function, there is a greater incidence of infants who show difficulties in acquiring this function. The new healthcare scenario, which sees neonatologists committed to providing answers to new health needs, has led to the formulation of advanced organizational systems within which the collaboration of the Speech Therapist in the activities of prevention, education, evaluation and treatment of newborns is officially recognised. with difficulties in oral functions and in support of food skills in hospital. Therefore, contrary to the past (LG SIN 2016), today the speech therapist is positioned as an integrated member of the team, both in intensive care and in intermediate care (Organizational Standards for Perinatal Care, SIN 2022).

The continuation of treatment after discharge from the NICU, the evaluation of short and long-term clinical outcomes , early interventions are the main objectives of the current follow-up programmes. The recommendations defined by the Organizational Standards of the Follow Up of the newborn at risk (SIN, 2022) provide for a multidisciplinary and multi-professional team in which the figure of the SPEECH THERAPIST is foreseen for the evaluation and monitoring of the communicative and linguistic aspects. In an integrated care system, a proactive speech therapy approach , adopted for this extremely fragile and predictably at risk type of population, represents a powerful strategy for the containment of negative outcomes, the control of multidimensional atypical evolutionary trajectories, the reduction of health needs and therefore the improvement of the quality of life of the newborn and of the whole family.

BIBLIOGRAPHY

1. *Als , H.* (1982). *Toward a synactive theory of development*: *Promise for the assessment and support of infant individuality*. *Infant Mental Health Journal*, 3(4), 229-243. *doi* : 10.1002/1097-0355(198224)3:4<229::*AID-IMHJ*2280030405>3.0.*CO*;2-*H*.
2. *American Academy of Pediatrics, Committee on Fetus and Newborn* (2008). *Hospital discharge of the high-risk neonates*. *Pediatrics*, 122(5), 1119-1126.
3. *American Speech-Language-Hearing Association* [*ASHA*]. (2004*a*). *Roles of speech-language pathologists in the Neonatal Intensive Care Unit*: *Position statement*. *Available at*: *www.asha.org/policy/*.
4. *American Speech-Language-Hearing Association* [*ASHA*]. (2004*c*). *Knowledge and skills needed by speech-language pathologists providing services to infants and families in the NICU environment*. *Available at*: *www.asha.org/policy/*.
5. *Arvedson , J., Clark, H., Lazarus, C., Schooling, T., Frymark , T.* (2010). *Evidence-based systematic review*: *Effects of oral motor interventions on feeding and swallowing in preterm infants*. *American Journal of Speech-Language Pathology*, 19(4), 321-340. *doi* : 10.1044/1058-0360(2010/09-0067).

6. *Crowe, L., Chang, A., & Wallace, K.* (2012). *Instruments for assessing readiness to commence suck feeds in preterm infants: effects on time to establish full oral feeding and duration of hospitalisation . Cochrane Database of Systematic Reviews,* (4). *doi* : 10.1002/14651858.*CD*005586.*pub*2.
7. *Foster, J. P., Psaila , K., Patterson , T.* (2016). *Non-nutritive sucking for increasing physiologic stability and nutrition in preterm infants. Cochrane Database of Systematic Reviews,* (10).
8. *Fucile, S., Gisel , E.G. , Lau , C.* (2002). *Oral stimulation accelerates the transition from tube to oral feeding in preterm infants. The Journal of Pediatrics,* 141(2), 230-236. *doi* : 10.1067/*mpd*.2002.125731.
9. *Greene, Z., Walshe , M., O'Donnell, C. P.* (2012). *Effects of oral stimulation for oral feeding in preterm infants. Cochrane Database of Systematic Reviews,* (3). *doi* : 10.1002/14651858.*CD*009720.
10. *Griffith, T., Rankin, K., White -Traut , R.* (2017). *The relationship between behavioral states and oral feeding efficiency in preterm infants. Advances in Neonatal Care: Official Journal of the National Association of Neonatal Nurses,* 17(1), *E*12. *doi* : 10.1097/*ANC*.0000000000000318.
11. *Lau, C.* (2014). *Interventions to improve oral feeding performance of preterm infants. SIG* 13 *Perspectives on Swallowing and Swallowing Disorders* (*Dysphagia*), 23(1), 23-45. *doi* : 10.1044/*sasd*23.1.23.
12. *Lau, C., Smith ,EO .*(2011). *A novel approach to assess oral feeding skills of preterm infants. Neonatology,* 100(1), 64-70.
13. *Lau ,C., Smith, EO ., Schanler,R . J.* (2003). *Coordination of suck-swallow and swallow breathing in preterm infants. Act Pediatrics* , 92(6), 721-727. *doi* : 10.1111/*j*.1651-2227.2003.*tb*00607.*x*.
14. *Lima, AH, Côrtes , MG, Bouzada , MCF, Friche , AADL* (2015). *Preterm newborn readiness for oral feeding: systematic review and meta-analysis. CoDAS* , 27(1), 101-107. *doi* : 10.1590/2317-1782/20152014104.
15. *Panizzolo, S.* (2017). *The Speech Therapist in the Neonatal Intensive Care Unit: approach to the infants with oral feeding disorders. Speech Therapy and Communication,* 13(2), 201-208. *doi* : 10.14605/*LOG*1321706.
16. *Panizzolo, S.* (2018). *The knowledge and skills required of the SPEECH THERAPIST working in the Neonatal Intensive Care Unit. Speech Therapy and Communication,* 14(3), 307-313.
17. *Shaker, C.S.* (2013). *Cue-based feeding in the NICU: using the infant's communication as a guide. Neonatal Network,* 32(6), 404. *doi* : 10.1891/0730-0832.32.6.404.
18. *Society Italian Neonatology* (2016). *Lines Guide from WHO- Recommendations on interventions to improve preterm birth outcomes*
19. *Society Italian Neonatology* (2022). *Organizational standards for perinatal care. Idea Cpa Publisher*
20. *Tian , X., Yi, LJ, Zhang, L., Zhou, JG, Ma, L., Ou , YX, Shuai , T., Zeng , Z., Song, GM* (2015). *Oral motor intervention improved the oral feeding in preterm infants: evidence based on a meta-analysis with trial sequential analysis. Medicines,* 94 (31). *doi* : 10.1097/*MD* .0 000000000001310.