ORIGINAL ARTICLE

# The working process of a Neonatal Intensive Care Unit

O PROCESSO DE TRABALHO EM UMA UNIDADE DE TERAPIA INTENSIVA NEONATAL

EL PROCESO DE TRABAJO EN UNA UNIDAD DE TERAPIA INTENSIVA NEONATAL

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**ABSTRACT**
The objective of this study was to analyze the organization of the working process of a Neonatal Intensive Care Unit through the relationships established between the social actors present in the micropolitical space. This study used an unconventional methodology, adapted to a qualitative study. A case series study was adopted, whose trajectory was referred to as sentinel-trajectory, through which it was possible to detect noises that affected the quality of the care provided. The analysis of the flowchart revealed weaknesses of the contract network, problems regarind the registers and documentations, and errors in the health care process.

**DESCRIPTORS**
Neonatal nursing
Intensive Care Units, Neonatal
Quality of health care
Health services evaluation

**RESUMO**
Este estudo teve como objetivo analisar a organização do processo de trabalho em uma Unidade de Terapia Intensiva Neonatal através das relações estabelecidas entre os atores sociais presentes no espaço micropolítico. Trata-se de uma metodologia não-convencional, adaptada a estudo qualitativo. Adotou-se um estudo de série de casos cuja trajetória foi denominada trajetória-sentinela e, através desta foram, detectados ruídos que influenciaram na qualidade da assistência. A análise do fluxograma revelou fragilidades na rede de contratualidade, problemas de registros e arquivamento de documentação e, erros relativos ao processo assistência.

**DESCRITORES**
Enfermagem neonatal
Unidades de Terapia Intensiva Neonatal
Qualidade da assistência à saúde
Avaliação de serviços de saúde

**RESUMEN**
Este estudio tuvo como objetivo analizar la organización del proceso de trabajo en una Unidad de Terapia Intensiva Neonatal, mediante las relaciones establecidas entre los actores sociales presentes en el espacio micropolítico. Se trata de una metodología no convencional, adaptada al estudio cualitativo. Se adoptó un estudio de serie de casos, cuya trayectoria fue denominada trayectoria-centinela y, a través de ella, se detectaron ruidos que influenciaron en la calidad de la atención. El análisis del flujograma reveló fragilidad en la de de contractualidad, problemas de registro y archivo de documentación, y errores referidos al proceso de atención.

**DESCRIPTORES**
Enfermería neonatal
Unidades de Terapia Intensiva Neonatal
Calidad de la atención de salud
Evaluación de servicios de salud

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## INTRODUCTION

Experience in daily practice with high risk newborns shows that the availability of resources considered essential according to common sense such as physical structures meeting technical standards, permanent material and consumable material in appropriate quantity and quality, and also a trained and up-to-date team, are not sufficient to ensure the quality of care delivery[1-2]. There are components related to the work process, not clearly identified within the routine, but which in fact interfere in the final product of health work: care delivery. A "*something else*" that combines both the technical component and also the (inter)relationships that are established in the organization of the work process and that, if they do not compromise the quality of care, at least affect its effectiveness.

The institutional routine is therefore expressed as a fold (of sense and nonsense), both in the individual and collective spheres, and has particularities. Hence, noisy processes operate in each singularity and also among them during the performance of actions. Such noise is made up of visible and invisible obstacles, tensions, contradictions, and strangeness in the work process[3-4]. Analogous to what is the case for societies, there are interactions of diverse natures in health facilities – economic, psychological, cultural, political, ethical, and emotional – that configure a system. Each system has its complementarities and antagonisms that regulate huge disruptions, which instead of destroying it, keeps it alive and functioning[5].

The work process in health facilities involves individuals with the need for acting and feeling, with particular views of the world. It is a "*living work*" and, due to its nature, an unpredictable work[3,6]. The analysis of micro-political space permits one to perceive how the relationships worker *versus* worker and worker *versus* patient occur. This locus of clashes combines both the technical component and the (inter)relationships that are established among the actors present in the care act. Hence if there is a routine technically satisfying but full of tensions, one needs to critically look at the relationships that are processed at a micro-political level aiming to (re)construct the entire network that is established in the production of care. It is about designing a map of the tension and strangeness present in the social networks of institutions.

In the specific case of neonatal intensive care units, the work process is also permeated by a series of particularities related to the care provided for severely ill newborns. Among these particularities the following are highlighted: the use of an almost always invasive and aggressive diagnostic and therapeutic approach; frequent use of technological innovations; the presence of a thin line between favorable responses and potentially adverse side effects to the implemented therapy; the newborn's various organic systems are immature, especially in preterm infants, which can limit these patients' physiological responses[7]. In this context, care standards require the use of techno-care models and the involvement of an interdisciplinary team qualified to stabilize the condition of newborns.

An evaluative process can work as a management instrument capable of enabling care interventions that focus on ensuring quality of care, and describe diverse experiences that aggregate visible and invisible obstacles. Evaluating, however, is not an easy task, since it requires one to find *strange* everything one is familiar with and which is part of the care routine. Identifying the tension and strangeness that exist between the duality of instituted/instituting requires one to become distant from it and spend time thinking on it, which is not always available among work teams.

## OBJECTIVE

To analyze the work process in a Neonatal Intensive Care Unit (NICU) having as the main focus the relationships that are processed in the micro-political space where care is produced.

The work process in health facilities involves individuals with the need for acting and feeling, with particular views of the world.

## METHOD

This evaluative study with a qualitative approach aims to portray the reality and bring an understanding of the dynamics of situations, its contrasts and comparisons[8]. The understanding of social phenomena and processes includes a subjective and objective analysis, the system of values of those involved, the facts and their meanings, order and conflicts.

The study's setting was a NICU of a high-risk maternity hospital located in the city of Rio de Janeiro, RJ, Brazil. The study was developed in two stages: the first included the construction of three sentinel trajectories, derived from two case studies and one interview.

Two cases were studied in the first stage of research. These were considered exemplary given the set of interventions and procedures required during hospitalization in the studied facility. Only newborns with gestational age below 32 weeks and birth weight below 1,500 grams hospitalized between January 2007 and April 2008 were selected. This type of design does not use a probabilistic sample since the study of a single case already permits the construction of the subject and its essential characteristics. The retrospective study of cases gave origin to three analytical flowcharts that allowed the chronological ordering of the facts and the identification of noise related to the micro-polices of the work process. Noise functions as a questions mark in the logic of the coordination process in care delivery. Each sentinel trajectory was analyzed based

on a flowchart, that is, a diagram-summary that permitted the creation of a scheme of the key process to characterize the studied service and also identify noise generated in the care process[3,9]. The following were used to create the analytical flowcharts: medical files (written memory) that record the passage of newborns in the unit and non-participant observation of the nursing team activities performed for the newborns participating in the study. The purpose of the non-participant observation was to collect data to support the construction of analytical flowcharts.

The second stage involved the construction of a nursing contractual network seeking to lead nurses to reflect on their role and inclusion, and on the relationships they establish in the NICU. The contractual network expresses the complex net of (inter)relationships among social actors. The organization of the network occurs through the connection existent among the elements (professionals, services, sectors, health units) and their interaction patterns. It expresses commitments, expectations, demands, agreements, coalitions, requests, and tensions among the parts. Understanding the dynamics of the connectivity implies understanding the network.

The retrospective analysis of records required: the facts to be chronologically ordered; identification of the services involved and the care units used; location of exam results, nursing records and medical reports. How records were used in the decision-making process, in relation to conduct, and in the definition of the logic of care, were verified. The non-written memory of one case was recovered through a semi-structured interview held with the mother of one of the studied newborns.

The network of commitments was constructed through discussions of focus groups and marked by the contracts established among the nursing team and the diverse social actors/services involved in the care delivered to the newborns hospitalized in the NICU. A total of 31 professionals of the nursing team participated in this study and one moderator (the researcher herself), who intervened in the discussions in order to focus and deepen the debate around the theme.

Ethical principles were followed in all the study's stages, complying with Resolution 196/96. The study was approved by the Committee for Research Ethics Concerning Human Subjects at the Fernandes Figueiras Institute (protocol nº 09/2008).

## RESULTS AND DISCUSSION

Two newborns hospitalized in a NICU were followed from birth until discharge. The first case, called *Case 1*, was followed during the 64 days of hospitalization, a period in which 216 noise elements were identified. The second case, called *Case 2*, was tracked during the 105 days of hospitalization. The description of this trajectory also included an interview with the child's legal guardian. A total of 264 noise elements were identified during the period of hospitalization (Figure 1).

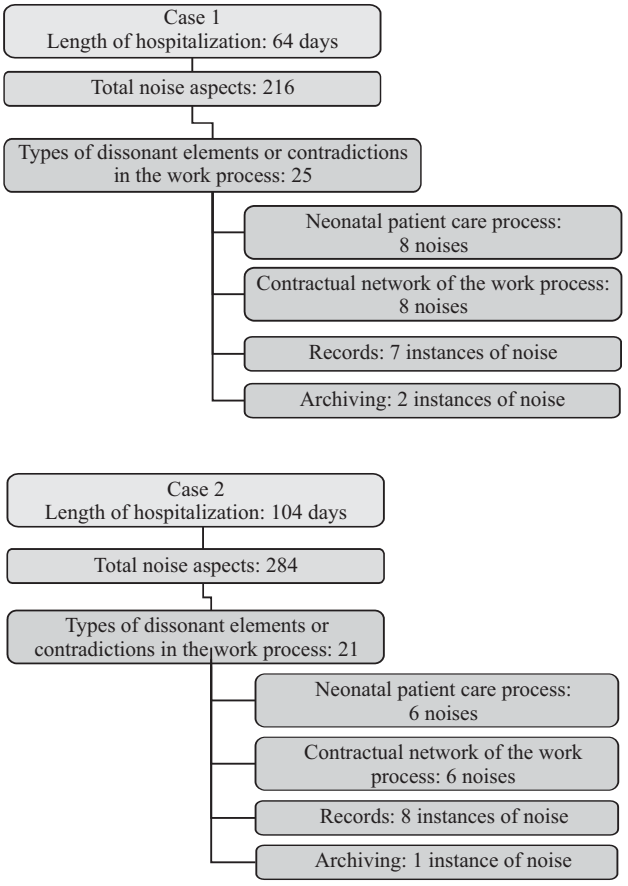


**Figure 1** - Distribution of noise according to the sentinel trajectories, Neonatal Intensive Care Unit of the studied Maternity Hospital - Rio de Janeiro, RJ, Brazil - 2008.

Various types of problems were identified in the analysis of the sentinel trajectories based on the medical files. These problems were dissonant elements in the daily care routine, which in general repeated throughout the hospitalization period. A convergence was observed between the noise identified in the study of the sentinel trajectories (Figure 1) and the construction of the contractual network. Four large groups of noise were identified and they involved: the care delivered to the newborn, the contractual network (relationships) that is established in the development of care, the quality of records, and the archiving of documents.

The identified noise was classified as *inter-unit* and *intra-unit*[6]. The inter-unit noise refers to problems that can be identified when some service, product and/or input of the care unit is requested or consumed. This type of noise allows analysis of the relationships existent between the care unit and its suppliers, or with another care unit. Intra-unit noise, in turn, consists of those problems that can be recognized within the care unit itself. Such problems interfere in the quality of care delivery since they compromise the integrality of care. Intra-unit noise can also be intra-team when related to a lack of integration among the professionals who compose the work team.

The following are listed as noise common in the studied cases (Figure 2):

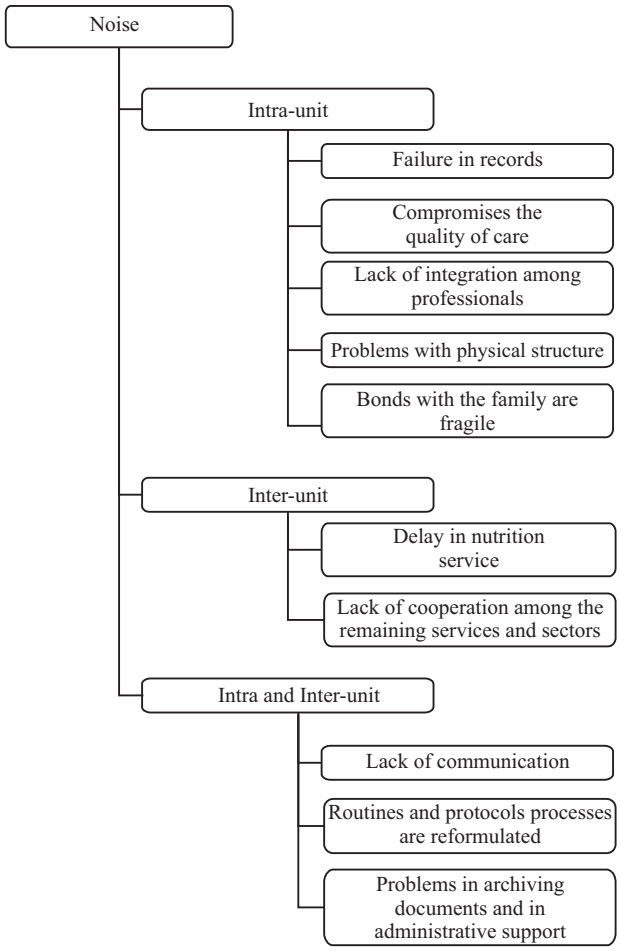


**Figure 2** - Distribution of noise identified on sentinel trajectory and focal groups, Neonatal Intensive Care Unit of the studied Maternity Hospital - Rio de Janeiro, RJ, Brazil - 2008.

1. Medical and nursing records without signature and/or stamp (intra-team noise). Even though this noise is present in medical records, it is mainly a problem found in nursing records.

2. Nursing team's records (intra-team noise). The nursing team records the care actions performed in a form intended to control water balance. Only admissions and some invasive procedures or dressings are recorded by nurses. The follow-up and comparison of the daily records of the various professionals responsible for care delivery suggest that some notes were not read or considered. The contradiction between evaluations and conduct described in some records and the discussion in the focus group indicate this hypothesis. It is worth noting that this is a one-time observation, restricted to some records during the period of case follow-up.

3. The patient's identification form was incompletely filled out (intra-team noise). The nursing team's failure to complete the headers of water balances results in loss, exchange, and homonyms cases, or incomplete filling (archiving problems).

4. Identification of dysthermia without maintenance of the temperature in the incubator in the thermo-neutral zone, a procedure that favors the control of the newborn body temperature (intra-team noise).

5. Delay or absence of conduct in situations in which the newborn did not have bowel movements (intra-team noise).

6. Lack of cooperation among professionals caring for the newborns (intra-team noise). The physiotherapist for instance, examines, takes notes, and prescribes conduct, but there are no indications in the medical or in the nursing team's records •that such recommendations/conduct occurred. The same problem is identified in relation to speech-language therapy.

7. The nutrition service delays or does not meet requests (inter-unit noise – care unit/Nutrition service). This noise was identified in those situations in which the Nutrition Service, despite having being previously contacted by the nursing team, did not send the appropriate diet. This fact affects the weight of newborns hospitalized in the NICU.

8. Delay in performing exams (Inter-unit noise).

The establishment of bonds between the person legally responsible for the newborn and the team is among the specific instances of noise that draw the most attention (intra-unit noise). The mother of one of the newborns reported in the interview that she felt excluded from the medical team's discussions in relation to the care delivered to her baby. It occurred especially during the daily rounds. The mother said she felt *invisible on those occasions*, because *they turned their backs to me while talking about my child*. In one of these visits the mother reported that she intervened and questioned the *doctors' posture*. She reported that the *doctors didn't say anything but did not turn their backs to her anymore*, though she *still felt excluded from the process*.

The focus group allowed the identification and discussion of noise that interferes in care delivery and in the construction of the contractual network, facilitating the group's discussion concerning the role and inclusion of the nursing team, of the relationships and management of care. Common points emerged from the construction of this network with the flowcharts of the sentinel trajectories and tensions/conflicts were identified in the professionals' daily routine.

Of the noise identified in the focus group, some occurrences clarify the analysis concerning the work process: lack of communication among the multi-disciplinary teams, especially among the nursing team, physicians, physiotherapists, speech-language therapists, nutrition service, and pharmacy; lack of inter-unit cooperation; commitment to quality of care; need to (re)formulate routines and protocols; problems related to the recording and archiving of documents; fragile bonds with the family.

The care process is focused on the figure of the physician and the remaining professionals in the team play a restricted role in the therapeutic project, which is defined by a specific

professional. There is restricted interdisciplinary exchange and also lack of integration and cooperation among professionals. Isolated from a more collective and interdisciplinary work, this care design generates a care dimension uncommitted to its subject/object of work: the patient. The elements essential to qualify health acts – bonds, responsibility and reception of patient– are not given much consideration in the relationship between health professionals and patients.

Communication is insufficient and predominantly occurs through medical files. Problems with the records in the medical files were evidenced in the flowcharts and in the reports of the focus groups. The records were partially read, which considerably interferes in the care process. It seems that the nursing team does not adequately use opportunities to negotiate.

Despite the complexity of this specialized unit, there are problems in the systematization of nursing care and in the daily recording by nurses in medical files. In relation to the nurses' work, the participants in the focus groups justify these occurrences of noise as consequences of *lack of time*. They state that routine activities (managing the nursing team, providing, arranging, organizing, and controlling the necessary inputs) limit their actions and participation in the therapeutic project. Despite the fact that nurses share a network of contracts and significations[10], the problems inherent to nursing know-how and to the mechanisms that enable individuals to react to what is, apparently established, are exposed.

The fragility of some contractual networks established within the studied unit is highlighted. It impedes agreements necessary to the relationship among sectors or services consolidating, which consequently produces distortions in the care process. Fragile contractual agreements have been a common characteristic of various institutions, which is verified in other studies[3-4,11-12]. The excessive effort that results from these distortions often generates rework, since a good part of the professionals' time is used asking for services already requested and in overcoming difficulties found in the daily process of care delivery. In general, such networks are spontaneously constructed and are extremely dependent on the existent interpersonal relationships and on informal mechanisms of communication.

The work process is fragmented and the projects are not, at first, explicit and properly negotiated, so as to ensure integrality of care. Such background shows the need to mobilize strategies to strengthen teamwork, focusing on integrality of care and satisfying the patients' needs. This fragmentation, a result of a work process increasingly more specialized and with a considerable incorporation of technology, in part implies restriction and differentiation of care, reduced care production, higher costs, discrimination and selection of clientele[3,6].

A bureaucratic administrative structure and a scenario formed by diverse groups of individuals (multi-professional team) that dispute their projects are identified, where medical power and autonomy predominate.

The lack of integration and cooperation among professionals is an element generating tension, expressed through a series of difficulties in practicing teamwork. The sharing of spaces (clinical meeting, daily rounds) is not effectively utilized. The autonomy of non-physician professionals (nutritionists, physical therapists, nurses) is relative in this collective work. Conduct prescribed by these professionals may not be followed and their records not valued, even if they indicate some type of abnormality not identified by the medical board. Non-physicians are there but are not incorporated into and do not embody the management of the care process.

The analysis of the flowcharts and discussion of focus groups reveal that the recommendations of the physical therapy and the speech-language services are not followed by the medical and nursing teams. According to one of the participants of the focus group *it is as if their visits did not exist*. As a consequence, tensions emerge in care process management. The medical board coordinates the care process but is not present in the unit fulltime; the nursing team, on the other hand, is always present but is not acknowledged as a managing agent or does not acknowledge itself as such. In this structure, the remaining professionals are requested according to the patient's needs but are not included in the care project and in the effectuation of care.

Care is centered on the figure of the physician, who has full autonomy regarding decisions and controls the work process in the NICU as a whole. The technological organization and work favor fragmented actions, impeding effectual teamwork existing through a collective planning of care and multidisciplinary discussion. The medical work in the NICU has the diagnosis and therapeutic process as central elements. Once interdisciplinary sharing is restricted, difficulties inherent to daily care generate contradictions and inarticulate actions where the final word comes from a specific profession[13-14].

The study revealed that there are very long hospitalizations (above 60 days). Length of hospitalization is commonly used as an indicator of hospital efficiency, a stopgap measure of costs and is seen as an indicator related to the quality of care delivery[15], though the nature of this relationship remains obscure. The evaluation of the average length of hospitalization should take into account the characteristics of the patients and of the hospital, type of remuneration for hospitalization, and availability of alternative treatments (e.g. home care). Hospitalizations significantly longer than those expected are seen as indicative of administrative inefficiency or low quality of care, since such stays may be necessary due to complications that may result from deficient care. Inter and intra-unit noise indirectly contributes to longer hospitalizations.

Analysis of the work process revealed obstacles that interfere in the quality of care delivery, creating problems and contradictions not always identified by managers and nursing professionals immersed in their daily practice. The analysis of the work process can enable the opening of the black box that involves the care delivery process and help to unveil the dynamics of technological health models. For that, barriers have to be overcome, especially those related to relationships. The NICU nursing team revealed great willingness to manifest these tensions and review contractual agreements.

Addressing critical nodes that affect the work process requires valuing resources of different natures and the participation of all the professionals who are responsible for the follow-up of inpatients. In this context, ensuring integrality of care can involve new configurations of established networks and (re)construction of relationships within the teams. The teams need to recover/establish bonds and exchange knowledge and practices.

It is believed that the stimulus to cooperative work and instituting actions and movements creates a favorable environment for the construction of the new, based on a care project collectively constructed and the focused meeting of the needs of patients[16].

## CONCLUSION

This study acknowledged health workers are subjects of the process and have power to interfere in and implement projects and thus enabled the identification of problems that interfere in the NICU, affecting the quality of care delivery. Effectiveness of care passes through the challenge of balancing the tension existent among the broad and multi-dimensional conception of appreciation of life, of technical-scientific improvement of health professionals, technological development and the rational use of the resources available in the facility.

The sentinel trajectory, a device that allows one to analyze quality of care, allowed the concomitant evaluation of the entire care process and results, indicating noise throughout the case follow-up, examples and forms of implementing a live work, that of care production– objective of this study.

For the analysis and discussion of tensions that were revealed in the flowchart to be productive, it is necessary to overcome barriers related to communication. Breaking the silence of everyday life reveals the presence of instituting processes that were not previously thought of by the model of organization and management of institutions; it also opens up possibilities to question the way the work process is put into operation and the meaning of its actions.

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