http://dx.doi.org/10.1590/0104-07072017000790016

DIFFICULTIES IN CRITICAL NEWBORN INTERHOSPITAL TRANSPORT CARRIED OUT BY THE EMERGENCY MOBILE CARE SERVICES

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ABSTRACT

Objective: to investigate the difficulties of the Emergency Mobile Care Service teams to interhospital transport critical newborn in an ambulance.

Method: this is a qualitative study carried out with 17 healthcare professionals, as physicians, nurses and drivers of vehicles working in the Emergency Mobile Care Service of a municipality in the interior of Ceará, from November to December 2014. Semi-structured, recorded interview produced the data, which we analyzed through thematic content analysis.

Results: the categories we gathered were shortage of materials, equipment and vehicles exclusive to interhospital transport; knowledge, deficient practice and training to assist critical newborns; and failure to communicate among professionals and difficulty in ambulance mobility on public roads.

Conclusion: these difficulties connect to all levels of management and require a differentiated approach in order to guarantee high level of excellence.

DESCRIPTORS: Newborn. Ambulances. Emergency medical services. Transport of patients. Qualitative research. Nursing.

DIFICULDADES NO TRANSPORTE INTER-HOSPITALAR DE RECÉM-NASCIDO CRÍTICO REALIZADO PELAS EQUIPES DO SERVIÇO DE ATENDIMENTO MÓVEL DE URGÊNCIA

RESUMO

Objetivo: investigar as dificuldades das equipes do Serviço de Atendimento Móvel Urgência para a realização do transporte inter-hospitalar de recém-nascido crítico em ambulância.

Método: estudo qualitativo, realizado com 17 profissionais de saúde, dentre médicos, enfermeiros e condutores de veículos atuantes no Serviço de Atendimento Móvel de Urgência de um município do interior do Ceará, no período de novembro a dezembro de 2014. Os dados foram produzidos por meio de entrevista semiestruturada, sendo as entrevistas gravadas. Os dados foram analisados por meio da análise temática de conteúdo.

Resultados: as categorias apreendidas foram: escassez de materiais, de equipamentos e de veículos exclusivos para o transporte inter-hospitalar do recém-nascido; conhecimento, prática e treinamento deficientes para assistência ao recém-nascido crítico; e falha na comunicação entre os profissionais e dificuldade para a mobilidade da ambulância em via pública.

Conclusão: as dificuldades mencionadas estão atreladas a todos os níveis de gestão e necessitam de um olhar diferenciado para que se garanta assistência de elevado nível de excelência.

DESCRITORES: Recém-nascido. Ambulâncias. Serviços médicos de emergência. Transporte de pacientes. Pesquisa qualitativa. Enfermagem.

DIFICULTADES EN EL TRANSPORTE INTER-HOSPITALARIO DEL RECIEN NACIDO CRÍTICO REALIZADO POR LOS EQUIPOS DEL SERVICIOS DE ATENDIMIENTO MOVIL DE URGENCIA

RESUMEN

Objetivo: investigar las dificultades de los equipos del Servicio de Atendimiento Móvil de Urgencia para la realización del transporte inter-hospitalaria del recién nacido critico en ambulancia.

Método: investigación cualitativa, realizado con 17 profesionales de salud, dentro de médicos, enfermeros y conductores de vehículos actuantes en el servicio de Atención Móvil de Urgencias de un municipio del interior de Ceará, en el periodo de noviembre a diciembre de 2014. Los datos fueron producidos por medio de entrevistas semiestructurada, siendo las entrevistas grabadas. Los datos fueron analizados por medio del análisis temático de contenido.

Resultados: las categorías aprendidas fueron: escasez de materiales, equipos y vehículos exclusivos para el transporte inter-hospitalario del recién nacido; conocimiento, practica y entrenamiento deficientes para la asistencia al recién nacido crítico; falla en la comunicación entre los profesionales y dificultades para la movilidad de la ambulancia en vía pública.

Conclusión: las dificultades mencionadas están relacionadas en todos los niveles de gestión y necesitan de una mirada diferenciada para que se garantice la asistencia con excelencia.

DESCRIPTORES: Recién nacido. Ambulancias. Servicios médicos de urgencia. Transporte de pacientes. Investigación cualitativa. Enfermería.

INTRODUCTION

The rapid and safe removal of critical newborns (NBs), such as premature infants and those with complex congenital malformations, born in centers with no resources for Neonatal Intensive Care Units (NICUs) through interhospital transport is one of the Ministry of Health recommendations to reduce neonatal mortality from preventable causes.[1] However, although Neonatology has progressed with the emergence of new equipment, therapeutics and knowledge,[2] the interhospital transport of critically ill NBs is considered an important issue in the area.[3]

Approximately 20% of neonatal transfers were inadequate in developed countries due to errors in medical regulation, teams with no transportation training, and failure in interhospital communication.[4] In Brazil, in a study with 75 NB transferred to a tertiary hospital, there were similar deficiencies related to pre-transport communication, characteristics of the team, such as the presence of qualified pediatricians in 57.3% of the NBs transports, and regarding the transportation units, 44% are transported in mobile ICU.[5]

The Emergency Mobile Care Service (SAMU) is responsible for pediatric and neonatal interhospital transport, whose conduct must comply with the guidelines established by the Ministry of Health, which regulates its activities.[6] The Federal Government has endeavored to improve the quality of transportation, making it safer for pregnant women and NBs through the Stork Network (Rede Cegonha, in Portuguese), which created the SAMU Cegonha.[7]

Because it is a dynamic and complex process, neonatal transport requires highly qualified organization and staff, with the capacity to act independently outside the neonatal unit.[8] Integrative review carried out in 2013, based on the question: what organizational behaviors are described in the literature about the interhospital transport of critical NB by ambulance?[9] evidenced the lack of Brazilian studies related to the conducts of the transportation teams of the country, showing the incipience of the investigations in this area.

Identifying flaws in the developmental stages of patient care is an important measure to make it safer. Considering the Ministry of Health proposal to work on patient safety in the transfer between issues of care,[10] the question is: what are the difficulties of the SAMU transport teams to carry out neonatal transport?

Thus, the study aimed to investigate the difficulties of the SAMU teams to perform critical NB interhospital transport in ambulance.

METHOD

This is a qualitative study, with an exploratory-descriptive character, since it allowed us to deepen the knowledge on the subject and the exposition of the subjects' perceptions and opinions of the research about the experienced reality. The study occurred at the SAMU headquarters, located in a municipality in the interior of Ceará. SAMU serves all urban and rural areas of the northern district of the state, as well as surrounding districts and localities. It has three ambulances, one of advanced support, two basic supports and a moto-ambulance.

A total of 17 healthcare professionals (five physicians, five nurses and seven ambulance drivers) had the following criteria: a minimum of two years

of experience in the SAMU and have performed critical NB interhospital transport in an advanced support ambulance. Participants were invited to the interviews during their working time, in a private place and individually, at the SAMU headquarters.

Data were obtained through semi-structured interviews, which followed a script with open and close questions about questions regarding the identification of participants (age and sex), time of experience at SAMU, time of professional training (higher level professionals), courses in neonatology and/or critical NB transport areas, in addition to the question related to the difficulties to perform interhospital transport of critically ill NB by ambulance. The data collection was finalized when the researcher realized that the information obtained in the sample as a whole, after contemplating their similarities and differences, was repeated, not collaborating with new understandings for the investigation, showing saturation of data.[11]

Data were collected from November to December 2014 with interviews via MP3 equipment. To analyze the data, we used the thematic content analysis technique, developed in three stages: pre-analysis, exploration of the material, data analysis and interpretation.[12]

In the pre-analysis, the transcribed material was organized in the light of the objectives and read exhaustively. In the second phase, exploration of the material, we decomposed and coded the data into record units (RUs) – word or set of words that synthesize the idea of a testimony – and, thus, obtained a vision of the characteristics of the results.[12] Thus, in each extract of the speech was highlighted its RU. Afterwards, the RUs were grouped according to their semantic affinity.

Finally, in the treatment of data and interpretation, the researcher, with the substantial results, performs his/her inferences and interpretations.[12] With the selection of significant speeches, the core of sense were gathered, originating groups of themes (categories). We searched for authors to support the analysis.

All spontaneously accepted to participate in this investigation and signed the Free and Clarified Consent Term, authorizing the recording. We submitted the study to the Research Ethics Committee of the Federal University of Ceará, being approved under the CAAE n. 34140914.0.0000.5054. We respected the ethical principles established for research involving human beings. In order to ensure the anonymity of the participants we identified them by the initial letter of the professional category plus the sequential number of the total of professionals of each category, for example: nurse (N1, N2), physician (P1, P2) and driver (D1, D2).

RESULTS

Of the 17 participants, three were female and 14 were male, aged between 28 and 53 years. The time of professional experience in the SAMU of all the categories investigated was from three to nine years; professional training of nurses from 19 to 28 years and physicians from 3.5 to 10 years. Regarding training in the neonatology area and/or in the critical NB transportation, we identified that only one nurse had specialization in neonatology; two physicians were certified by the *Pediatric Advanced Life Support* (PALS) course and five (three drivers, two physicians and one nurse) had a course in neonatal transport and/or critical NB.

From the analysis of the contents of the interviews, we gathered four categories: Shortage of materials and equipment; Poor knowledge, practice and training to assist critical NB; Difficulty in ambulance mobility on public roads; and, Failure to communicate among professionals.

Shortage of materials, equipment and vehicles exclusive to the new born interhospital transport

We observed the absence or insufficiency of equipment as a difficulty to perform the critically ill NB interhospital transport, which may compromise the quality of care provided. [...] *most time we do not have enough and appropriate equipment to such transportation* (N2); *we have little material to care for the newborns. We have practically only the basics to maintain airways* (N3); *the material is often inadequate. We place, for example, an adult oximeter and adapt it to a NB and sometimes it does not correctly capture the saturation* (P3); *it is hard mainly regarding the availability of material for airway and venous access in all sizes* [...] (P5).

In order to continue the service in the unit of origin of the NB, the transport teams request equipment and materials borrowed from this unit to keep the assistance going. [...] *We end up using the hospital material because our assistance lacks it, which increases our response time* (D2); [...] *we ask for infusion pumps from the hospital to transport newborns in vasoactive drugs. It takes a long time for the hospital staff to prepare the consent form for us to sign* (N5).

The transport team has found it difficult to carry out interhospital transport of critically ill NB

because the ambulance was not exclusive to the transportation. *Since we work in a pre-hospital service, we cannot keep an ambulance just to make this type of transport. We have to dismantle the car to put it together for an NB (*D1); Sometimes we are transferring and someone from the regulation calls asking us to speed up because there is another occurrence. We stopped passing important information about the NB because we have to leave the place quickly. We only have one advanced support ambulance to handle transfers and other occurrences of severe patients (P3); Since we work in a pre-hospital service I cannot keep an ambulance just to do this transport (P4).

Poor knowledge, practice and training to assistential new born

Participants reported that they have poor knowledge to deal with critically ill NB, highlighting the need for greater involvement of managers and professionals in the neonatal transport field. *Often we do not have much knowledge to deal with newborns* (P3); [...] *we have no training on NB transportation. The entity we work for usually does not offer this course either.* [...] *update in congress is not usual, except in very specific congresses* [...]. *No way you learn in 30 minutes what you need to do, we actually should learn in years* (P1).

The professionals of the transport team have difficulty performing invasive procedures, essential for attending to intercurrences during the transportation of the critical neonate. *I observe that many professionals have difficulty intubating, difficulty to recognize if the child is getting worse, and understanding what is happening to the child is a different universe* (P4); *Most of the time we do not feel fully able to work with this group and especially in critical condition*. [...] *usually the physician has no ability, making us insecure in some situations* (N2).

From the perspective of the professionals who perform the transport, the training on neonatal transport is insufficient to carry out a safe transportation. [...] *team training is greatly reduced, far short of the need to carry out safe transport* (N3); *our trainings are more related to the assistance we perform with more frequency, such as traumas. Since we do not transfer NB often, we have no routine* (D2).

Communication failure among professionals

Because communication is a basic instrument in health practice, professionals reported great difficulty when communication fails during medical regulation, related to the collection of information about the newborn. [...] *we call to ask the situation of the child* [...]. *I have to trust what my colleague tells me. So he usually tells me: 'the child is stable, in CPAP, not in vasoactive drugs', and often when we get there the child is intubated, in the ventilator, with vasoactive drug in an infusion pump* [...] (P4); *The biggest difficulty is when the regulation is not accurate. They say something and when we get there, we find another picture* [...]. *There is usually some setbacks in relation to communication in regulation* (N5); *NB data transferred with lack of information. Sometimes the person who is requesting does not give the conditions of the NBs to the team that will transport them* (N3).

The professionals mentioned that the absence of communication between the professionals of the hospital requesting the transfer and the professionals that will receive the NB has implications for transportation, such as longer time to conclude transportation and greater consumption of transport team materials. *Communication failure between the requesting hospital and the hospital that will receive the NB. Sometimes the specific sector should receive the NB, according to the applicant, but when we get there the professional is not fit to receive the NB, is not in the workplace* (N4); *In the past we were carrying a very serious NB and had to wait for authorization confirmation to receive the newborn at the hospital entrance, consuming even more our oxygen* (N2). *Sometimes, in the transport of intubated NB we have to wait for the team to assemble the ventilator because the physician who authorized the NB to be received did not communicate the local team* [...]. *The team that will receive the NB is rarely at the place to receive the NB that has been regulated* (P3).

Difficulty in ambulance mobility on public highway

The difficulties regarding the mobility related to the transport of critical NB in the ambulance were associated to the lack of urban mobility planning, which is beyond the teams' action. [...] *many people have no idea about traffic. If we have the siren on and the guy is at the red light he does not know how to give way. He waits for the signal to open, even with the siren on and the giroflex. Lay people* (D1); [...] *it is hard because the road network has no specific signage, regardless of whether it is a neonate transfer or not. The population is not clear about the emergency and urgency preference of the ambulance service* (D2); [...]*the road is often bumpy, it does not help* (D4).

DISCUSSION

The professionals involved in the research were experienced in performing prehospital care,

but had little capacity for dealing with critical newborn that requires interhospital transport. Thus, difficulties were evident not only about material resources but also in terms of the qualification of human resources, which is essential for safe transport.

Because SAMU is a service offered to the population a little more than ten years ago, the fragilities reflect mainly the non-compliance with what was proposed in its creation project. A study carried out at SAMU in Fortaleza-CE identified that the service presents structural and planning problems, as well as a shortage of material and human resources, but does not compromise the service.[13] A study carried out at SAMU in Rio Grande, Rio Grande do Sul state, identified that it did not meet the parameters of Ministerial Ordinance 2048/2002 in several aspects, especially due to the lack of human and material resources.[14] The SAMU teams in the different regions of Brazil suffer from difficulties related to equipment and materials.

They occasionally need to use an oximeter with an adult digital sensor because there is no oximeter with a neonatal sensor. Monitoring of oxygenation with pulse oximeter is a resource of great relevance for transport teams, as recommended by the Ministry of Health's Guidance on Neonatal Transport.[1] Nevertheless, caution is important regarding the proper selection of the pulse oximetry sensor, in agreement with age, and the rotation of the device in order to avoid injury to the newborn skin, especially in premature infants whose skin is extremely thin.[15] Thus, appropriate devices are important for the neonatal public in order to avoid iatrogenies.

Regarding the materials to guarantee the ventilatory support and intravenous therapy of the NB to be transported, the transport teams should ensure all materials for attending to possible intercurrences in the ambulance, since they must continue assistance to the newborn at the hospital unit. In addition to having the materials, it is essential that they use checklists to facilitate the conference of materials and equipment, minimizing failures due to possible forgettings.[16]

Due to the lack of equipment and materials to meet the needs of the NB during ambulance transport, the transport team reported they use materials from the unit of origin of the NB. In the event of a material loan request, the transport team is responsible for returning the material after the transfer, increasing the response time of the service, since it must return to the hospital of origin of the NB. The response time for the SAMU teams is an indicator of quality of care,[17] started from the moment the ambulance was activated to the transfer until the return to its home base, after leaving the NB at the destination hospital. Increased response time may compromise the service in a timely manner of other prehospital care requests, as not all SAMUs have exclusive advanced support ambulance for interhospital neonatal transport as mentioned during the investigation.

The number of advanced support ambulances in the SAMUs, known as Advanced Support Unit (ASU), is based on population parameters, with one ASU per 400,000 to 450,000 inhabitants.[18] In the studied region of operation of SAMU, there is only one ASU for all the requests of patients in critical health situations, making it impossible to provide an ambulance exclusively for the neonatal transport.

Regarding the report of having to "dismantle the car", drivers need to replace the stretcher by the incubator when there is a request for interhospital transfer of NB. The incubator should be supported on properly fitted wheeled cars when inside the ambulance. The other equipment that the service has for neonatal care are permanently in the ambulance, since the service meets the demands of newborns, children, adults and the older adults in an out-of-hospital environment.[18]

ICU type ambulances of SAMU equipped with incubator and neonatal transport ventilator were proposed by Ordinance no. 1.459, OF June 24, 2011, which established the Stork Network (Rede Cegonha, in Portuguese). However, the centralized purchase of vehicles is a time consuming process and has several barriers imposed by the current processes.[19]

Emphasizing knowledge and skills of the transport team, good general knowledge about neonatal care and a high level of specialization in procedural skills are prerequisites for those who transfer neonatal infants.[20] Scholars recommend that transport teams be enabled for the following procedures: attention to childbirth, neonatal resuscitation, physical examination of the newborn, airway and intubation management, venous and arterial access (central and peripheral), invasive and non-invasive monitoring, thoracic and abdominal drainage and preparation and administration of neonatal drugs.[21]

The Ministry of Health established contents and skills to enable and certify professionals in the Urgency and Emergency care. Physicians working in the SAMU should receive training in the management of basic and advanced ventilatory support equipment and master techniques of ventilatory

support (tracheal intubation, cricothyroidotomy, thoracic drainage and thoracentesis).[18] The reports show no fulfillment of what had been agreed upon.

Due to the lack of mastery of the behaviors performed, the team feels no confidence, as mentioned by the participants. Trust represents the feeling of certainty that the other person knows how to act, what to do, and when to intervene in the approaching the patient. Therefore, the professionals established links, which allows them to construct a professional familiarity and ends up adding importance to the subjects. That is, from the moment each one of the team has the ability and competence to perform the work and to recognize this in their colleagues, a certain tranquility is established to provide care, although it may be stressful.[22]

The Ministry of Health established safe transport by the National Patient Safety Policy.[10] To this end, a well-trained team is required, subject to constant training, enabling professionals to discuss the theory learned from practice, approaching what is prescribed from the real.[22]

Knowledge is essential and must be seen as a living dynamic to produce interpretations, meanings, criticisms and ways of participating in reality.[23] Although Transport Medicine has an important place in the international scene, Brazil still has isolated initiatives for its propagation. The Brazilian Society of Pediatrics and the Brazilian Nursing Association enable training by distance and face-to-face education on neonatal transport. The inclusion of this theme in the curricular matrices of the undergraduate courses, when they exist, needs further deepening. Aiming at training professionals with greater awareness of quality neonatal transport performance, the theme should be addressed in neonatology residency, pediatric intensive care and pediatric emergency medicine programs.[24]

According to the reports, communication failures cause disturbance to the professionals involved in transportation. SAMU professionals need to send and receive clear and complete information to carry out service planning that involves anticipation of resources and materials needed for the service, as well as define tasks, route and forecast to execute the activity.

Accurate, organized and complete patient information is an extremely important responsibility for healthcare professionals.[25] In order to provide care to critically ill patients, the communicative process should be used as a continuous tool to provide security and clarity to professionals because they deal with stressful situations that require careful attention and perfect understanding of the information transmitted.

During the interhospital transportation request, good quality communication is determinant for a successful transportation, as well as feedback of the information to the referral center.[25] The patient's physician, whether a physician on duty, a hired physician or a physician assistant, must transfer requests to the SAMU Regulatory Center.[18] They are responsible for providing correct information about the clinical condition of the newborn during the telephone call, which are important to establish a priority in care.[26]

In turn, the regulatory physician of SAMU needs information about the clinical condition of the NB and destination hospital to register it in the service information system and make the decision about the transfer request with the application of risk classification. The age at the moment of transportation, reason for transportation, place of origin and destination unit of the newborn, clinical history and Apgar score at birth, clinical evaluation with temperature, airway data and pulse rate are questioned.[27] After collecting information on medical regulation, the transport team in the ASU is activated for transportation. Communication failures, at any stage of the NB transport, can cause adverse events during the assistance.

Regarding the difficulties mentioned for the ambulance mobility during the transport of the critical NB, the Brazilian Traffic Code, established in Law no. 9.503, of September 23, 1997, article 29, establishes that ambulances, in addition to transit priority, free movement, parking and stopping are ensured, when in emergency service and properly identified by alarm sound and flashing red light. When the devices are activated, indicating the proximity of the vehicles, all the drivers must leave the passage on the left lane free, going to the right and stopping, if necessary. Failure to provide passage is a very serious violation, and fines may be imposed.[28] It should be emphasized that SAMU may request the support of non-health agencies, such as municipal guard and police, to assist in mobility, signaling, and others.[6] By sensitizing the community and using emergency services support bodies it is possible to improve ambulance mobility during transport of critical patients.

Regarding the study limitation, it was performed in only one unit of SAMU, with only one ASU to perform the neonatal transfers. It is important to unveil new scenarios to find out if the reported problems are common in most units distributed in the Brazilian states.

CONCLUSION

The results of this study made it possible to understand the difficulties of the SAMU teams to perform interhospital transport of critical NB in ambulance. Participants mentioned issues linked to all levels of management, which require a differentiated approach in order to guarantee high level of excellence.

Transporting critical NB in ambulance requires much more than equipment and materials. All those involved, including Nursing professionals, must have knowledge for the correct decision making associated with the process, such as the exact time to perform the transfer, determination of risks and communication skills, and guidelines, to be performed during the intercurrences. The absence of one of these requirements implies a greater NB risk of death during transportation.

Studies on NB interhospital transport performed by SAMU professionals are still incipient. There is a need for educational technologies on the subject that contemplate available resources and current health care model, as well as discussion of strategies during training promoted by the Permanent Education Centers of SAMUs to minimize the damages to the NB transported by ambulance, providing quality and safe assistance.

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Recived: march 13, 2016
Approved: september 19, 2016