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MANAGEMENT OF WASTE OF HEALTH SERVICES: STUDY IN TWO HOSPITALS OF MICRORREGIÃO DO BICO DO PAPAGAIO - TOCANTINS, BRAZIL

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ABSTRACT

The Plan of Waste Management of Health Services (PGRSS) can minimize the risks of work accidents and provide greater security to the hospital community, the public and the environment. Due to its characteristics, the waste of health services deserves special mention as its classification, segregation, packaging, transport, collection, storage and final arrangement. The present study aimed to describe the Waste Management of Health Services (RSS) at two reference hospitals in Bico do Papagaio micro-region, Tocantins, in order to evaluate the adequacy of them to Resolution RDC 306/2004 of the Sanitary Surveillance National Agency (ANVISA). Therefore, to achieve the proposed objective, a questionnaire was applied in the two hospitals to identify how waste management is carried out, highlighting the importance of PGRSS for better management of RSS, emphasize the importance of biosecurity measures on the use of personal protection equipment (PPE), employee training and notification of occupational accidents related to the handling of RSS. Given the results, we found some negative aspects related to the management of RSS in the studied hospitals because they own the PGRSS, and not normally perform it, which is a failure the noncompliance with the relevant legislation. Moreover, one of them has not been approved by relevant municipal and state agency, and none of them is supported by the Secretaries of Administration, Environment and Health, which would be essential as the inappropriate management of RSS can be harmful to the environment, public health and especially to those involved in the handling of these wastes. Therefore, it is concluded that the practice adopted by the two studied health facilities is not adequate and consequently does not meet the relevant resolution to this issue, because the studied health facilities had non-conformities before the established standards by CONAMA 358/2005 and RDC 306/2004 of ANVISA resolutions.

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INTRODUCTION

Nowadays, one of the most worrying issues involving environmental issues and compromising present and future generations concerns the inappropriate management of health care waste (RSS), which is harmful to the environment and health and is often inadequate form in the soil. For this reason, it is important to discuss the proper management of such waste in public or private health facilities, because of the amount of waste generated in those services, and especially because there is specific legislation on proper and to obey. Accordingly, the National Sanitary Surveillance Agency, through the Resolution of the Collegiate Board of Directors - RDC no. 306/2004, emphasizes that every generator of Health Service Waste (RSS) should prepare a Program for Management of Health Services Waste (PGRSS), which should contain procedures involving steps from identification to final destination (BRAZIL, 2004). Operational and cost problems, as well as the lack of information, induce the inadequate disposal of waste by depositing it in the dumps or open pit deposits, resulting in a series of negative impacts being totally objectionable from the point of view sanitary, environmental

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and social. For this reason, RSS management has become more relevant, particularly due to the need to manage its different classifications, and to offer particular destinations for each type of waste without causing impacts to the environment. However, it is worth noting that not all types of waste are to be treated before being taken to their final destination, as some waste is recyclable and can be recycled. The residue considered common can be released to landfills without receiving preliminary treatment, when not contaminated by infectious and / or chemical residues, or when they are not derived from patients with infectious and contagious diseases. Therefore, RSS management is fundamental not only to avoid inappropriate treatment costs, but also to reduce environmental and human health risks, as well as to enable the recovery of matter and energy through recycling (SCHNEIDER *et al,* 2013). Costa et al. (2012) state that in Brazil about 1% to 3% of the 150,000 tons of solid urban waste correspond to the RSS, 90% of which is placed in improper sites such as open-air dumps, becoming one of the largest current problems, where Brazilian legislation and the lack of information of the population and government authorities do not establish a solution to this problem, causing greater damage to the environment and to man. Thus, in order to solve these problems, it was necessary for the RSS generators to elaborate their PGRSS, in order to meet the requirements of the ANVISA RDC norms 306/2004 (BRAZIL, 2004), CONAMA Resolution 358/2005 (BRAZIL, 2005a) and standards of the Ministry of Labor and Employment NR-32, among others (BRAZIL, 2005b). It must be compatible with local regulations related to collection, transportation and final disposal determined by the competent bodies at local level, which are responsible for these stages.

It should be noted that there are other legislation related to the management of health services waste, such as: RDC ANVISA Nº. 33/2003 of February 25, 2003, published in the Official Gazette of the Union on March 05, 2003, approves the Technical Regulation for the Management of Waste of Health Services - General Guidelines that are included in the Annex to this Resolution (CAMARGO et al, 2009). It is incumbent upon the State, Municipal and Federal District Health Secretariats, together with the Environment and Urban Cleansing Bodies, and the National Nuclear Energy Commission - CNEN, as appropriate, to disclose, orient and supervise compliance with this Resolution.

The Resolutions of ANVISA - RDC Nº. 306, dated 12/07/2004 - and of CONAMA - No. 358 of 04/29/2005 - correspond to the most current federal documents that symbolize the power of the State over the generators, in addition to establishing the duty of all generators of health care waste to prepare and execute their Service Waste Management Plan of Health (PGRSS). On the other hand, CONAMA Resolution 05 of 05/08/93 deals with the adoption of procedures for Solid Waste, because in health, it has become indispensable to use procedures that seek to control the generation and disposal of health care waste, especially as a result of the increasing increase in medical treatment, from new technologies, equipment, hospital articles and chemical products, associated to the inappropriate management of waste generated, such as the incineration of waste in the open air, and disposal in dumps, between others. Given the importance of this subject, studies on the management of SSRs can provide subsidies to contribute and suggest adjustments in the management plan of the RSS by punctuating items such as safety in the workplace, reduction of risks to the environment and the health of the individuals cared for in those health services. Thus, the study aims to describe the management of the RSS generated by two hospitals in the micro-region of Bico do Papagaio in the state of Tocantins: the municipal hospital of Araguatins and the regional hospital of Augustinópolis.

MATERIALS AND METHODS

Descriptive and cross-sectional study. Held in two hospitals located in the state of Tocantins, Brazil. The first one was the Municipal Hospital of Araguatins - HMA, characterized as small and located in Araguatins - TO and the second was the Regional Hospital of Augustinópolis - HRA, located in the city of Augustinópolis - TO, considered a reference, population of all the municipalities of the Bico do Papagaio micro-region.

Data collection took place in October 2013, through a semi-structured questionnaire, the same was applied to the administrators of the health institutions mentioned above. Analyzed through simple descriptive statistics. Study approved by the Ethics Committee of the University of Taubaté - UNITAU with opinion number 395,731.

RESULTS AND DISCUSSION

Regarding the characterization of the hospitals surveyed, it was verified that the service provided by the hospitals under study is general, with a percentage representation of 100%, since both attend urgent and emergency situations, medical clinic, pediatrics, ambulatory, surgeries and others. As for the size of the hospital, one of them is small, because the number of beds is less than 50 and the other one of medium size. As far as the weighing of waste from the health services is concerned, both hospitals do not carry out the weighing, therefore the quantity of waste generated per day is not known.

It was verified that in the two hospitals under study, their representatives affirmed that they segregate the waste generated, according to the criteria of RDC resolution 306/2004, however, both said that they segregate in part the residues of group B. Thus, the hospitals in studies present positive aspects regarding the segregation stage of health services residues, according to the responses obtained from their representatives. Table 1 shows the percentage distribution of the hospitals surveyed regarding the Management Plan.

Table 1. Distribution of the hospitals studied in the Health Service Waste Management Plan in the micro-region of Bico do Papagaio, Tocantins, Brazil, October 2013

Management Plan RSS		
	HMA	HRA
Do you have an RSS feed management plan?	Sim	Sim
Has it been updated to comply with RDC 306/2004?	Sim	Não
Has it been approved by municipal and state bodies?	Sim	Não
The secretary of administration; health and environment support the correct management of RSS?	Não	Não

Source: field research, 2013.

It is observed in Table 1 that the two hospitals under study have a Waste Management Plan (100%), however, the participants stated that it is not performed normally. When asked if the Plan was updated to meet DRC 306/2004, one of the interviewees said yes and another said no because it was elaborated 5 years ago and has not been updated. As for the PGRSS to have been approved by municipal and state body, only one participant said yes, therefore, demonstrating a percentage representation of 50%. When interviewing the

interviewees about whether the Municipal Administration Office, as well as the Health and Environment Department offered support for the correct management, both participants (100%) stated that they did not. When questioning the study participants about the segregation of RSS, it was verified that the two hospitals segregate the waste generated, according to the criteria of resolution RDC 306/2004. These results show negative aspects regarding the management of RSS in the hospitals under study, since they present the PGRSS, and do not perform it normally, which is a failure to comply with the pertinent legislation. In addition, one of them has not been approved by a competent municipal and state body, and none of them is supported by the Secretariats of Administration, Environment and Health, which would be essential, since inadequate management of RSS can lead to damages to the environment , public health and especially those involved in the management of this waste. Regarding the management of RSS, it is pointed out that CONAMA Resolution 358, of April 29, 2005, emphasizes that all generators of health care waste contained in art. 1, in operation or to be implanted, should elaborate and implement the Health Services Waste Management Plan (PGRSS), in accordance with the pertinent legislation, especially sanitary surveillance standards (BRAZIL, 2005a). The same author states in the first paragraph of CONAMA Resolution 358 that it is the responsibility of the environmental agencies of the States, Federal District and Municipalities to establish criteria to determine which services will be subject to environmental licensing, which should include the PGRSS. In addition, the environmental agency, in the scope of the licensing, will set deadlines for regularization of the services in operation, and the PGRSS should be presented properly implemented. Table 2 deals with the Packaging of RSS of the hospitals surveyed.

Table 2. Distribution of the hospitals studied in the micro-region of Bico do Papagaio, Tocantins, Brazil, October 2013

RSS Feeds		
	HMA	HRA
Are the residues of group A packed in a milky white bag with the symbol of infecting substance?	Yes	Yes
Are the residues of group B packaged in rigid material suitable for each type of chemical?	Yes	Yes
Are radioactive waste (Group C) packed in shielded lead containers?	Yes	Yes
The residues of group D - the papers are packed in blue bags; plastic in red bags and those not recyclable in black bag?	Yes	Yes
The residues of group E - the sharps are packed in yellow box with infecting symbol?	Yes	Yes

Source: field research, 2013.

In view of this, it should be noted that the packaging data are contradictory, since during the visit in the respective establishments we observed that the RSS is often inadequately packed and in different bags than required by the legislation in force, and therefore, failing to recommendations of RDC 306/2004. With regard to the packaging of RSS, NBR 9191/2000 specifies the types of bags and container conditions for the correct packaging of the various types of waste (ABNT, 2000). This standard stresses that bags for storing waste must be impermeable, consisting of material that will withstand rupture and leakage and should be identified according to the stored waste, however, the containers must be of washable material, resistant to puncture and leakage, with opening system that dispenses the manual contact, with rounded edges and identified by the types of residues disposed in its interior.

In addition, only one of the establishments surveyed has a regular external storage as verified during the visit, however, the other study institution stores its waste in the outside of the hospital in an inappropriate way, this condition implies risk to the population, and this fact constitutes an infraction according to RDC 306/2004 (BRASIL, 2004). Table 3 shows the distribution of the hospitals studied for temporary and external storage and the existence of preliminary treatment of RSS before being transported to external storage.

Table 3. Distribution of the studied hospitals in the micro-region of Bico do Papagaio, Tocantins, October 2013

Storage and Handling RSS		
	HMA	HRA
Are RSSs temporarily stored near the site of generation to facilitate internal collection?	No	Yes
Do RSSs receive any preliminary treatment after being taken to the external storage?	No	No
In case RSS is previously treated according to their classification, after that, RSS is for external storage?	Yes	Yes

Source: field research, 2013.

From these results, the disagreement between the respondents' responses, because when they were questioned about the existence of preliminary treatment in the RSS, both affirmed that no type of procedure is performed at this level, however when asked about the situations in that the waste receives preliminary treatment and then external storage, both said yes, demonstrating controversy between one issue and another.

However, one of the researched establishments presents a regular external storage as verified during the visit, however, the other studied establishment stores its waste in the outside of the hospital in an inappropriate way, this condition implies risk to the population, and this fact constitutes an infraction according to RDC 306/2004 (BRAZIL, 2006). Regarding the internal collection of RSS, more specifically, the frequency and the time it is performed, the following responses were obtained: "the collection is carried out weekly" (HMA) and "collected 4 times a day and if necessary" (HRA). Already when asked how the internal transport of the RSS was carried out, the respondents said: they are taken in the trash bin itself or when the bags are packed and taken out (HMA) and times of lesser flow of people outside the clothing and food distribution (HRA).

Regarding internal transport, there is a lack of compliance with the standards established by Resolution RDC 306/2004, since the internal transport of the HMA according to the person in charge of this establishment is carried out by taking the basket containing the bags with the waste to the external environment of the hospital or are given in the bag when they are full and carried in the hand to the external environment of the establishment, thus, the practice adopted by this establishment is not adequate and consequently does not comply with the pertinent resolution to this theme (BRAZIL, 2004). Relevant to this, Almeida (2006) points out that the collection and transport must obey the routine previously established by the health establishment so as not to coincide with the times of distribution of clothing, food and medicines, as well as, during visits or of greater flow of people or procedures. However, the collection must be carried out separately, considering the type of waste and packed in a suitable container for each type of waste. Table 4 shows the results of the research on the existence of own incinerator.

Table 4. Distribution of the hospitals studied regarding the treatment of RSS in the micro-region of Bico do Papagaio, Tocantins, October 2013

Treatment and Final Disposition of RSS		
	HMA	HRA
Treatment and Final Disposition of the hospital RSO has its own incinerator?	No	No
Are common waste incinerated?	No	No
Infected waste is cremated?	No	Yes
Are all waste incinerated?	Yes	Yes
Is the final provision of the RSS made in septic tanks or in a special landfill cell?	Yes	Yes
Does the municipality have a sanitary landfill?	No	No

Source: field research, 2013.

Considering the results shown in Table 4, it is possible to verify the disagreement between the respondents' answers, since one said that the common waste was not incinerated, but when it was again questioned if all wastes were incinerated, it said yes. Respondents asked whether the final provision of the RSS is made in a septic tank or in a special landfill cell, the representatives of the hospitals said yes, and also said that the municipalities do not have a landfill. In view of this, it should be noted that the final destination of the HMA and HRA RSS is not appropriate and does not correspond to that recommended by RDC 306/2004. The production of smoke resulting from burning is composed of several chemical substances that may be harmful to the health of the population surrounding this place and is therefore considered an inappropriate practice adopted by both hospitals. As RSS receives inadequate treatment and final destination, it increases the likelihood of impacts to the environment, as they favor the contamination of drinking water sources, and contribute to the spread of diseases through vectors that multiply in those places or that use waste power source. For that reason, issues related to the environmental impacts and health of the population, as well as the expenses with the treatment and final destination of RSS, have become a major concern for society, and a subject of great relevance for governmental policy at (VENTURA, REIS, TAKAYANAGUI, 2010).

Copola (2011), points out that according to research carried out on environmental impacts, it was verified that the landfill is one of the disposal methods that causes less damage and degradation to the environment, therefore, it is considered ecologically correct, and this information can be confirmed through of inc. VIII, of art. 3 of Federal Law 12305/10, which states that the landfill is the "final disposition environmentally appropriate: orderly distribution of tailings in landfills, observing specific operational norms in order to avoid damages or risks to public health and safety and minimize adverse environmental impacts ". When questioning the interviewees if all those involved in the management of RSS were able to perform this function, both (100%) said no, because only a few were trained and these represent the minority of those involved in this process. This finding shows that the hospitals studied are not good when asked about the training of workers involved in waste management, since the constant updating and qualification of the workers on this subject is extremely relevant. Moreover, by directly participating in the management of SSRs, such workers put their health at risk by adopting inappropriate practices, such as not using PPE's even if the establishment provides it. Relevant to this, it is pointed out that the inadequate management of RSS brings numerous risks, among them: accidents at work, occupational diseases and increased hospital infection. For this reason, the professionals responsible for waste management must be trained when they are admitted and continue in permanent education in relation to the stages of waste management, besides covering their duty not only with their own hygiene but also with materials and environments (BRASIL, 2004). Nunes et al. (2012) point out that the relationship between management and workers' health is notorious, but it is also necessary to qualify health professionals about the adequate management of waste and keep them constantly updated, regarding the rules and routines of the service, and biosafety measures adopted by the establishment. However, when questioning study participants about the use of personal protective equipment used by those involved in the management of SSRs, the HMA stated that they wear PVC gloves, long sleeves, masks, PVC long boots and HRA boots 4012 BEL , Boot 80 BPL200 PA long barrel, long-sleeved latex glove and mask. This finding is relevant, since it is observed that the representatives of the hospitals under study are concerned with the safety and health of the worker.

Conclusion

The management of the waste generated by the health services under study is of concern with regard to biosafety measures to avoid work accidents and health care for the population and the environment, since they do not effectively comply with the recommendations of Resolution No. 306/2004 of the National Health Surveillance Agency. This study made it possible to verify that the inappropriate management of the RSS of the hospitals studied poses risks to the public health and the environment in the various moments of its execution, since the discharge is carried out in an incorrect way, that is, in the open, and the risks potentiated by lack of structure from generation to final destination. Incorrect handling of waste exposes employees to biological agents that can cause disease, either by direct contact with infecting material (contaminated object / person), or indirectly (contaminated object / vector and / or vehicle / person). Also, in the population, this form of contamination, that is, indirect, can occur since the proliferation of pathogenic microorganisms is disseminated by air in the form of spores, when accumulated in the external shelter, constituting a source of contamination for the population resident in the vicinity of it. In this sense, it is concluded that the practice adopted by the two health institutions studied is not adequate and consequently does not comply with the resolution pertinent to this subject, since they present the PGRSS, and do not perform normally, which is a failure to comply compliance with the relevant legislation.

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