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Levantamento das principais fontes de desperdício de unidades assistenciais de um hospital universitário

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# Survey of the major sources of waste in the health care units of a teaching hospital

LEVANTAMENTO DAS PRINCIPAIS FONTES DE DESPERDÍCIO DE UNIDADES ASSISTENCIAIS DE UM HOSPITAL UNIVERSITÁRIO

RELEVAMIENTO DE LAS PRINCIPALES FUENTES DE DESPERDICIO EN LAS UNIDADES DE ATENCIÓN DE UN HOSPITAL UNIVERSITARIO

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## ABSTRACT

The objectives of this study were to survey the different types of waste, their causes and suggestions to eliminate them according to the opinion of the nursing and medical staff from the Clinical Medicine, Surgery, Pediatrics, Rooming-In, and Nursery Units; and estimate the cost of the major source of waste found in the referred units. This descriptive, explorative study was performed at the University of São Paulo Teaching Hospital using a quantitative approach. The study sample consisted of 189 medical and nursing professionals. Material waste (36%) was the most often reported by all professional categories, followed by physical structure waste (27%). The most reported wasted materials were medicines, dressing packs, stationary paper, and infusion devices. The estimated annual cost of material waste in the studied units is about R\$ 479.262,86.

## DESCRIPTORS

Costs and cost analysis  
Cost control  
Hospital costs  
Nursing

## RESUMO

Este estudo teve como principais objetivos levantar os diferentes tipos de desperdício, suas causas e sugestões para eliminá-los, segundo a opinião de profissionais de enfermagem e médicos atuantes em unidades de Clínica Médica, Clínica Cirúrgica, Pediatria, Alojamento Conjunto e Berçário; e estimar o custo da principal fonte de desperdício nessas unidades. Trata-se de um estudo descritivo, exploratório, com abordagem quantitativa realizado no Hospital Universitário da Universidade de São Paulo. A amostra foi constituída por 189 profissionais de enfermagem e médicos. O desperdício relacionado aos materiais (36%) foi o mais apontado por todas as categorias profissionais seguido pelo desperdício de estrutura física (27%). Os materiais desperdiçados mais citados foram os medicamentos, pacotes de curativo, papel sulfite e dispositivos de infusão. O custo do desperdício anual com materiais nas unidades estudadas pode girar em torno de R\$ 479.262,86.

## DESCRIPTORES

Custos e análise de custo  
Controle de custos  
Custos hospitalares  
Enfermagem

## RESUMEN

Este estudio tuvo como objetivos relevar los diferentes tipos de desperdicios, sus causas y las sugerencias para eliminarlos, según opinión de profesionales de enfermería y médicos actuantes en unidades de Clínica Médica, Clínica Quirúrgica, Pediatría, Internación Conjunta y Neonatología; y estimar el costo de la principal fuente de desperdicios en tales unidades. Se trata de un estudio descriptivo, exploratorio, con abordaje cuantitativo, realizado en el Hospital Universitario de la Universidad de São Paulo. La muestra se constituyó con 189 profesionales de enfermería y médicos. El desperdicio relacionado a los materiales (36%) fue el mayormente referenciado por todas las categorías de profesionales, seguido por el desperdicio de estructura física (27%). Los materiales desperdiciados más citados fueron los medicamentos, paquetes de vendajes, papel de impresora y dispositivos de infusión. El costo de desperdicios anuales con materiales en las unidades estudiadas giraría en torno a los R\$ 479.262,86.

## DESCRIPTORES

Costos y análisis de costo  
Control de costos  
Costos de hospital  
Enfermería

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## INTRODUCTION

Cost rises have drawn attention of hospital administrators, health professionals, as well as the sources paying for healthcare, i.e., the national health system – The Single Health System (*Sistema Único de Saúde - SUS*) or the Supplementary System, through medical plan companies and health insurances.

Public hospitals have faced difficulties to administrate their scarce resources due to a reduction in the federal funds for health, considering the population's demands for health care.

Because of a complex national conjecture, the health sector, in the private domain, has faced serious financial burdens without, however, having the chance to transfer the cost increases automatically to the prices of the services mainly because of the factors of market competition, the pressure of society and health plans, and a certain government control over prices<sup>(1)</sup>.

This setting brought upon administrators and health professionals the need to obtain knowledge about costs, search for measures to balance costs with other financial resources, as well as to gain the competency to allocate resources and optimize outcomes<sup>(1)</sup>.

Therefore, the concerns of health administrators have focused on surveying and controlling hospital costs and finding contention measures especially concerning the waste<sup>(2)</sup>.

Waste can be defined as an uncontrolled, abusive, irrational and inconsequent use of resources. It is using with no clear need, purpose or objective. Waste is not necessarily associated with using more resources than what is available. Sometimes little is used, but used wrongly, and that is also waste<sup>(3)</sup>.

From this perspective, it is understood that waste in the health area refers to the unnecessary use of resources in the production of processes, procedures or services aimed for healthcare. In fact, waste in healthcare increases the difficulties that already exist because of scarce resources.

Waste can occur in many ways. It can involve material and medications, from purchasing and keeping a large stock, which makes the control more difficult, to buying questionable quality material, and using the material inappropriately.

The purchase of equipment without analyzing its economical feasibility regarding the cost, utilization demand, and the price of replacement accessories and components is a costly practice in healthcare, besides their preventive maintenance.

Further, more costly waste can occur due to the inappropriate use of beds. This specific waste can occur in two different ways: bed replacement when the hospital does not use them at an acceptable level; in other words, the hospital works below the recommended occupation rate. In addition, inappropriate use can also occur in hospitals with high occupation rates when patient stay is longer than the necessary. Both cases imply a new patient being left unassisted<sup>(4)</sup>.

Another source of waste in the health area may refer to the processes that, due to the excessive number of stages, make it more confusing and result in an ineffective and delayed service. Therefore, processes must be constantly analyzed<sup>(5)</sup>.

The human resource issue is even more complex. Because of its diversity and unquestionable importance in any organizational process, it may also consist in different sources of different types of waste, such as: rework, low productivity, absenteeism, high turnover, and occupational accidents.

**The survey of the sources of hospital waste related to material resources, equipment, processes, physical structure, staff and beds in public and private organizations is an ultimate need considering the scarcity of resources in view of the clientele's demands for health care and its high costs.**

It is emphasized that waste is directly associated with the development of actions that do not support or add value to the products or services that are produced; rather, it adds unnecessary costs and expenses without necessarily leaving the client satisfied<sup>(5)</sup>.

Neglect and the lack of management control have been pointed out as causes of health service inefficiency, in the public as well as the private sectors. Therefore, it is indispensable to adopt strategies that help make a fast identification of any waste and flaws that could increase the expenses in organizations<sup>(6)</sup>.

The survey of the sources of hospital waste related to material resources, equipment, processes, physical structure, staff and beds in public and private organizations is an ultimate need considering the scarcity of resources in view of the clientele's demands for health care and its high costs.

No international studies on the sources of waste in hospitals were found, and only two national studies addressing this matter were located<sup>(2-3)</sup>. These studies surveyed the opinions of employees' from different hospitals about the types of waste they realized in their workplaces, with the purpose to develop orientation programs to minimize them.

## OBJECTIVES

To survey the different types of waste, their causes and suggestions to eliminate them, according to the opinion

of nursing professionals and physicians working in health care units of a university hospital.

To estimate the costs of the main sources of waste found in the studied units.

## METHOD

This exploratory, descriptive study was performed using a quantitative approach.

The study location was the University of São Paulo Hospital (HU-USP), a tertiary general hospital, located in São Paulo. The HU-USP units that comprised this study were: Clinical Medicine (Cl Med), Surgery (Surg), Pediatrics (Ped), Rooming-In (RI) and Nurseries (Nur).

The study population consisted of 425 workers: 61 (14.36%) nurses, 106 (24.94%) nursing technicians, 73 (17.18%) nursing aides, and 185 (43.52%) physicians working in the studied units.

The sample loss - 236 (56.7%) – occurred due to instruments that were not returned. The professional category with the highest sample loss was physicians, with 149 (80.54%), followed by nurses, with 17 (27.86%), technicians, with 43 (40.56%), and the smallest was nursing aides, with 27 (36.98%). The 189 returned questionnaires accounted for 43.3% of the population.

Regarding the participation of the different categories in the study (n=189), the nursing team accounted for 81%, with 63 nursing technicians (33%), 46 nursing aides (25%) and 44 nurses (23%), and the medical team with 19%, with 36 physicians.

**Table 1** – Frequency of the main types of waste according to the studied units – São Paulo – 2009

Type	Cl Med f	Surg f	Ped f	RI f	Nur	Total	%
Materials	41	36	26	38	22	163	36%
Physical structure	29	34	25	17	17	122	27%
Beds	13	17	18	3	10	61	13%
Equipment	16	7	10	6	10	49	11%
Working process	12	8	11	7	6	44	10%
Staff	2	3	3	5	2	15	3%
<b>Total</b>	<b>113</b>	<b>105</b>	<b>93</b>	<b>76</b>	<b>67</b>	<b>454</b>	<b>100%</b>

### Waste related to materials

The total number of answers regarding the types of wasted materials in the Cl Med was 60. The most reported were medication wastes– eight (13%) – due to their presentation. This category includes xylocaine, which is disposed of after bladder catheterization, in compliance with the recommendation of the Commission for Hospital Infection Control at the institution. Another important waste report concerned bond paper – seven (10%) – attributed to the fact that when physicians request an exam, one requisition is printed at the unit and a copy is printed at the laboratory or at the complementary examination

The study was authorized by the HU-USP Research Ethics Committee (Process number 631/05).

Data collection was performed from August 2008 to March 2009, using a questionnaire containing open questions about which were the sources of waste in the studied units, the reasons they occurred, and suggestions to minimize them. The questionnaires were distributed by the researchers to the employees who agreed to participate and provided consent by filling out the Free and Informed Consent Form.

The categorical variables were subjected to descriptive analysis and presented as absolute numbers and percentages.

The direct cost of the waste was calculated considering the Real, the present currency of Brazil.

## RESULTS

The results are always presented according to the total distribution of the study participants, showing the main types of waste, their causes, and suggestions. The categorical variables of interest in this study were analyzed according to the absolute and relative number of the answers, presented in tables and charts. It is emphasized that, for one same question, there was more than one answer regarding the type of waste, cause and suggestion.

The waste related to materials was the most reported (36%), followed by physical structure (27%), and the least referred waste, regarding staff (3%) in all units and by all professional categories, as shown below in Table 1:

units, and both are disposed of after the exam is performed. It is also observed that 10% of the materials used for contact isolation at the unit are disposed of after the isolation is completed, without being used, because they accumulate in the patient room, with 5% regarding gloves and 5% to protective gowns; this material could supply the isolation more parsimoniously, avoiding waste when patients are discharged or transferred.

The main reported causes of waste, among the 48 answers, were the wrong idea about the costs of the materials – seven (15%) and the lack of awareness regarding the impact of the costs on the unit – six (12%). Another

reported cause was the presence of interns, as there is an increase in material use due to the students' lack of skills or inexperience; however, because of the mission of the hospital, internships are seen as necessary for learning. Unfortunately, there are no studies regarding the impact of material use in teaching hospitals.

The participants from the Clinical Medicine Unit made the following suggestions, among the 38 reports, aiming at minimizing material waste: multiprofessional training – eight (21%) regarding the controlled use of material and orientations about costs – five (13%), building awareness regarding waste – four (10%), and improving student supervision – three (8%).

Regarding the Surgical Unit, which reported 53 types of material waste, 10 (18%) regarded dressing packs, followed by gauzes – eight (15%) due to the uncountable dressings performed every day. As to the causes of waste, with 42 answers, the main cause was opening materials unnecessarily in procedures – 10 (24%), which gives evidence of the lack of awareness – six (14%) of the professionals, who do not make an analytic evaluation before the procedure because of their easy access to the material – two (5%). There was a correlation between rework (2%) and the fact that the nursing team made dressings and shortly after the physicians reopened the dressing for evaluation purposes, thus requiring a new dressing procedure. The main suggestions, among the 27 reports, were instructing the professionals, seven (26%), through meetings, training – four (14%), and supervision by nurses – three (11%). One participant (4%) mentioned standardizing the time to perform dressing procedures, thus avoiding the exposure of the wound and risks of infection due to excessive handling, rework, and material use.

In the Pediatrics Unit, 56 answers were obtained regarding the type of material waste. The most reported types were medications – 10 (17%), syringes – seven (12%), and puncture devices – six (10%). A total of 35 causes were reported, and the most frequent was the lack of awareness – seven (18%), and misuse – four (10%), which refers to abusive, unnecessary or inappropriate, uncontrolled use, and not evaluating the real need for the material before performing procedures. Among the 25 most reported suggestions regarding how to minimize losses, training – six (24%), and building awareness – five (20%) – accounted for 44% of the answers.

There were 60 reports regarding the types of material waste at the Rooming-In Unit. The most reported were regarding bond paper – 12 (20%), medications – seven (11%), intravenous (IV) infusion devices – six (10%), IV – six (10%), as well as infusion devices and suture, both with 5 (8%). There were 31 answers about the causes. The most reported causes were the lack of

awareness – seven (23%), unnecessarily opening materials for procedures – four (13%), and inefficient software – four (13%), which generates the need for printing copies. Regarding paper waste, in addition to the software issue, a lot of paper is used as scrap paper. Among the 33 suggestions for change, the main were training – 15 (45%), building awareness – seven (22%), checking the real need to use the material before opening it – two (6%), supervision as control – two (6%), and the standardization of medical procedures – one (3%), among others.

The types of material waste in the Nursery Unit (40) referred to puncture devices – eight (21%), medications – seven (19%), and gloves – four (10%). The causes (19) were related to the constant changes made to prescriptions – three (16%), justified by the fact that they were performed after the clinical evaluation by the physician; the presence of interns – two (10%) as a source of waste was attributed to their inexperience to draw blood and evaluate newborns, causing a large use of materials, despite it being a university hospital. The lack of training – three (17%), is related to the workers' lack of preparation and inexperience, as it is a specialist unit that requires specific and frequent trainings. The proposed suggestions for change (18) were: building awareness – seven (39%), and totaling medications – four (21%), i.e., using the same container for other patients with the same medical prescription, thus reducing waste.

### ***Waste related to the physical structure***

There was not much variability in the studied units regarding the structural wastes. Therefore, of the 258 answers, water waste corresponded to 91 (35.3%), light 77 (29.3%), medical gases 47 (18.2%) and telephone 45 (17.2%).

The causes of waste to the physical structure, reported by the units, were the lack of maintenance, gas valve and faucet leaks, lights that are left on unnecessarily and a delay to heat water. Gas leaks were attributed to defective flowmeters. Water and light waste was associated with the boiler system used in the institution, which requires showers and faucets to be open until the water is heated, which takes time. It was highlighted there was abusive telephone use with personal calls, to ground lines as well as mobiles, because there is no systemized control at the institution. These data are presented in Table 2.

Participants reported there is a lack of commitment or involvement towards the institution, and they recognize this culture related to public property persists. Regarding the medical gases, the answers point to flowmeters left on without use, because patients get up to walk in the hallway and their companion or even health professionals forget to turn them off, besides cases of leakage.



**Table 2** – Causes of waste related to the physical structure of healthcare units - São Paulo - 2009

Causes	f	f Cumulative	%	% Cumulative
Lack of maintenance	39	39	21.55	21.55
Leaks in flowmeters and faucets	35	74	19.33	40.88
Light on unnecessarily	28	102	15.47	56.35
Delays in heating water for bathing	20	122	11.05	67.40
Lack of awareness	20	142	11.05	78.45
Abuse	9	151	4.98	83.43
Lack of commitment towards the institution	7	158	3.87	87.30
Lack of education regarding costs	7	165	3.87	91.17
Lack of supervision	5	170	2.77	93.94
Equipment constantly (24 hours) on unnecessarily	4	174	2.20	96.14
Free access to the telephone	3	177	1.66	97.80
No sensors on faucets	2	179	1.10	98.90
Others	2	181	1.10	100

Table 3 lists the main suggestions proposed by the studied units.

**Table 3** – Suggestions of changes for the waste related to the physical structure of the Surgical Unit - São Paulo - 2009

Suggestions	f	f Cumulative	%	% Cumulative
Schedule preventive maintenance visits	45	45	39.48	
Training	17	62	14.91	
Build awareness	12	74	10.52	
Improve water heating	11	85	9.64	
Limit the telephone use	11	96	9.64	
Install faucets with sensors	5	101	4.38	
Adjust the physical structure	4	105	3.51	
Supervision	3	108	2.64	
Publish cost reports	2	110	1.76	
Install lights with timers	1	111	0.87	
Environmental education	1	112	0.87	
Family education	1	113	0.87	
Limit Internet use	1	114	0.87	

### **Waste related to equipment**

The equipment wastes at the Clinical Medicine Unit, with 13 answers, are related to breaking computer screen cables – four (30%), infusion pumps – three (23%), pulse oxymeter sensors – three (23%), blood pressure devices – two (15%), and bells – one (9%).

In the Surgical Unit, only three answers were obtained: wheelchair – one (34%), blood glucose device – one (33%), and stretchers – one (33%). It was reported that the equipment are constantly defective and are in no use condition. This shows a need for follow up and evaluate the performance of the equipment for further purchases.

In Pediatrics, with six answers, the most reported types of waste referred to couches and chairs – two (34%), which are broken and, even so, remain in the unit.

In Rooming-In, the reported wastes (nine) refer to the wheels of the hamper support – two (22%), crib wheels – two (22%), cardiocotograph – two (22%), fetal monitors – one (11%), ultrasound – one (11%), and fetal Doppler – one (11%).

The types of waste related to equipment in the Rooming-In unit (10) were the incubators – three (30%), photo-

therapy equipment – three (30%), cribs – two (20%) and monitors – two (20%).

The causes of waste received 42 answers, which referred to incorrect operation - 20 (47.61%), lack of maintenance - 10 (23.81%), lack of knowledge of how to operate – three (7.16%), lack of standardization – two (4.76%), overload – two (4.76%), lack of knowledge about costs – two (4.76%), inappropriate recommendation – one (2.38). In this study, it is emphasized that most answers pointed at the team as being responsible for the equipment misuse.

The suggestions (39) about how to minimize the referred wastes was: to invest in training the staff in how to operate the equipment– 16 (41.02%), establishing a preventive maintenance program– 11 (28.21%), building awareness and educating the staff about the correct use – eight (20.52%), teach and supervise equipment storage – four (10.25%).

### **Waste related to the beds**

As to wasting beds, at the Clinical Medicine unit, 11 answers were obtained. Most reports referred to long stays – four (36%), occupation for hospitalization shorter

than 24 hours – three (27%), and occupation by patients who have been discharged – three (27%). Prolonged occupation occurs when patients remain hospitalized while waiting for complementary exams; occupations for hospitalizations shorter than 24 hours occur due to a lack of evaluation and to medical criteria. Another reported waste referred to patients staying in the unit after being discharged when their family does not come to pick them up because of social hindrances. The causes of wastes related to patient beds occur due to a lack of evaluation criteria by the physicians for hospitalization (40%) and a prolonged time of diagnostic investigation (20%), leading to short and prolonged hospitalization, respectively. To change the waste of beds at the institution, it was suggested that hospitalization criteria be established (23%) and an efficient communication with the patients' relatives to program patient discharge (15%).

The wastes reported at the Surgical Unit referred to hospitalization shorter than 24 hours – six (60%), prolonged occupation – three (30%), and postponed surgeries – one (10%). Occupations due to hospitalizations shorter than 24 hours occur because of small surgeries that could be performed at the Day Hospital. Prolonged hospitalizations are related to delays in performing complementary exams for surgery. The beds occupied with patients that have been discharged – seven (41%), outpatient and small surgeries – four (23%), lack of communication between team members – two (12%), and social hindrances – one (6%) are some of the 17 answers about the causes of these wastes. As a proposal of change (13), the most reported were establishing hospitalization criteria - three (23%), with a view to avoiding those lasting less than 24 hours; improving medical conducts – three (23%), to avoid prolonged occupation, the systematization of surgery scheduling by the day hospital – two (15%) and a more active participation of the social service – two (15%).

This type of waste in the Pediatrics unit is mainly represented by the beds being occupied by unnecessary on-day hospitalizations, because of precipitated conducts after the clinical evaluation, accounting for 78% of the answers. The occupation of beds due to social hindrances (11%) was associated to the delayed decision of the Child Protection Council to refer the child. The reported causes were the lack of criteria and evaluation by physicians for hospitalization (58%) and the prolonged period of diagnostic investigation (14%). Building awareness and training the medical team accounted for 63% of the suggestions for change.

In the Rooming-In unit, the reported types of waste were the unnecessary transfers – one (50%) and patients hospitalized with no indication – one (50%); examples are patients how have not been evaluated and are waiting for exam results to be discharged. No causes were reported for unnecessary transfers. Regarding patients hospitalized with no indication, the reported causes were the lack of involvement and commitment towards the institution

(50%) and the lack of communication between medical teams (50%). In order to minimize the wastes related to patient beds, it was suggested to establish a bed management system – one (34%), evaluate the transfers – one (33%), and establish hospitalization criteria – one (33%).

Regarding the Nursery unit, the most reported wastes were beds occupied because of a scarcity of beds in the Rooming-In unit (38%) and unnecessary hospitalizations (26%) resulting from inappropriate medical conducts. The causes pointed out were the lack of beds in the Rooming-In Unit – two (33%), not having an appropriate follow-up by resident physicians – two (33%), the physicians' lack of criteria and evaluation for hospitalization – one (17%), and the lack of agility in the discharge process – one (17%). The most frequent suggestions presented among the total 10 answers were to reevaluate the hospitalization indications – three (30%), follow-up by resident physicians – two (20%), and continuing education of the resident physicians – one (10%).

### ***Waste related to the working process***

The waste related to working process most reported by the Surgical (50%) and Pediatrics (37%) units was the frequent requisition of medications to the pharmacy, because after the medical prescription is made or changed, nursing professionals have to walk to the pharmacy to get the medications. The second most frequent report at the Surgical (25%) and Pediatric (27%) units was the forwarding of exam materials to the laboratory by nursing professionals.

Another reported issue is the excessive number of documents to be filled out, assigning a bureaucratic character to the process of registering the actions performed. Nursing professionals washing materials and cleaning beds was also considered a waste, considering that other professionals could do these activities, and nursing professionals could invest this time directly with patient care.

In the Rooming-In the main reports regarded the lack of medical protocols (29%) and an excessive amount of paperwork (29%). Providing instructions to patients was mentioned as repetitive activities performed by different professionals. The Rooming-In physicians reported an excessive requisition of unnecessary exams (14%). The main cause of waste reported was the ineffective software system (44%), followed by the lack of preparation of physicians (14%) and a lack of effort by physicians to develop protocols (14%). The mentioned suggestions were: to implement electronic patient records (30%), training (14%), develop medical protocols (14%), improve the communication between teams (14%) and adjust the scheduling of gynecology appointments (14%).

The causes of waste in the working process were paperwork, lack of communication between nursing and support services, the lack of a computerized system to register data, and the disorganization of support services, such as: Central Supply and Sterilization and Pharmacy.

From the participants' perspective, excessive paperwork and the lack of a computerized system integrating the support services (pharmacy, supplies, laboratory) causes a waste of time in the working process.

Hiring more workers to perform the activities related to support services; reviewing the working processes, with a view to improving communication and obtaining a better connection between different services, and the computerization of services to minimize the need for professionals to leave the units were actions presented as suggestions to reduce the waste in working processes.

### **Waste related to staff**

In the Clinical Medicine unit, this type of waste was correlated to the poor distribution of male workforce in the staff (100%). The actions developed in the unit require strength and male workforce in all work shifts. The cause attributed to this waste is the lack of organization of the work shifts – two (70%), causing work overload and occupational illnesses – one (30%). The suggestions for changes is to make an equal distribution of the male workforce per shift – two (50%), and to readjust and train the staff – two (50%) in order to enable activities and not cause work overload.

The lack of organization in the staffing (100%) was the only report in the Surgical unit and one single cause was referred to work overloads that cause occupational illnesses. The suggestions presented are to optimize (67%) and reorganize (33%) the staff.

In the Pediatrics unit, on the other hand, the poor staffing and scheduling was reported due to the different number of professionals in the different work shifts. The causes reported were the lack of organization and distribution of personnel (50%) and the lack of repossession of medical leaves (50%). The suggestions for change include the evaluation for the service by the nursing leadership (34%), to optimize the referral of patients to perform exams (33%) and replace the workers that are on medical leaves (33%).

In the Rooming-In unit the reported wastes were unperformed activities (50%) and professionals lacking the profile required to work in the unit (50%). The causes were the lack of supervision (75%) and of organization (25%). The presented suggestions were: to improve supervision (50%), reallocate workers according to their profile (25%), and more rigor regarding unperformed activities (25%), in the sense of controlling and penalizing, as they are delegated to professionals as a part of their job.

In the Nursery unit the reported wastes were the inappropriate task division (100%), and the cause presented was the lack of establishing priorities (50%) and inflexible people with an inadequate professional attitude (50%), which difficult the process of staffing and scheduling. The suggestion presented was the need for training (100%).

### **The cost of the main source of waste**

To calculate the cost of this waste, it was necessary to survey the costs of the materials consumed by the units in 2008, the year before this study was performed. This information was obtained with the supplies and accounting departments of the hospital.

Because of the lack of waste rates regarding these materials, because the HU-USP does not count with any tracking system or real use control, using a computerized system, the present study used a materials waste rate of 20%, the only reference found in the literature mentioning a waste rate in the health sector<sup>(2)</sup>. It is emphasized that the UNICAMP Hospital, the location of the referred study<sup>(2)</sup> is also a public organization aimed at teaching. Therefore, the estimated cost of material waste was calculated using this percentage over the total annual costs, as shown in Table 4.

Table 4 – The studied healthcare units according to the annual costs with medical-hospital materials and medications in 2008\* – São Paulo – 2009

Unit	Annual Cost	Cost of Waste
Cl. Med	875.799.78	175.159.95
Surg	718.322.35	143.664.47
Ped	421.587.73	84.317.54
Nurs	220.367.47	44.073.94
RI	160.234.82	32.046.96

\* Source: information provided by the HU-USP Materials Management Department.

Therefore, using the 20% rate over the total cost, the annual waste cost in the studied units could be around R\$ 479.262,86.

## **DISCUSSION**

The waste related to materials (36%) was the most reported by physicians, nurses, nursing technicians and aides. Previous studies<sup>(2-3)</sup> have also found evidence that material waste is the most reported type of waste. It is emphasized that managing material resources has been a reason for concern for public and private health institution administrators, because of the high costs they represent for these institutions<sup>(7)</sup>.

The annual cost of material waste in the studied units could add up to about R\$ 479.262,86; if a 36% rate was applied, as pointed out by HU-USP workers, this value could rise to R\$ 862.672,32. It is highlighted that these values are considered to be high for private hospitals, as they count with a cost-per-patient management system, and therefore know that the material waste is currently around 5%.



The poor participation of professionals in this study showed that the teams have not yet been sensitized about the possible waste existing at the units they work in. The concern with costs in healthcare is relatively new, particularly in public institutions, because it was not the custom to evaluate and outline the quality of the material used, the production and costs, i.e., work efficiently. Therefore, it is necessary to build awareness among the health team in order to define and reevaluate the working processes.

Participants often suggested making investments in training the team as an important strategy to reduce or fight waste. It is believed that through training programs it is possible to provide workers with tools that would help, in the individual and collective level, to seek elements that facilitate the perception of the importance of this theme, with a view to reaching healthcare quality and reducing costs.

A study developed in private and public hospitals showed that, although 66.67% of institutions were involved in programs to combat waste that had already been institutionalized, 100% affirmed they faced difficulties to implement the process of identifying and combating waste. The study associated those difficulties to the human factor, i.e., to the deficient relationship between leaders and professionals, the team's lack of commitment towards the institution and vice-versa, and the workers' lack of an administrative view <sup>(3)</sup>.

Both studies developed on this theme concluded that a orientation and continuing education program that would address all the hospital areas could lead to a clearer view of the reality of waste <sup>(2-3)</sup>.

The study developed at HU-USP advanced in relation to previous studies, because, in addition to seeking only the indication of professionals about where they believed waste existed, it reported the reasons and their suggestions.

However, further studies should make a deeper approach in hospital sectors and find evidence that would help propose more specific actions to combat waste.

Therefore, the goal is that by deepening this study at HU-USP it will be possible to map the types of common and specific waste in each unit, measure the real waste; verify if the waste is or not relevant; and propose effective measures to minimize if eliminating them is found to be impossible.

## CONCLUSION

The survey of sources, causes and suggestions was chosen as our first step in the process to minimize waste. The goal is to, with these data and together with the teams, study the proposition of designing processes to minimize the identified types of waste and establish indicators to follow up, and waste rates, in order to implement a formal program aiming at reducing waste. This process has already begun in the Surgical Unit of the referred hospital, due to the high material expenses in this unit.

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