

# Time spent by the multidisciplinary team in home care: subsidy for the sizing of staff

Tempo gasto por equipe multiprofissional em assistência domiciliar: subsídio para dimensionar pessoal

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## Keywords

Home care services; Nursing care; Home care; Public health nursing; Health manpower; Personnel downsizing

## Descritores

Serviços de assistência domiciliar; Cuidados de enfermagem; Assistência domiciliar; Enfermagem em saúde pública; Recursos humanos em saúde; Downsizing organizacional

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## Abstract

**Objective:** To analyze the time spent by the health multidisciplinary team assisting patients in home care.

**Methods:** An exploratory descriptive study that included 214 patients. After defining the main procedures, they were timed by trained observers who collected the data in 2009 and 2010. In total, 245 home visits and 441 procedures were observed.

**Results:** Among the procedures categorized as direct assistance, the highlight was the time spent by the nursing staff, of 30.2 hours, followed by physiotherapists with 11.9h, dieticians with 9.4h and physicians with 8.9h. Indirect care was represented by the displacement of staff and guidance to the caregiver, family and/or patient, which consumed 65.3 hours and 20.3h, respectively.

**Conclusion:** The analysis of time spent in home care revealed the complexity of this model of care and the potentiality to subsidize the sizing of staff, as well as the reorganization of the service.

## Resumo

**Objetivo:** Analisar o tempo gasto por equipe multiprofissional de saúde no cuidado aos pacientes em assistência domiciliar.

**Métodos:** Estudo exploratório e descritivo, que incluiu 214 pacientes. Após a definição dos principais procedimentos, os mesmos foram cronometrados por observadores treinados, que coletaram os dados em 2009 e 2010. Houve a observação de 245 visitas domiciliares e 441 procedimentos.

**Resultados:** Dos procedimentos categorizados como assistência direta, destacou-se o tempo gasto pela equipe de enfermagem que foi de 30,2h, seguido por 11,9h gastas pelo fisioterapeuta, 9,4h pelo nutricionista e 8,9h pelo médico; e como assistência indireta, representada pelo deslocamento da equipe e orientação ao cuidador, família e/ou paciente, verificou-se que foram gastas 65,3h e 20,3h, respectivamente.

**Conclusão:** A análise do tempo gasto na assistência domiciliar revelou a complexidade desse modelo de atenção e a potencialidade para subsidiar o dimensionamento de pessoal, bem como a reorganização do serviço.

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## Introduction

In recent years, home care has risen as a global trend in response to demands arising from demographic and epidemiological transition, in Brazil especially characterized by: reduction of child mortality; sharp decline in fertility; increase in life expectancy at birth; rapid process of population aging, and prevalence of chronic non-communicable diseases. Such health situation, together with the development of new technologies, among other factors, has elevated the healthcare costs of patients who need continued assistance at different levels of complexity.<sup>(1)</sup>

Thus, home care prevails as an alternative to hospitalization by the innovation potential of the current techno-care model, consolidating the comprehensiveness and continuity of care and enabling the following: quality and humanization of care; teamwork focused on the expanded clinic; development of bonds and effective participation of caregivers and families in the production of unique therapeutic projects; reduction of hospital admissions and re-admissions, with release of hospital beds and consequent lower costs of care.<sup>(2-5)</sup>

Aiming to regulate this care modality already validated in other countries, but still not consolidated in the public service of Brazil, the Ministry of Health launched the *Programa Melhor em Casa* ('Better at Home Program') - Domiciliary Care in 2011, under the Brazilian Unified Health System. The recently published Ordinance number 963/2013 reaffirms home care as a technological incorporation of substitute or complementary character to hospital intervention for low and medium complexity, initiated in the Emergency Department and complementary to Primary Care.

In this sense, home care in the public system is presented as an innovation that requires new technologies of care, because it aims to provide humanized, user-centered multidisciplinary care with bonding, which puts the challenge to build health teams with appropriate size and time to provide quality care.

However, there is the difficulty of explaining, especially for managers, the amount of staff needed, as well as the possible number of patients to be

cared for by a team, considering the specificities of this care modality.

The literature review showed the scarcity of studies on the subject, which are focused basically on methods to classify patients in home care used in other countries, and in Brazilian experiences based on the workload of nursing directed to hospital inpatients. Other existing instruments are intended to determine the interventions on patients in home care, among which: the *Catalogue de Prestations de Soins* of the *Fondation des Services d'Aide et de Soins à Domicile*, used in Switzerland and instruments used by the Brazilian Association of Homecare Medicine (ABEMID) and of the National Center of the Homecare Enterprises (NEAD).

These instruments cover the organization of services in a practical way, including the amount of nursing professionals through the listing and/or temporal duration of specific activities of private home care services, and also those of high complexity, for purposes of paying procedures and/or hours of work, which characterizes the *Manage Health Care* model, focused on the managerial and financial rationale of health insurances, agreements and plans.

Thus, there is an urgent need for studies on home care, especially in the public service, which presents several peculiarities, including those related to the comprehensive care developed by the multidisciplinary team in collaboration with the caregiver, among other interfaces. It is noteworthy that the identification and validation of procedures/interventions developed in daily life may subsidize the sizing of staff and consequently a better human resource planning, which can ensure the quality of care, together with its training.

This study aimed to analyze the time spent by the health multidisciplinary team with patients in home care, in order to provide subsidies to reflect on the sizing of staff in the service.

## Methods

This is a descriptive, exploratory study carried out in five Regional Centers of the Home Care Program

(HCP) of Distrito Federal, Brasília, implemented since 1994.

In the first stage of the study, workshops with home care specialist professionals were held to discuss the procedures required by patients, in order to obtain the consensual and content validity of such procedures. Some validated instruments such as the Therapeutic Intervention Score System (TISS), were consulted as well.

The instrument designed to measure the time spent in home care (Appendix), was composed of the main procedures/interventions developed in direct care (at home) by the multidisciplinary team, herein considered: physician, nursing staff, physiotherapist and dietician. Besides these, are also included in the instrument the procedures that are part of indirect assistance, such as: displacement of the team – the time spent from departure of the service until arriving at the patient's residence, and from the patient's domicile until arriving at another home (if any), and/or the return to service; and guidance to the caregiver, family and/or patient.

In the second stage of the study, patient care was observed by using an instrument created in the first step of the study. Two external observers were selected for measuring the time of activities of the multidisciplinary home care teams, who met the following inclusion criteria: belonging to one of the professional categories of the health staff; having reference of responsibility and commitment; having the profile and available time to perform the work. The training of observers occurred through several meetings, focusing on the correct completion of the instrument and the possibility of extra records for its improvement.

The population for measurement of procedures was formed by active patients in the Home Care Program of Distrito Federal, the Home Care Service (Brasília-DF), Primary Care, in the period between 2009 and 2010. The study was carried out by systematic random sampling.

The inclusion criteria of the study participants were those of the admission to the program: individuals with acute and chronic diseases, sequelae and comorbidities; in palliative care; with functional disability for activities of daily living (temporary

or permanent), and in clinical stability, profile in which there is the prevalence of the elderly.

The exclusion criteria were the following: patients requiring invasive mechanical ventilation, in continuous monitoring, with intensive and complementary propedeutics nursing and potential demand for sequential diagnostic procedures with urgency; in use of complex medication with potentially serious side effects, or difficult to administer; in emergency surgical treatment and those who did not have a continuous and identified caregiver.

The study variables were represented by the number and average time spent for the procedures performed at home for direct assistance, and by the number of instructions and the actual time spent in displacements of multidisciplinary teams for indirect assistance.

The possible assessment and measurement bias were minimized by standardization of the data collection instrument and use of a chronometer, as well as by the training of accredited observers.

The sample size calculation was based on the target population of 1019 active patients of the Program in October 2009 (significance level: 5% statistical power: 80%), resulting in 282 patients.

Data were stored in Excel spreadsheets and the analysis was carried out by elements of descriptive statistics, using the SPSS statistical software version 17.0.

The study was carried out in two periods. The first was during the months of October, November and December 2009, in the Regional Health Departments of Sobradinho, Planaltina, Gama, Guará and Asa Norte, where 66 home visits were done. The second period was conducted during the months of July, August and September 2010 (179 visits totaling 245 home visits) to complement the number of visits of the first sample, in order to obtain the quantity needed for the representative sample of patients in the Program. The research reached 86.8% of the instrument total application for the calculated sample (214 of 282 patients).

The development of the study met national and international standards of ethics in research involving human beings.

## Results

It was observed that the nursing staff spends more time in the Home Care Program (HCP) of Distrito Federal. The main procedures carried out are shown in table 1. Those that demanded greater average time for performance were: 'dressing/debridement' - 25.1 minutes; 'Multiple dressings' - 15.6; 'Dressings of pressure ulcer grade III' - 11.7 minutes, and 'Dressings of pressure ulcer grade II' - 10.2 minutes; 'Nursing consultations' - 21.6 minutes (first) and 12.3 minutes (subsequent); 'Insertion of serum therapy' - 16.9 minutes; and 'Care and guidance for patients with ostomies' - 15.8 minutes. The time spent on these procedures show the complexity of care among patients cared for by the program.

**Table 1.** Number of procedures performed at home by the nursing staff in the first and second stages of the study and their average duration (in minutes)

Nursing Procedures	n(295)	Average (minutes)	SD
Dressing/debridement	1	25.1	0
1 <sup>st</sup> Nursing consultation (at home)	8	21.6	20.5
Insertion of serotherapy	1	16.9	0
Care and guidance for patients with ostomies	5	15.8	13.9
Multiple dressings	4	15.6	15.5
Subsequent nursing consultation (at home)	26	12.3	14.9
Dressing - pressure ulcer grade III	15	11.7	21.8
Dressing - pressure ulcer grade II	18	10.2	7.1
Insertion of a nasogastric/nasoenteric tube	7	9.6	6.9
Dressing - pressure ulcer grade IV	10	8.5	12.5
Insertion of indwelling urinary catheter	8	8.2	7
Application of medication intravenously	5	7.1	8
Insertion of urinary catheter for collection of examination	6	6.5	3.9
Blood collection for examination	35	6.2	13.5
Removal of serotherapy	1	3.3	0
Measurement/assessment and recording of vital signs	59	3.1	12.3
Muscular/subcutaneous administration of medication	2	3.1	2.8
Blood glucose evaluation	8	1.7	1.7
Oximetry measurement	27	0.9	7.4
Registration and approval of the caregiver in the home visit form	49	0.8	5

n - Number of procedures performed; SD - Standard Deviation

Similarly, in table 2 are arranged the data corresponding to the main systematic procedures performed by the physiotherapist, dietician and physician, in the same place and time, with the specifics of each professional category. The physiotherapist showed greater number of procedures (42), followed by the dietician (29) and the physician (25). The activity which required more time was the 'first

medical consultation (at home)' (54.3 minutes on average), followed by 'evaluation/adaptation of the residential environment' by the physiotherapist (35.5 minutes on average) and the 'first home consultation with a dietician', which lasted for 23.5 minutes on average.

**Table 2.** Number and average duration of the home procedures (in minutes) carried out by the physiotherapist, dietician and physician

Professional category	Procedures	n(96)	Average (minutes)	SD
Physiotherapist	Evaluation/adaptation of the residential environment	3	35.5	7
	Physiotherapy session (respiratory, motor, neurological and/or trauma) / guidance to the caregiver and/or patient	16	21.2	40.5
	1 <sup>st</sup> Consultation with the physiotherapist (at home)	6	16.4	10.3
	Subsequent consultation with the physiotherapist (at home)	17	10	27.3
Dietician	1 <sup>st</sup> Consultation with the dietician (at home)	15	23.5	12.7
	Subsequent consultation with the dietician (at home)	14	15.2	22.6
Physician	1 <sup>st</sup> Medical consultation (at home)	3	54.3	10.6
	Subsequent medical consultation (at home)	22	17	18.4

n - Number of procedures performed; A - Average; SD - Standard Deviation

The variables of direct assistance (professional procedures) and of indirect assistance (displacement time and guidance to the caregiver, family and/or patient) are listed in table 3.

**Table 3.** Variables of direct and indirect assistance, according to the number of procedures performed, average of hours with the respective percentages and time of displacement and general guidance, according to real-time in hours and percentage

Direct assistance (procedures of professionals)	n(%)	Average hours (%)
Nursing	295(75,5)	30,2(50)
Physiotherapist	42(10,7)	11,9(19,7)
Dietician	29(7,4)	9,4(15,6)
Physician	25(6,4)	8,9(14,7)
Total	391(100)	60,4(100)
Indirect assistance	Real time (hours)	(%)
Time of visit duration (T visit = T arrival at domicile - T departure from domicile)	92	58,5
Time of team displacement (T displacement = T departure from service to domicile + T between domiciles + T return to service)	65,3	41,5
Time of general guidance (T guidance = T visit - T procedures)	20,3	13
Total time (T total = T visit + T displacement)	157,3	100

n(%) - Number/Percentage of procedures; A(%) Average of hours/Percentage of time spent ( $\sum n \times A_{min}/60$ ); T-Time

For direct assistance, the average time spent was calculated from the sum of procedures of each pro-



fessional, multiplied by their respective average duration in minutes (Tables 1 and 2), and divided by 60 to obtain the data in hours. It was observed that 75.5% of all procedures performed by the multidisciplinary team were developed by the nursing staff (295), corresponding to 50% of the total average of time spent on home care.

The time spent on indirect assistance that includes the duration of the visit (general guidance + performing procedures) and the displacement of the team were timed as follows: Total time = 157.3 hours, of which 92 hours were in visit duration (58.5%), and 65.3 hours was travel time (41.5%). The time for guidance was 20.3 hours thus, the actual time of procedures was 71.7 hours ( $92 - 20.3 = 71.7$ ), corresponding to 13% and 45.5% of the total time of home care, respectively.

The losses occurring during the survey period were represented by nine missed visits (scheduled and not carried out); five unregistered visits; seven unrecorded procedures; two with incompatible recorded time, in which the percentage is below 1% relative to the total.

## Discussion

It was found that home care develops various procedures/interventions carried out by the multidisciplinary team, aiming to provide quality of care, which is to meet the specific needs of these patients that have a differentiated profile.

In relation to the nursing procedures, it was found that performing dressings on pressure ulcers of varying degrees was one of the most frequent activities and that demanded more time of these practitioners. This fact is consistent with the clinical profile of patients who have been treated at the HCP of Distrito Federal, since the incidence of pressure ulcers in home care is common, affecting patients with restriction of movement and sensitivity, in which the main risk factors are the contact pressure, shear force, anemia, malnutrition and chronic diseases.<sup>(6,7)</sup>

When comparing the amount and duration of the procedures performed by the nursing in rela-

tion to the other team professionals, it was found that nursing has reached a much higher level. This shows the weight of the nursing staff in the routine of Home Care Services, characterizing it as a privileged locus of nursing, where the skills are developed in its entirety, whether in the assistance area, administrative, educational and mostly in research, by the leading scientific production in home care, as well as in case management.<sup>(8)</sup>

However, it is noteworthy that unlike other professional categories, the nursing procedures are very specific and parameterized, i.e., in most of the times, they are perfectly distinguishable and timed, which is not true when the approach is clinical, in medicine, nutrition, and physiotherapy, due to the scarcity of studies on the measurement of time of procedures.

In the data regarding the procedures performed by physiotherapists, dietitians and physicians, it was evident that the physiotherapist performed the largest number of procedures, compared to dietitians and physicians. It is noteworthy that the physiotherapist spends significant time with assessing the conditions of residences, which reveals care with safety of patients and, consequently, greater assurance in the continuity of their follow-up.

The domiciliary physiotherapy is resultant mainly from chronic diseases, and most of the patients who require this therapy are confined to bed and in the age group above 65 years. The main goal is the motor rehabilitation to treat major sequelae of stroke, as well as those of osteoarthritis and hip fracture. This profile is found in patients of the Distrito Federal Program, and in a survey carried out in a Norwegian District Rehabilitation Centre, where the coordinated and multidisciplinary rehabilitation led to significant and sustained improvements to patients attended, of whom 74% required home care services.<sup>(9)</sup>

The time spent in the first consultation of all professionals in general was greater than the time spent on follow-up visits (Tables 1 and 2), probably due to the ignorance about the condition of patients, requiring more time in their propedeutics and in contact with the caregiver and the family. Furthermore, it is suggested that the time spent in consultations

shows care, particularly focused on guiding the caregiver that remains all the time with the patient.

In this respect, the activity that required more time for performance was the first home medical consultation, a fact shared by the Cuban HCP, which is developed by family physicians, who spend 22 minutes per visit and have the support of specialists. The average time spent with patients is comparable with that of the family nurses because most home visits are organized together, encompassing visits for preventive and curative care.<sup>(10)</sup>

The number of follow-up visits of most team professionals was well above the number of first visits reported (Tables 1 and 2), characterizing the longitudinality of care, which expresses the bond in close relations between professionals and patients, caregivers and families, guided by the humanization of relationships, trust, and joint participation in actions that consider the completeness of patients, their specific needs and its resolution.<sup>(11)</sup>

Regarding the time spent on indirect care, the time of general guidance given by all members of the multidisciplinary team lasted 20.3 hours in a total of 92 hours spent on the home visit itself (22%). This reflects and reaffirms, together with the longitudinality of care, the implication and the link between the professional team and the patient, becoming the differential of home care, in the predominant use of the light technologies characterized by the development of human relations. This context provides an inexhaustible source for continuing education and new ways of integrating different perspectives for transforming health practices.

This fact is consistent to that found in other studies, in which the time spent by nursing staff in activities in nursing homes was significantly higher for communication comparing to all the activities carried out in those institutions, concluding that communication/guidance activities have a prominent place in facilities that treat elderly due to the positive influence of social interaction relationships with the wellbeing of these patients.<sup>(12,13)</sup>

The time spent with the displacement of staff (indirect assistance), demanded 65.3 hours of the total of 157.3 hours of timed home care. It is noteworthy that the service infrastructure needs to be

revised, especially that related to transportation for transit of professionals. The travel time of the team consumed 41.5% of the total period of home care, which impacted negatively on the productivity of the service. The average duration of each home visit was approximately 55 minutes.

The limits of the results of this study are related to the exploratory design that does not allow establishing an association between cause and effect. Furthermore, the operational difficulties encountered in collecting data, which mirrored the logistics service structure of the Secretaria de Saúde do Distrito Federal (SES-DF), in which often there was no sufficient availability of cars and drivers for the adequate displacement of teams for home visits.

Another aspect is that the activities listed here are only those identified as major and most prevalent in the service. Other related activities were not computed here, such as meetings of the multidisciplinary team, which demonstrably improve communication between health professionals and optimize the service to patients, especially improving prescriptions at homes, in addition to all logistics that is developed in service, for the administrative and care planning both before and after the home visit.<sup>(14)</sup>

## Conclusion

This study helped identifying the main procedures/interventions carried out by a multidisciplinary team of home care service, whose analysis of the time spent can support the proper sizing of health professionals and the infrastructure needed to meet the specific demands of the service, and in general, the planning and organization of the service.

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## Collaborations

Villas Bôas MLC and Shimizu HE declare that contributed to the conception and design, critical revi-

sion of the important intellectual content and final approval of the version to be published.

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## Appendix

Instrument for sizing of time required to perform procedures in home visits

### Home Care Program of the SES-DF

Professional category	Procedure	Time 1	Time 2	Time 3	Mean of time	Observation
Nursing	1 <sup>st</sup> Nursing consultation (at home) <sup>1</sup>					
	Subsequent nursing consultation (at home)					
	Muscular/subcutaneous application of medication <sup>2</sup>					
	Application of medication intravenously <sup>2</sup>					
	Insertion of serotherapy <sup>3</sup>					
	Removal of serotherapy <sup>3</sup>					
	Insertion of urinary catheter for collection of examination <sup>3</sup>					
	Insertion of indwelling urinary catheter <sup>3</sup>					
	Insertion of nasogastric/nasoenteric tube <sup>3</sup>					
	Blood collection for examination <sup>3</sup>					
	Dressing – pressure ulcer grade II <sup>3</sup>					
	Dressing – pressure ulcer grade III <sup>3</sup>					
	Dressing – pressure ulcer grade IV <sup>3</sup>					
	Dressing/debridement <sup>3</sup>					
	Multiple dressings					
	Guidance to caregiver					
	Guidance to patient					
	Blood glucose evaluation					
	Care and guidance for patients with ostomies <sup>4</sup>					
	Removal of sutures <sup>5</sup>					
Oximetry measurement <sup>5</sup>						
Measurement / assessment and recording of vital signs <sup>5</sup>						
Registration and approval of the caregiver in the home visit form <sup>6</sup>						
Professional category	Procedure	Time 1	Time 2	Time 3	Mean of time	Observation
Physician	1 <sup>st</sup> Medical consultation (at home) <sup>7</sup>					
	Subsequent medical consultation (at home)					
	Guidance to caregiver					
Dietician	Guidance to patient					
	1 <sup>st</sup> Consultation with the dietician (at home) <sup>8</sup>					
	Subsequent consultation with the dietician (at home)					
Physiotherapist	Guidance to caregiver/patient					
	1 <sup>st</sup> Consultation with the physiotherapist (at home) <sup>9</sup>					
	Subsequent consultation with the physiotherapist (at home)					
	Physiotherapy session (respiratory, motor, neurological and/or trauma) / guidance to the caregiver and/or patient. <sup>10</sup>					
	Evaluation/adaptation of the residential environment					
Travel time	Travel time of the vehicle from the Health Unit to the domicile and return to the Unit	Time 1	Time 1	Time 1	Average Time	Observation
		ND	ND	ND	ND	
		DD	DD	DD	DD	
		DN	DN	DN	DN	
	Arrival time at domicile					
	Departure time from domicile					

ND – journey between the NRAD and the Domicile

DD – journey between Domiciles

DN – journey between the Domicile and the NRAD (Núcleo Regional de Atenção Domiciliar / Regional Center for Home Care)

Name of observer  
Place / Date

Issue number  
Signature



## GENERAL GUIDELINES

The purpose of this tool is to measure the time spent in each procedure performed at home and with the displacement of professionals using chronometer. The procedures are divided by professional category. It must be completed by a trained observer, free of any critical evaluation of the procedure or by the professional who is performing the activity. Each time measurement must be done individually, i.e., by timing a procedure each time, for not distracting attention.

The same procedure performed for a patient can be measured in different home visits.

In the attached table, there are specific columns by professional category, by procedure, by time spent for the procedure and displacement, Average Time, and Observations.

Record the time required for the evaluated procedure in the column 'Time 1'. In a second home visit, the time spent for that same procedure will be determined and recorded in the column 'Time 2', and so on.

Time will be measured in **hours, minutes and seconds** e.g.: **00h00min00seg.**

Any procedure not currently included in this instrument may be listed in the blank spaces or in the column 'Observations'.

The professional performing the procedure should inform the observer about the beginning and end of each activity; e.g.: 'Administration of medication subcutaneously' - start counting the time from the moment of positioning the patient for this procedure until the time of recording information. The same goes for the other actions.

The Average Time is the sum of 'Time 1', '2' and '3' divided by 3 (example).

Travel Time: means the travel time of the vehicle between the Regional Center for Home Care (NRAD) and the home visit location (ND), between domiciles (DD), and between the domicile and the NRAD (DN).

The routine of the team should not be changed during the instrument application.

## SPECIFIC GUIDELINES

1. According to the Nursing Evaluation Report for Home Care Patients contained in the Implementation Project of the HCP in Distrito Federal.

2. Includes preparation of medication, application and registration.

3. Includes preparation of materials and the patient, technical procedure, organization of the site and entry/recording of data. For collection of material for examination, **exclude** the travel time and delivery to the laboratory. In cases of dressing on pressure ulcers, consider the time required for the dressing of **an ulcer** only. The professional doing the dressing should inform the observer about the degree of complexity of the ulcer.

4. Includes the care and guidance related exclusively to the ostomy.

5. Includes patient preparation, technical procedure and organization of the site.

6. Includes completion of the home visit form, its reading by the caregiver, and the signature of the caregiver.

7. According to the Report of Medical Evaluation for Patients in Home Care of the Implementation Project of the HCP in Distrito Federal- 2007. Includes assessment and registration.

8. According to the Plan of Nutritional Evaluation for Patients in Home Care of the Implementation Project of the HCP in Distrito Federal - 2007. Includes assessment and registration.

9. According to the Report of Physical Therapy Evaluation of the Implementation Project of the HCP in Distrito Federal - 2007. Includes assessment and registration.

10. Consider the physiotherapy procedure (physical, neurological, respiratory and/or trauma therapy), along with the guidance that will be provided to the caregiver and/or patient throughout the development of activity.