

## Original articles

# Speech Therapy Practice in the Intensive Care Unit of a hospital of infectious diseases of Alagoas

*Atuação da fonoaudiologia em unidade de terapia intensiva de um hospital de doenças infecciosas de alagoas*

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**ABSTRACT**

**Purpose:** to describe the speech therapy in Intensive Care Unit of a main-hospital.

**Methods:** the sample consisted in all records of the minutes book of the research site in 2014. The period data was collected and tabulated in Excel®, analyzed using statistical methods and the results was presented in graphs and tables.

**Results:** in the sample of 166 patients, 77 has participated the research. 40 (51.9%) through speech therapy and 37 (48.1%) through monitoring. This number of patients assisted by speech therapy service was significant, once the average hospital stay was twenty days by the severity of the main-pathologies. Most patients that had some kind of speech therapy was discharged from the intensive care unit being transferred to other hospital units.

**Conclusion:** speech therapy was an important help in the Intensive Care Unit, making bigger the possibility of discharge

**Keywords:** Speech, Language and Hearing Sciences; Intensive Care Units; Communicable Diseases

**RESUMO**

**Objetivo:** descrever a atuação fonoaudiológica em Unidade de Terapia Intensiva no hospital de referência.

**Métodos:** a amostra foi composta por todos os registros no livro ata do local da pesquisa no período de 2014. Os dados foram coletados e tabulados em planilha Excel, analisado por meio de método estatístico e os resultados apresentados em gráficos e tabelas.

**Resultados:** da amostra de 166 pacientes, 77 tiveram intervenção fonoaudiológica, sendo 40 (51,9%) por meio de fonoterapia e 37 (48,1%) por meio de gerenciamento. Este número de pacientes assistidos pelo serviço de fonoaudiologia foi significante, uma vez que em média o período de internação foi de vinte dias pela gravidade das patologias de base. A maioria dos pacientes que tiveram algum tipo de intervenção fonoaudiológica recebeu alta da Unidade de Terapia Intensiva sendo transferidos para outras unidades do hospital.

**Conclusão:** a fonoaudiologia tem uma atuação importante na Unidade de Terapia Intensiva favorecendo a possibilidade de alta dos pacientes internados nesta unidade.

**Descritores:** Fonoaudiologia; Unidades de Terapia Intensiva; Doenças Transmissíveis

## INTRODUCTION

The Intensive Care Units (ICU) were established in Brazil since 1970 and their appearance improved the care of critical patients, previously performed in the ward with inadequate areas and shortage of technological and human resources<sup>1</sup>.

Intensive care hospital services occupy spaces for the care of critically ill patients who require complex and specialized care. The reality experienced by the multidisciplinary team which works in intensive care is permeated by various feelings and emotions and routine requires an excellent technical and scientific training and professional preparation to deal with the loss, the pain and the suffering<sup>2</sup>.

The speech therapy was recently introduced in hospital settings. Speech therapy in the ICU is inserted in several areas, among them NICU, pediatric, coronary, burns, trauma, and cancer. The clinical assessment in the ICU aims to identify the possible functional changes that affect the oral and pharyngeal phase of swallowing. For an accurate clinical evaluation, the use of items described in the literature is required such as testing the water, pulse oximetry and cervical auscultation<sup>3</sup>.

In hospitals, rehabilitation performed by this professional involves difficulty in swallowing (dysphagia) as well as cognitive and communicative aspects. In the case of dysphagia, stroke, prolonged intubation and tracheostomy are considered as risk factors<sup>3-5</sup>.

Regarding communication of ICU inpatients of infectious diseases, the speech therapist can act evaluating, planning and discussing with other professionals of the multidisciplinary team aspects related to very important cognitive incentives for the inpatient in the ICU, considering that it may favor the difficulties of individuals with neurological disorders<sup>6</sup>.

The speech therapist should be the professional inserted in health care services that enhance the humanized assistance, since the humanization process permeates communicative skills and attitudes whose scope and intervention come from the speech therapist. In addition, the National Policy of Humanization (PNH) is the basis of successful therapeutic procedures and, above all, it is an exercise of citizenship<sup>7</sup>.

Infectious diseases are among the most prevalent diseases in intensive care units. Unfortunately, Brazilian data based on the prevalence of infection in the ICU are scarce<sup>8</sup>. Therefore, information on the speech therapists work in the rehabilitation of inpatients in intensive care units in infectious diseases hospitals are practically nonexistent.

Thus the aim of this study was to describe the speech therapists in the intensive care unit in the referral hospital in the state of Alagoas.

## METHODS

This study was approved by the Research Ethics Committee (CEP) of UNCISAL with the protocol number 834 026 in 2014.

The survey was conducted in a teaching hospital of the University of Health sciences of Alagoas (UNCISAL), which is a reference in infectious diseases in this state. The records of all inpatients from this ICU during the period from January to December 2014, whose age were from 24 years of age or over were included, because according to the Brazilian Institute of Geography and Statistics (IBGE)<sup>9</sup> they are considered adults or seniors. Patients under this age are disconnected from the profile of this intensive care unit because they are considered to belong to the children and youth group. Patients who progressed to death after the first 24 hours of admission were also excluded.

Data collection was held in the corresponding minute book records for the period from January to December of 2014 at the research site, which considered the length of stay in the ICU, the basic pathology and speech therapy period what define its characterization.

Because it is a retrospective study in which there was no identification of hospitalized individuals, there was no need of Informed Consent (IC), therefore its decline was required. The research site authorized its realization.

Data were collected through a structured form for the acquisition of key information from research, namely: length of stay, speech therapy time, medical hypotheses base, kind of speech therapy and hospitalization outcomes of patients (Attachment 1), recorded in a spreadsheet Excel (2007) and analyzed using statistical method.

The variables were described by frequency distribution. Charts and graphs were built. To verify the association between variables speech therapy through speech therapy or speech therapy management, which is known as patient dysphagia follow up and the outcome of the hospitalization of patients the chi-square test was applied in two independent groups (with and without speech therapy). The 0.05 significance level was accepted to reject the null hypothesis.

## RESULTS

183 records of patients present in the minute book of the year Speech Therapy occurrence of 2014 were selected for this study. However, 17 of these records were excluded from the study because such patients came to death in less than 24 hours of hospitalization in infectious ICU. Thus, only 166 patient records were analyzed in this study, 77 (46.4%) of patients who had had speech therapy as part of the treatment and 89 (53.6%) of patients who had not had speech therapy as part of the treatment according to the minute book recordings.

As for the length of stay in the ICU, it was observed that 160 patients remained less than one month in the ICU, in which 77 patients were assisted by speech therapist 72 (93, 5%) were hospitalized during this period and 5 (6.5% ) between 1 and 3 months. 88 (9.9%) out of 89 patients who had no intervention by the speech therapist were hospitalized in less than one month and only 1 patient (1.1%) between 1 and 3 months. The prevalence of hospital stay to be less than one month was due to the fact that patients who were served by speech were discharged from the ICU on the contrary of those who had no intervention of the speech therapist because they were under severe general condition which prevented them from having such intervention. In either group, were no reports of patients who have been admitted to a period between 4 and 6 months or up to seven months.

As for medical diagnosis, we observed the presence of four basic conditions that were more recorded among the 77 patients who had speech therapy, the most frequent were: AIDS which affected 27 patients (55.8%) and tuberculosis which affected 20 patients (35%) . In addition, records of 13 patients (16.8%) affected by meningitis and 3 patients (3.8%) affected by tetanus were found and also other records of less frequent base diseases ( filariasis, leptospirosis, dengue hemorrhagic fever, influenza virus The subtype -H1N1, liver disease, encephalitis, ascites, etc.) which affected a total of 43 patients (55.8%), these diseases were brought together in a single group. Some opportunistic infections were also recorded, and the most frequent was cerebral toxoplasmosis which affected 14 patients (17.8%), followed by tuberculosis, which affected 7 patients (8.8%) and candidiasis, which affected five patients (6.5%) . All these disorders were associated with AIDS.

In patients who had not had speech therapy, were observed 5 more basic conditions which were recorded among the 89 patients, the most frequent were: tuberculosis which befell 29 patients (32.5%) and AIDS that also befell 29 patients (32.5 %). Moreover, records of 10 patients (11.2%) affected by meningitis were found and also records of 8 patients (8.9%) affected by leptospirosis and 2 patients (2.2%) by tetanus. Other less frequent pathologies were also recorded (dengue, snakebite, endocarditis, uterine cancer, esophagitis, hydrocephalus, liver disease, etc.) affecting a total of 62 patients (69.6%) these were brought together in a single group. Some opportunistic infections were reported, the most frequent were cerebral toxoplasmosis in 15 patients (21.3%), followed by tuberculosis, which affected 10 patients (16.8%) and candidiasis, occurred in 8 patients (9%). All these disorders were associated with AIDS.

It is noteworthy that more than one medical diagnosis were recorded in the same patient in cases of HIV positive, reinforcing these immunosuppression.

Speech therapy was the kind of intervention that prevailed in most patients assisted by a speech therapist in the ICU of infectious diseases. 40 (51.9%) out of the 77 patients had speech therapy and 37 (48.1%) were monitored (Table 1). In speech therapy oral motor sensory stimulation exercises were performed for fitness of tone, sensitivity and mobility of the speech organs (OFA's), and language stimulation in patients with AIDS associated with toxoplasmosis.

In patients after invasive mechanical ventilation and in some cases of tuberculosis, voice features as the voice quality on the scale that considers hoarseness-R, degree of coarseness-A degree of breathiness-S, grade asthenia-A , degree of tension-T and degree of instability-I (RASATI), pitch (feeling low / high frequency-) and loudness (feeling low / high-intensity) were also worked on them.

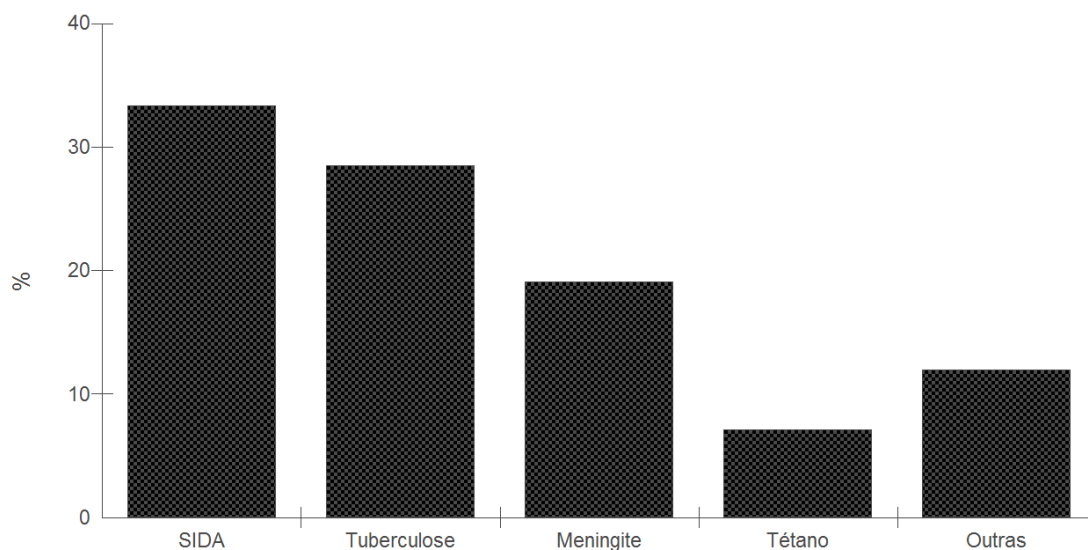
**Table 1.** speech therapy type in infectious intensive care unit

	N	%
Speech therapy	40	51,9
Monitoring	37	48,1

N= number of patients % = percentage

The management occurred in patients who were evaluated and showed no speech therapy demand, remaining under observation while hospitalized to monitor the integrity of oromotor functions and others patients were in serious overall condition resulting from a greater number of opportunistic disease or they were admitted in ICU due to a respiratory failure which evolved to intubation orotraqueal.

In the 40 patients who had phoniatrics the predominant diseases were AIDS (n = 14; 33.3%) and meningitis (n = 12; 28.5%), and this type of intervention has also occurred in some patients with tuberculosis (n = 8; 19.1%) in all patients with tetanus (n = 3; 7.1%) and other basic conditions such as H1N1, filariasis, ascites, hepatic disease, encephalopathy (n = 5; 12%) (Figure 1).

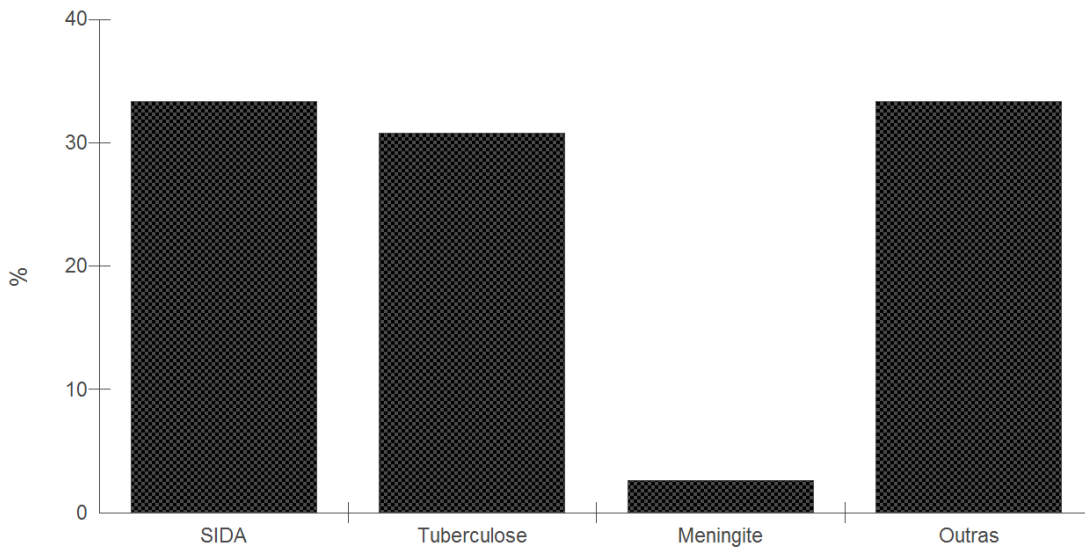


Other: H1N1, filariasis, ascites, encephalopathy and liver disease.

**Figure 1.** Speech therapy intervention: speech therapy x base pathologies

In the 37 patients who were monitored the most frequent base diseases were AIDS (n = 13; 33.3) and tuberculosis (n = 12; 30.8%), this type of intervention was also observed in a patient with meningitis (n = 1; 2.6%) and other basic conditions such as leptospirosis, chronic obstructive pulmonary disease, hepatitis and others (n = 13; 33.3%) (Figure 2).

Most patients who have had some kind of speech therapy were discharged from the Intensive Care Unit and were transferred to other hospital units. In the Statistical analysis with Chi Square test this finding was highly significant ( $p < 0.000$ ) because it demonstrates that there is an important relationship between speech therapy and the fate and survival of patients who are admitted to the ICU of infectious diseases (Table 2).



Other: Leptospirosis, chronic obstructive pulmonary disease and hepatitis.

**Figure 2.** Speech therapy intervention: Monitoring x base pathologies

**Table 2.** Relationship between speech therapy with the fate of patients in the intensive care unit of infectious diseases

	With speech therapy		Without speech therapy		P value
	N	%	N	%	
Discharge	53	68,8	25	28,1	P<0,000
Death	24	31,2	64	71,9	

N = Number of patients; % = Percentage

\*Chi-square test, P value = Probability of significance < 0,05

## DISCUSSION

The role of the speech therapist in hospitals provides an early assessment and a differential diagnosis in cases of dysphagia, with the objective of prevention as well as prevent and / or minimize clinical complications to the patient<sup>10</sup>.

The participation of these professionals in multidisciplinary team aims to prevent and reduce complications as a consequence from changes in the stomatognathic system, thereby contributing to the reduction of hospital stay and the rate of re-admissions for complications<sup>5</sup>.

The length of stay of the inpatients in the infectious diseases ICU participant in the survey was less than 1 month, similarly studies in HIV-positive patients who had been hospitalized in the infectious diseases ICU for about 22 days were also observed, which occurred at the same time of another study in an ICU in Acre which showed an average of hospital stay of 20 days<sup>1,11</sup>. Such reports suggest that not necessarily the type of

pathology determines the length of hospitalization but the general condition of the patient.

In this study, phoniatics was the kind of speech therapy that prevailed in the ICU of infectious diseases. In the practitioner dysphagia can be observed as a frequent manifestation among patients in ICU, which confirms another research carried out in an ICU of a hospital in Maranhão where a high incidence of oropharyngeal dysphagia was notice in 12 inpatients<sup>12</sup>. Thus, the speech therapy to adjust the myofunctional aspects that impact on swallowing becomes essential for the rehabilitation of patients admitted to the infectious diseases ICU.

The monitoring in patients with invasive mechanical ventilation (IMV) was also performed via intubation considering the serious general condition of these patients and, associated with the least hospital stay, in disagreement with the results of another study that found that patients on IMV with severe general condition remain for long time in ICU, preventing any

kind of rehabilitation activities for the characterization of the patient's condition<sup>5</sup>. It is observed that there is only agreement between the severity of the patient's condition and infeasibility of intervention.

In this study, AIDS, tuberculosis, meningitis and tetanus were the most common diseases reported in patients treated by a speech therapist in the ICU.

AIDS is a syndrome caused by the Retroviridae family of retroviruses, HIV-1 and HIV-2, which is unfolded by a quantitative and qualitative reduction of T lymphocytes in HIV-infected patients with advanced disease manifestations often have CD4 + lymphocyte below 200 cells / mm<sup>4</sup>, an increased plasma levels of ribonucleic acid (RNA) of HIV, and indicative clinical manifestations of severe immunocompromised<sup>13</sup>.

In patients with AIDS, intra-oral lesions are observed, changes in tone, mobility, strength and sensitivity of the speech organs, which reflect on the adequacy of the stomatognathic functions. Other studies also define this interpretation considering dysphagia and chewing change as outstanding conditions of patients with AIDS<sup>14</sup>.

In patients HIV-positive with associated neurological comorbidities speech therapy is important to speech because of organic repercussions inherent to the condition, mainly because swallowing is a neurological control function with considerable impact on the patient's general condition. This analysis is reinforced by authors that state that all HIV-positive patients with neurogenic dysphagia have a confirmed diagnosis of cerebral toxoplasmosis in which the speech-language intervention is vital in order to adjust consistency, temperature, food volume and more propitious attitudes to a safe and efficient diet<sup>15</sup>.

Tuberculosis is an infectious disease whose agent is Koch's bacillus<sup>16</sup>. Cough for more than two weeks, production of phlegm, fever, sweating, fatigue, chest pain, loss of appetite and weight loss are the main symptoms of tuberculosis. In more advanced cases sputum with blood may appear<sup>17</sup>.

In patients with tuberculosis speech therapy includes initial indirect techniques of stimulation of swallowing, passive and active vocal training to increase the maximum phonation time and to improve the pneumotransport phonoarticulatory<sup>18</sup> coordination. In this study, speech therapy in patients with tuberculosis was performed with emphasis on orofacial motor through indirect and direct techniques to promote adaptation of speech organs and their functions; and aspects in the voice area as adequacy of the pitch,

increased loudness, improved voice quality and pneumophonoarticulatory coordination were worked in those undergoing invasive mechanical ventilation for a long time.

Meningitis is characterized by inflammation of the meninges and etiology defined by bacterial, fungal and viral agents causing broad spectrum of signs and symptoms such as increased headache, vomiting, stiff neck, constipation and neurological signals<sup>19,20</sup>. In this study it was observed changes in speech pathology affecting the tone and mobility of the speech organs, difficulty in swallowing function and voice disorders. Thus, there were indirect or direct therapy techniques according to the level of consciousness presented by the patient; and postural maneuvers to assist in the efficient and safe swallowing for maintaining oral feeding route. In addition, there was use of vocal therapy for adjustment of vocal quality, pitch and loudness.

Tetanus is a non-contagious infectious disease caused by tetanospasmina (TS) produced by toxigenic strains of Clostridium tetani bacteria. Infection generally occurs by introducing Clostridium spores. The TS prevents the release of inhibitory neurotransmitters that act on the lower motor neuron increasing frequency of shots. Clinically, the release of the shots of the lower motor neuron manifested by increased muscle tone, and muscle spasms to sensory stimuli, especially visual and auditory. The muscles most often early affected in the tetanus is the proximal muscles, with sardonic laughter, lockjaw, neck stiffness and choking<sup>5</sup>.

Tetanus is the kind pathology in which the speech therapist has an important role as the difficulty in swallowing and speech, lockjaw and drooling are some of the symptoms found in patients with this condition in the Intensive Care Units<sup>5</sup>.

In this study the intervention of the speech therapist reinforced the literary accounts, emphasizing the adequacy of the orofacial muscles tone with relaxation and stretching of the muscles responsible for mandibular opening, favoring exercise of speech articulation and postural maneuvers to effect swallowing and also the vocal therapy after tracheal intubation and later tracheostomy to favor regularity of vibrating vocal folds and lower airway protection.

Despite progress in the treatment and control of infection with Human Immunodeficiency Virus (HIV), Acquired Immune Deficiency Syndrome (AIDS) persists as a major cause of death worldwide, moreover, opportunistic infections remain the leading cause of

hospitalization and death in people living with HIV / AIDS<sup>21</sup>.

In the study, the opportunistic diseases associated with HIV / AIDS in patients who have had or had not had speech therapy were: cerebral toxoplasmosis, tuberculosis and candidiasis in order of prevalence respectively, corroborating with the literature in which it is observed that these diseases are the third most common co infections reported in patients with HIV / AIDS<sup>13,15</sup>.

One of the most responsible for the increase in morbidity and mortality in patients with immunodeficiency is HIV and TB co infection, because, on one hand HIV infection increases the incidence of tuberculosis and on the other hand tuberculosis decreases the survival of people with HIV<sup>12,22</sup>. Such evidence was confirmed by the high number of deaths in patients with both associated pathologies.

According to Health Ministry data cerebral toxoplasmosis is a neurological disease more frequent in AIDS patients, occurring in 20-30% of patients with HIV<sup>23</sup>. The study data were against these findings ranging 2% from the lowest percentage range considered by WHO, no coincidence may have been influenced by the absolute number of internal research.

Oral candidiasis represents one of the most common injuries in HIV / AIDS patients. Some studies claim that over 75% of infected patients have candidiasis<sup>15</sup> in disagreement with the findings of this research, in which candidiasis appears as third most common co infection in HIV / AIDS patients. One can infer that prior medication use might have occurred to soften the symptoms of this comorbidity, since it is characterized by physical manifestations (oral cavity), therefore it is a noticeable injury not necessarily identified by a previous medical intervention which may favor self-medication in some individuals.

Regarding to the outcome of patients' hospitalization, in this study most patients who had speech therapy were transferred to other hospital wards. The differential of speech therapy is evident in the rehabilitation of these patients, favoring the discharge from the ICU. One study found a higher death rate compared with the transfer rate in patients with HIV positive in an infectious diseases hospital<sup>11</sup>. However there was not a speech therapist in this hospital.

To be admitted to the ICU patients are classified according to their status. In general, patients at steady state are those whose vital functions are modified, however, there is hemodynamic stability. Patients

considered to be under impaired general health status are those in whom stability hemodynamic exist<sup>24</sup>, however, they occur with refractory alterations of vital functions. Patients with severe general state are in instability hemodinâmica<sup>24</sup>. The obstacle in speech therapy is characterized only by the intervention of infeasibility in serious cases that could lead to a worsening of hemodynamic instability.

It was found that the presence of speech therapists in this UTI contributed to organize the orofacial and cervical musculature and to identify the swallowing function changes. Thus, rehabilitation was provided and feeding was conducted orally. It is worth to highlight vocal rehabilitation and cognitive incentives, especially in cases with respiratory and neurological effects.

## CONCLUSION

In this research AIDS, tuberculosis, meningitis and tetanus were identified as the base of diseases that most affect patients assisted by speech therapist in the ICU of a infectious diseases hospital. The only obstacle to speech therapy was the severe general condition of some patients, which determines the impossibility of the speech therapist to work as the clinical condition can be worsened by the hemodynamic instability.

The proposed rehabilitation was more used in speech therapy with emphasis on the organization of the orofacial and cervical muscles and in the rehabilitation of swallowing disorders in the case of AIDS and meningitis and vocal and swallowing disorders in cases of tuberculosis and tetanus rehabilitation.

Therefore, speech therapy care in the Intensive Care Unit of an infectious diseases hospital encompasses aspects of orofacial motor and dysphagia as rehabilitation areas more used, which contribute to patients discharge from this unit.

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**Attachment 1****FORM OF DATA EXTRACTION**

Register number: \_\_\_\_\_ Gender: \_\_\_\_\_

Date: \_\_\_\_\_ Month: \_\_\_\_\_

1 – Number of inpatients \_\_\_\_\_

2 – Patient length of hospital stay:

 Less than one month Between 1 and 3 months Between 4 and 6 months Between 7 and 9 months Between 10 and 12 months

3 – Speech therapy period with the patient:

 Less than one month Between 1 and 3 months Between 4 and 6 months Between 7 and 9 months Between 10 and 12 months

4 – Basic medical diagnosis:

 Tuberculosis     AIDS     Tetanus     Meningitis     Other

5 – Type of speech therapy:

 Speech therapy \_\_\_\_\_ Monitoring \_\_\_\_\_