

## Original articles

# Speech therapy criteria to indicate an alternative feeding route at an intensive care unit in a university hospital

*Critérios fonoaudiológicos para indicação de via alternativa de alimentação em unidade de terapia intensiva em um hospital universitário*

Priscila Carneiro Barroqueiro<sup>(1)</sup>

Monique Kelly Duarte Lopes<sup>(1)</sup>

Alba Maria Soares Moraes<sup>(1)</sup>

<sup>(1)</sup> Hospital Universitário da Universidade Federal do Maranhão – Unidade Presidente Dutra, São Luis, MA, Brasil.

Conflict of interest: non-existent

Received on: June 13, 2016  
Accepted on: March 13, 2017

### Mailing address:

Priscila Carneiro Barroqueiro  
Av. Marinheiros, quadra 3, nº 7 – Araçagy  
São José de Ribamar/MA  
CEP: 65110-000  
E-mail: pri\_barroqueiro@yahoo.com.br

## ABSTRACT

**Purpose:** to identify the criteria used to indicate an alternative feeding route to admitted patients at an intensive care unit in a university hospital.

**Methods:** a cross-sectional, retrospective, quantitative and descriptive study. The protocols of the patients who had an alternative feeding route indicated by a speech therapist in the period between January and December 2014 were analyzed. The data were tabulated using the Microsoft Excel program. As for the statistical analysis, the STATA 12.0 program was used to estimate averages and standard deviations or medians, respectively.

**Results:** out of the 25 participants, 76% had their level of conscience altered. However, 52% had their diet prescribed by a doctor, 24% presented language disorder, 52% speech articulation disorder, and 44% voice disorder. Only eight patients could be evaluated with oral diet. The criterion used with a major frequency for the indication of an alternative feeding route was the alteration of the level of conscience.

**Conclusion:** this paper corroborates other researches pointing out alteration of the level of conscience as a risk factor concerning dysphagia. The importance of the speech-language therapist in hospital environments, for an early detection of patients who need intervention, is emphasized.

**Keywords:** Speech, Language and Hearing Sciences; Intensive Care Units; Feeding Methods

## RESUMO

**Objetivo:** identificar os critérios utilizados para indicação de via alternativa de alimentação para pacientes internados em unidade de terapia intensiva em um hospital universitário.

**Métodos:** estudo transversal, retrospectivo, quantitativo e descritivo. Foram levantados os protocolos dos pacientes que tiveram via alternativa de alimentação indicada por fonoaudiólogo no período entre janeiro e dezembro de 2014. Os dados foram tabulados utilizando-se o programa Microsoft Excel. Para a análise estatística foi utilizado o programa STATA 12.0, por meio do qual foram estimadas médias e desvios-padrão ou medianas, respectivamente.

**Resultados:** dos 25 participantes, 76% encontravam-se com nível de consciência alterado. Apesar disso, 52% destes tiveram dieta prescrita por médico. 24% tinham alteração de linguagem, 52%, de fonoarticulação e 44%, de voz. Somente oito pacientes tiveram condições de ser avaliados com oferta dieta oral. O critério utilizado para indicação de via alternativa de alimentação com maior frequência foi a alteração do nível de consciência.

**Conclusão:** este estudo corrobora com outros já realizados apontando alteração do nível de consciência como fator de risco para disfagia. Ressalta-se a importância do fonoaudiólogo no ambiente hospitalar de modo a detectar precocemente os pacientes que necessitam de intervenção.

**Descritores:** Fonoaudiologia; Unidades de Terapia Intensiva; Métodos de Alimentação

## INTRODUCTION

The swallowing disorder named dysphagia happens because of neurological, structural and functional disorders, or even as a consequence of morbid states and it can cause malnutrition, dehydration, aspiration pneumonia, major risk of complications, increase of mortality, beyond the time of internment increase and its high costs. It is present in 12 to 30% of the hospitalized patients<sup>1,2</sup>.

The main risk factors for dysphagia include: age, altered behavioral state, cognition, agitation, concentration, tracheostomy, mechanical ventilation, extubation, nasogastric and endotracheal tubes, sedation and residual effects, and even risk diseases concerning dysphagia, for instance, neurological, chronic obstructive pulmonary, and head and neck ones<sup>3,4</sup>.

Patients admitted to the Intensive Care Unit (ICU) present a major risk of frequent aspirations due to a variety of factors, such as lowering of the conscience level, the supine position, clinic instability and immunodepression<sup>3</sup>.

The speech-language therapist's early intervention of hospitalized patients aims at offering a safe diet and medications, so contributing to the prevention and reduction of lung commitments, time of alternative feeding route, time of hospitalization, costs of morbidity and mortality<sup>3,5-8</sup>.

Swallowing evaluation usually includes the clinical data and instrumental exams, for instance, nasofibroscopy or videofluoroscopy. However, many times such exams are not available, and clinical evaluation ends up being the sole method used, since it is quick, noninvasive, with a low cost, demanding few resources<sup>3</sup>.

The bedside speech-language therapist evaluation must be able to identify patients under potential risk of dysphagia, and is composed by tests which diagnose oral functions disorders and comprise the morphology, mobility, coordination, rhythm, intra and extra-oral sensitivity, tone and posture of oropharyngeal structures, and even the feeding offer, when possible<sup>1</sup>.

Through this evaluation, one can observe the difficulties presented by the patients during their feeding, such as signs of laryngeal penetration and/or laryngeal-tracheal aspiration of the swallowed bolus, the safety in the maintenance or need of stopping the feeding through oral route, the best consistency to be offered and the possible causes of the identified disorders<sup>9</sup>. If it is observed that patients are unable to feed and

hydrate themselves orally, in a safe and functional way, the speech-language therapist usually indicates an alternative feeding route, using differentiated criteria<sup>1</sup>.

It is not uncommon to observe professionals of the team prescribing oral diets to patients at risk of dysphagia, because such risks go unnoticed. Because of the specificities involved in the process of swallowing and the speech-language therapist's eye upon it, the present paper aims at identifying which speech-language therapy criteria were used to indicate an alternative feeding route to the hospitalized patients at an Intensive Care Unit in, a University Hospital.

## METHODS

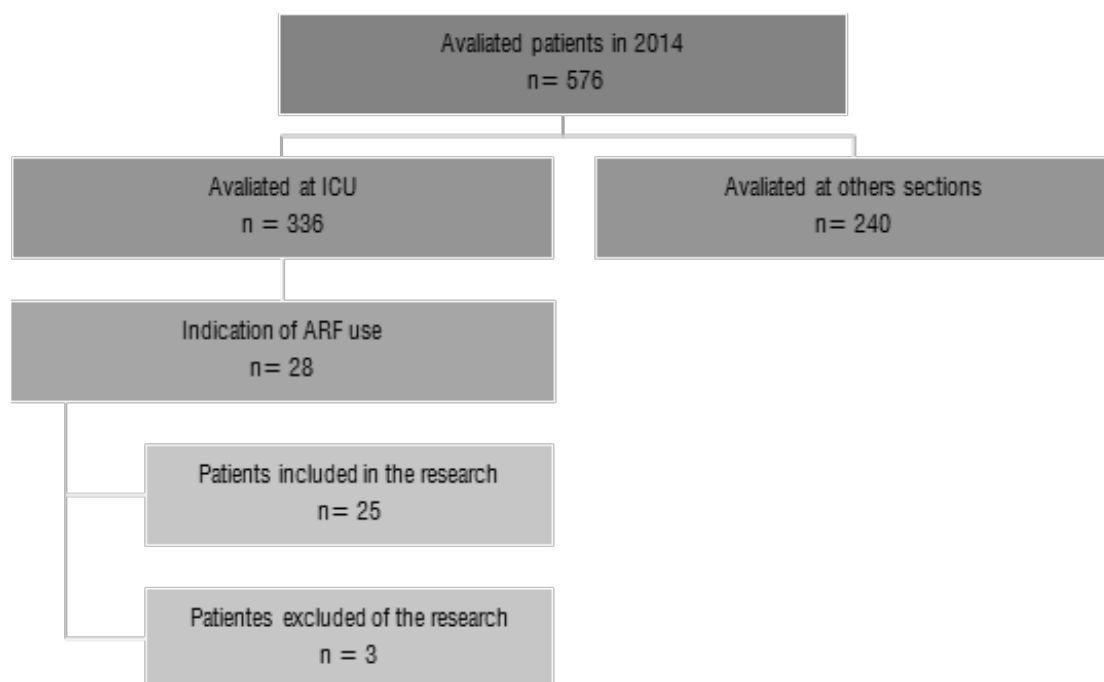
This paper is in agreement with Resolution 466/12 of the National Health Council and was submitted to the consideration of the Ethical Committee in Research of the University Hospital from the origin institution and was approved under number 1,140,173. A cross-sectional study, it was performed at the University Hospital of the Federal University of Maranhão (President Dutra Unit), more precisely, at the general ICU with its 15 beds, that is 9 clinical and 6 surgical ones, assisting young, adult and elderly patients.

The data herein used were collected by means of the Admission, Evaluation, Management and Speech Therapy Leave Protocol, an instrument used by the Speech Therapy Service of the hospital unit where the research was performed.

As inclusion criteria, the protocol should relate to a patient prescribed alternative feeding route by a speech-language therapist and bear his age record, diagnostic and criterion used by the professional for such recommendation. Protocols related to patients who had been admitted in the ICU, already using the alternative feeding route, indicated by other members of the team or whose protocols did not contain the required data, were excluded.

Protocols of all patient admitted and assessed at the general ICU, from January to December, 2014, totaling 336, were surveyed. After analyzing the protocols, a sample of 15 patients was obtained, as observed in the fluxogram (Figure 1).

Out of the protocols, the following variables were surveyed: age, gender, diagnosis, level of conscience, clinical breathing condition, feeding situation, speech therapy aspects (speech articulation, language and vocal quality) swallowing, cervical auscultation, conditions for functional evaluation and criteria for the indication of an alternative feeding route.



**Caption:** ICU = Intensive care unit. AFR = Alternative feeding route.

**Figure 1.** Sample individuals screening fluxogram

Tabulated by the Microsoft Excel program (2013), the data were presented, by calculating the absolute frequencies and the percentiles for the categorical variables. The STATA 12.0 program was used for the statistical analysis.

## RESULTS

The research comprised 25 patients, 52% being females. The minimum ages of 18 and a maximum of 90 were observed, under an average of 64.4 and a standard deviation of 17.2. The age ranges were divided into categories according to the World Health Organization (WHO), and 4% were adolescents (< 20 years old), 28% were adults (between 20 and 59 years old) and 68%, elderly (60 years or above).

Table 1 shows the clinical characteristics of the sample at the time of evaluation. A higher percentage of neurological patients (32%) was observed. Nineteen patients (76%) presented conscience level alteration.

As for speech therapy aspects, 24% of the patients presented language disorders, 52%, speech articulation problems, and 44%, vocal alterations (Table 2).

As for the aspects of the swallowing functional evaluation, 56% of the patients presented swallowing, however, only 32% had ideal clinical conditions for evaluation under a diet offer. The level of conscience was the most frequently used speech therapy criterion for the indication of an alternative feeding route (Table 3).

**Table 1.** Distribution of clinical characteristics of the sample

Clinical characteristics of the sample		
	n	%
<b>Diagnosis</b>		
Neurology	8	32
Orthopaedics	4	16
Gastroenterology	4	16
Urology	2	8
Hepatology	1	4
Multiple diagnosis	6	24
<b>Level of conscience</b>		
Normal	5	20
Disordered	19	76
Not mentioned	1	4
<b>Breathing clinical picture</b>		
Eupneic	13	52
Tachypneic	2	8
Dyspneic	6	24
Not mentioned	4	16
<b>Feeding situation</b>		
VO	0	0
VO UDC	13	52
Zero diet	10	40
Not mentioned	2	8

**Caption:** VO = Via oral feeding route; VO UDC = Via oral feeding route under doctor's criteria. (Stata 12.0)

**Table 2.** Speech therapy characteristics of the sample

Description of the sample's speech therapy characteristics		
	n	%
<b>Expressive language</b>		
Normal	10	40
Disordered	6	24
Not evaluated	2	8
Not mentioned	7	28
<b>Understanding language</b>		
Normal	10	40
Disordered	6	24
Not evaluated	2	8
Not mentioned	7	28
<b>Speech articulation</b>		
Normal	2	8
Disordered	13	52
Not evaluated	3	12
Not mentioned	7	28
<b>Vocal quality</b>		
Normal	2	8
Disordered	11	44
Not evaluated	3	12
Not mentioned	9	36

(Stata 12.0)

**Table 3.** Distribution of swallowing functional evaluation findings

Findings of swallowing functional avaluation		
	n	%
<b>Swallowing</b>		
Present	14	56
Absent	0	0
Not evaluated	1	4
Not mentioned	10	40
<b>cervical auscultation</b>		
Normal	8	32
Disordered	5	20
Not evaluated	0	0
Not mentioned	12	48
<b>Condition to evaluation with diet offer</b>		
Yes	8	32
No	17	68
<b>Criteria to indicate AFR</b>		
Level of conscience	16	64
Breathing clinical picture	3	12
Oral dysphagia	2	8
Pharyngeal dysphagia	0	0
Oropharyngeal dysphagia	0	0
Associated criteria	4	16

**Caption:** AFR = Alternative feeding route. (Stata 12.0)

## DISCUSSION

From the findings one can observed that 68% of the sample was composed by ageing. The WHO defines ageing from the chronological view point, as persons 65 years old or above in developed countries and 60 in developing ones, like Brazil<sup>10</sup>. In a paper performed at an intensive therapy it was observed that from the aged individuals, 74% were dysphagic<sup>3</sup>. Another paper, also performed in a hospital situation, comprised a sample of 1470 elders, found a prevalence of 17% of cases of sepsis stemmed from the oropharyngeal dysphagia, being considered as the gravest complication from the swallowing disorders. So, the clinic staff must be vigilant, since the elderly rarely recover, increasing the indexes of mortality<sup>11</sup>.

Several authors have already discussed on the sensitive alterations in motor and structural of the involved organs in the swallowing brought from the aging process as well as the incidence of casual factors of primary dysphagia as strokes and clinical pictures of dementia<sup>8-12</sup>. A paper containing 514 elderly attended at a reference center got a prevalence of 27.3% of communication disorders and 26.4% of swallowing

disorders, thus, confirming the appearance of disorders from the aging process<sup>13</sup>.

Eight patients from the sample were neurological, confirming several papers which address neurological diseases as a risk factor for dysphagia<sup>3,6,8-14</sup>. In a research with clinical swallowing evaluation at an intensive care unit with 35 patients, it was observed that the neurological etiology was the third cause of admission of major prevalence; the first was pulmonary involving 35 patients, and the second was other clinical conditions<sup>3</sup>. Another research, performed among 544 elderly who used the alternative feeding route, again under admission in a public hospital, observed that the most prevalent base affection was neurological and the main reasons for the readmission were respiratory affections<sup>15</sup>.

At the approach time, 76% of the patients were with level of conscience altered, what was defined by several authors as a risk factor concerning dysphagia<sup>1,2,6,8-14</sup>. As to breathing matters, 8% of the patients were under tachypnea and 24% referred dyspnea. It has been observed that disorders in the breathing clinical picture increase the risks of bronchoaspiration due to the incoordination between breathing and swallowing<sup>5-16</sup>.

From the 25 patients evaluated, 13 (52%) were under oral diet prescribed by a doctor. At the unit in where the field research was performed, the medical team usually pays a visit beside the bed and act according to what they consider adequate indicating those patients they believe to get risk of dysphagia to the speech therapy team. Nevertheless, the speech-language therapists visit all the patients habitually, including those who were not referred by the medical team, so intending to work proactively and preventively. Thus, at times, they come across situations in which the patient already had the prescribed oral diet by the doctor, however, he is unable to receive it. At the general ICU, the diet is usually offered by Nursing experts. Thus, it can be inferred that, if this were not a speech-language therapist intervention, there would be an offer of oral diet to patients who expressed risk of bronchoaspiration.

In this way be emphasized that the speech-language therapist in the hospital environment must act, too, towards the following formation of the professionals of the team, so as to help them when detecting patients who need intervention<sup>16</sup>.

The language evaluation finding can influence on the rehabilitation program, the therapeutic techniques selection, prognosis and interpretation of the discovered data<sup>15</sup>. Among the sample individuals, 24% expressed disorders of comprehensive and expressive language.

The correlation between the swallowing and voice/speech is known, because these are performed by the same structures, so that vocal or speech articulatory disorders can reflect on swallowing problems<sup>17</sup>. Some papers show that the vocal disorders can be related to organic disorders and one can get inferences about the glottic closure<sup>8</sup>. As seen in Table 1, 52% of the evaluated patients presented speech articulatory disorders and 44% vocal ones, so corroborating the data in the literature.

The clinical bedside evaluation, in spite of the *expertise* and the subjectivity of the speech-language therapist, is, for the present, the most employed way of swallowing evaluation because it is not invasive, but quick and low cost, and, many times, it is the sole feasible way, because a great deal of services do not provide objective exams, for instance, nasofibroscopy or videofluoroscopy<sup>3</sup>.

Cervical auscultation helps professionals to know better the way patients deal with the secretions, when they are present, their breathing standard and the

possible intake of meal through the inferior by-air intake, since swallowing involves specific sounds<sup>18,19</sup>.

It was normal in 32% of the patients. The researches still remain controversial as to the efficiency of cervical auscultating, for, although a quick, noninvasive and low cost method, its interpretation depends on the examiner's experience. In addition, it is not possible to quantify feeding stasis or food intakes<sup>18</sup>.

Among the criteria to indicate the alternative feeding route the level of conscience had a major incidence (64%). The conscience is defined as the individual's capacity to recognize himself and the stimuli of the situation<sup>20</sup>. In order to establish a unique language among the members of the team, it is common to adapt scales of standard evaluation to evaluate it<sup>21</sup>. In the service where the present research was carried out, the Glasgow coma scale was used to assess patients without sedation. However, due to the great instability presented by many patients in the ICU, care was taken to check whether the level of conscience held itself during the speech-language therapist evaluation, or whether it presented swinging, and this was considered a risk factor, too. Some researches mentioned the minimal score of the Glasgow scale used by some professionals to release the oral diet for the patients<sup>16</sup>. However, this is not our practice, because all the answers presented in the evaluation are considered, so that we can get a more adequate behavior, and the scale is only an aspect to be observed.

Several studies point out that lethargic patients or under inconsistent alert clinical condition are at high risk of aspiration owing to the reduction of reflexes and protection mechanisms of the inferior by-air tracts<sup>1,2,6,8,14-16</sup>. It was observed, too, that among cases in which the patients do not answer to simple verbal commands there is a commitment of the speech-language therapy rehabilitation, the progression of the ingestion of oral diet being the major the difficulty; and, consequently, a longer time using the alternative feeding route<sup>5</sup>. In a study performed with patients under post traumatic brain injury, it was verified that the cognitive aspect is a great factor of interference in the rehabilitation concerning the swallowing in those patients<sup>22</sup>, as well as in post stroke patients<sup>14</sup> and those under neurodegenerative neurological diseases<sup>2</sup>.

The second most used criteria were the altered breathing clinical condition. The disorder of the breathing clinical condition has been pointed out as a risk factor for dysphagia by several researches<sup>1,8-9</sup>, for the individuals cannot tolerate major periods or even



short ones of apnea during the swallowing<sup>1</sup>, and this can induce to the incoordination between the breathing and the swallowing, which is fundamental for the protection of the by-air inferior tract<sup>23</sup>.

Two patients presented incoordination of the movements of the speech articulatory organs, offering the opportunity of stressed difficulty of manipulation of the feeding bolus and this is classified as oral dysphagia. In this case, the alternative feeding route was indicated because of the risk of feeding premature loss<sup>24</sup>.

As a study limitation, it was verified that innumerable segments of the protocols were not filled in by the professionals. It is important that constant training be provided to the team, in order to raise awareness about the importance of the correct and complete filling-in of the used instrument, for the registered data are a source of research and they can help in the production of scientific material.

## CONCLUSION

It was observed that the level of conscience was frequently the most used criteria to indicate the alternative feeding route and highlighted its importance for a safe and functional oral feeding. But patients whose level of conscience was favorable were not found, however, presented other risk factors, such as breathing disorders and swallowing dynamics problems. Thus, importance of the speech-language therapist in the several sections of hospital settings is emphasized, so as to precociously intervene in dysphagic and under risk patients, so favoring nutrition and safe hydration, resorting to rehabilitation techniques, if necessary, and helping in the continuing formation of the of the several team professionals.

## REFERENCES

1. Padovani AR, Moraes DP, Mangili LD, Andrade CRF. Protocolo fonoaudiológico de avaliação do risco para disfagia (PARD). *Rev Soc Bras Fonoaudiol*. 2007;12(3):199-205.
2. Nunes MC, Duarte S, Palmonari A, Rockland A, Furkim AM. Fatores de risco para a progressão da ingestão alimentar por via oral de doentes com doenças neurológicas degenerativas em acompanhamento em terapia de fala. *Acta Med Port*. 2011;24(6):919-24.
3. Padovani AR, Moraes DP, Sassi FC, Andrade CRF. Avaliação clínica da deglutição em unidade de terapia intensiva. *CoDAS*. 2013;25(1):1-7.
4. Padovani AR, Andrade CRF. Perfil funcional da deglutição em unidade de terapia intensiva clínica. *Einstein*. 2007;5(4):358-62.
5. Furkim AM, Sacco ABF. Eficácia da fonoterapia em disfagia neurogênica usando a escala funcional de ingestão por via oral (FOIS) como marcador. *Rev. CEFAC*. 2008;10(4):503-12.
6. Silva RG, Cola PC, Gatto AR. Critérios de enquadramento para a terapia fonoaudiológica na unidade de terapia intensiva para indivíduos adultos com disfagia orofaríngea neurogênica. In: Furkim AM, Rodrigues KA. *Disfagias nas unidades de terapia intensiva*. São Paulo: Rocca; 2014. p. 151-9.
7. Nogueira SCI, Carvalho APC, Melo CBM, Moraes EPG, Chiari BM, Gonçalves MIR. Perfil de pacientes em uso de via alternativa de alimentação internados em um hospital geral. *Rev. CEFAC*. 2013;15(1):94-104.
8. Bassi D, Furkim AM, Silva CA, Coelho MSPH, Rolim MRP, Alencar MLA et al. Identificação de grupos de risco para disfagia orofaríngea em pacientes internados em um hospital universitário. *CoDAS*. 2014;26(1):17-27.
9. Moraes AMS, Coelho WJP, Castro G, Nembr K. Incidência de disfagia em unidade de terapia intensiva de adultos. *Rev. CEFAC*. 2006;8(2):171-7.
10. Baldoni AO, Pereira LRL. O impacto do envelhecimento populacional brasileiro para o sistema de saúde sob a óptica da farmacoepidemiologia: uma revisão narrativa. *Rev Ciênc Farm Básica Apl*. 2011;32(3):313-21.
11. Sasegbon A, Dark P, O'shea L, Hamdy S. Association Between Acute Sepsis and Oropharyngeal Dysphagia in A Hospitalised Elderly Population. *Gut*. 2016;65(1):A114-A115.
12. Estrela F, Motta L, Elias VS. Deglutição e processo de envelhecimento. In: Jotz GP, Carrara-de-Angelis E, Barros APB. *Tratado da deglutição e disfagia: no adulto e na criança*. Rio de Janeiro: Revinter. 2010. p.54-8.
13. Moraes IG, Couto EAB, Cardoso AFR, Labanca LM. Perfil fonoaudiológico dos idosos atendidos em um centro de referência. *Distúrbios Comun*. 2016;28(1):82-92.
14. Inaoka C, Albuquerque C. Efetividade da intervenção fonoaudiológica na progressão

- da alimentação via oral em pacientes com disfagia orofaríngea pós AVE. *Rev. CEFAC*. 2014;16(1):187-96.
15. Gonçalves MLV, Brolio GAF, Lozano AC, Lamari NM. Perfil dos idosos usuários de via alternativa de alimentação reinternados em hospital público. *RBCEH*. 2015;12(1):20-7.
  16. Furmann N, Costa FM. Critérios clínicos utilizados por profissionais para liberação de dieta via oral em pacientes adultos hospitalizados. *Rev. CEFAC*. 2015;17(4):127-8.
  17. Vale-Prodromo LP, Carrara-de-Angelis E, Barros APB. Avaliação clínica fonoaudiológica das disfagias. In: Jotz GP, Carrara-de-Angelis E, Barros APB. *Tratado da deglutição e disfagia: no adulto e na criança*. Rio de Janeiro: Revinter; 2010. p. 61-7.
  18. Bolzan GP, Christmann MK, Berwing LC, Costa CC, Rocha RM. Contribuição da ausculta cervical para a avaliação clínica das disfagias orofaríngeas. *Rev. CEFAC*. 2013;15(2):455-65.
  19. Barros APB, Carrara-de-Angelis E. Avaliação fonoaudiológica à beira do leito. In: Jotz GP, Carrara-de-Angelis E, Barros APB. *Tratado da deglutição e disfagia: no adulto e na criança*. Rio de Janeiro: Revinter; 2010. p. 68-75.
  20. Andrade AF, Carvalho RC, Amorim RLO, Paiva Ws, Figueiredo EG, Teixeira MJ. Coma e outros estados de consciência. *Rev Med*. 2007;86(3):123-32.
  21. Muniz ECS, Thomaz MCA, Kubota MY, Ciani L, Sousa RMC. Utilização da Escala de Coma de Glasgow e Escala de Coma de Jovet para avaliação do nível de consciência. *Rev. Esc. Enf. USP*. 1997;31(2):287-303.
  22. Silvério CC, Hernandez AM, Gonçalves MIR. Ingesta oral do paciente hospitalizado com disfagia orofaríngea neurogênica. *Rev. CEFAC*. 2010;12(6):964-70.
  23. Drozd DRC, Costa CC, Jesus PRO, Trindade MS, Weiss G, Neto ABM et al. Análise da fase faríngea da deglutição em portadores de tosse crônica. *Int Arch Otorhinolaryngol*. 2012;16(4):502-8.
  24. Hirano I, Kahrilas PJ. Disfagia. In: Lango DI, Fauci AS. *Gastroenterologia e Hepatologia de Harrison*. 2.ed. Porto Alegre: AMGH; 2015. p. 21-4.