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Descritores

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Quality indicators for integrated care of dysphagia in hospital settings

Indicadores de qualidade para o gerenciamento da disfagia em Unidades de Internação Hospitalar

ABSTRACT

This article proposes a panel of quality indicators for the management of swallowing rehabilitation (SR) therapy in a hospital setting. There were four stages in developing these indicators: identifying procedures to be managed; generating indicators and standardizing data collection; identifying the correlation among indicators; and formulating the panel of indicators. The following 12 quality indicators were developed: swallowing evaluation index; individual care index; speech-language pathologist (SLP) care index; number of assisted patients index; severity rate; swallowing diagnosis rate per hospital unit; swallowing rehabilitation demand index; time until first swallowing evaluation; SLP index per hospital bed; time until removal of feeding tube; time until reintroduction of oral feeding; and time until decannulation. The proposed indicators were designed to improve the management of dysphagia in a hospital setting. Measuring these indicators is essential to understanding the patient's needs and providing quality care. Managing care using these indicators will make it easier to track the patient's rehabilitation process, measure the effectiveness of new therapeutic processes and technologies, and evaluate the performance of hospital units relative to other providers in the area. The management of SR using quality indicators allows the effectiveness and efficiency of rehabilitation programs to be clearly evaluated.

RESUMO

Este estudo propõe um painel de indicadores de desempenho para a gestão de um programa de reabilitação da deglutição (PRD) em ambiente hospitalar. Para a elaboração do painel de indicadores foram estabelecidas quatro fases: identificação de processos a serem gerenciados; elaboração dos indicadores e padronização de obtenção dos dados; classificação e proposição de correlação de indicadores; elaboração do painel de indicadores. Os resultados apontam 12 indicadores: índice de avaliação da deglutição; índice de atendimento por paciente; índice de atendimento por fonoaudiólogo; índice de pacientes atendidos; taxa de gravidade; taxa de avaliação por unidade de internação hospitalar; índice de demanda para reabilitação da deglutição; tempo para avaliação da deglutição; índice de fonoaudiólogo por leito; tempo para retirada da via alternativa de alimentação; tempo para o retorno da alimentação por via oral; tempo para decanulação. O processo de medição de indicadores é essencial para entendimento e gerenciamento da disfagia em ambiente hospitalar e delineamento da qualidade. O gerenciamento por indicadores padronizados favorece a análise do desempenho ao longo do tempo, frente à inclusão de novos processos ou tecnologias, e a comparação a outros Serviços julgados como referências no setor. Este gerenciamento contribui para que a eficácia e eficiência dos programas de reabilitação sejam evidenciadas.

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INTRODUCTION

Recently, increased regulation has required rehabilitation programs to report their results and outline the goals of the rehabilitation process effectively and efficiently. Evidence-based rehabilitation focuses on establishing relationships between interventions and results. Because this practice analyzes results based on evidence, it requires professionals in the field to identify, implement, and organize the goals of the rehabilitation process in order to improve its effectiveness⁽¹⁾.

The public disclosure of hospital performance using quality indicators has been encouraged because it promotes transparency, makes the hospital more responsible for the quality of health care^(2,3). Poor-quality health care almost always increases costs because of inefficiency, prolonging treatment and increasing the likelihood of unnecessary and inefficient remediation treatments⁽⁴⁾.

Because of the high incidence of dysphagia in hospitals and its possible consequences, it is critical to effectively diagnosis and manage feeding disorders. In addition pathological impact of feeding disorders, it is important to consider the financial aspects of health care as well as the patient's quality of life and the burden of dysphagia on caregivers^(5,6).

The American Speech-Language-Hearing Association (ASHA) Code states that SLPs are responsible for the management of dysphagia identify and appropriately determine functional outcome, follow the standards of quality care established by accreditation bodies, and know the methods used to measure and monitor the quality of important procedures and results⁽⁶⁾.

The body of literature on dysphagia indicators is limited, and there are currently no standardized quality indicators for swallowing rehabilitation programs (SRPs). This study aims to develop a panel of quality indicators that will assist in designing and managing SR therapy in Hospital Units.

METHODS

This study was developed in a teaching, research, and care hospital. The hospital has 980 hospital beds, including 120 ICU beds (nine ICUs), that are grouped according to medical specialty. The research was approved by the Ethics Committee of the Institution (CAPPesq HCFMUSP n° 0351/08)

Procedures

- There were four stages in developing the quality indicators:
- Stage I – Identifying procedures to be managed: the common procedures most suited to management by quality indicators were identified^(8,9).
 - Stage II – Generating indicators and standardizing data collection: the formulae for measuring quality were determined and nomenclature was defined
 - Stage III – Identifying the correlations among indicators: the quality indicators were classified as either procedure indicators or outcome indicators. For each indicator, possible cause-and-effect correlations were identified and the factors were ranked

- Stage IV – Formulating the panel of indicators: the panel of indicators was generated by identifying the most significant cause-and-effect relationships from Stage III.

RESULTS

The results from each of the four stages are described below.

Stage I – Identifying procedures to be managed

For SR in hospitals, four procedures were identified that could be monitored by quality indicators. Besides that, the control protocols for each one of these processes were identified (Appendix 1).

The bedside evaluation is crucial in SR and determines all subsequent steps. The results of this process can be expressed in terms of hospital performance, severity rate, apparent demand for swallowing evaluation, and apparent demand relative to admission indicators (number of admissions or patients/day) of the hospital.

In this study, the bedside SR process was considered the most important indicator of a safe return to oral feeding. This process provides information regarding the total number of sessions performed, the number of sessions the patient requires before discharge, the number of SR cases relative to the outcome indicators of the hospital, and the number of professionals involved in the rehabilitation process.

The primary goal of SR is the return to normal oral feeding. Information regarding the reintroduction of oral feeding indicates the effectiveness and efficiency of SR when it identifies and provides information about the number of patients who return to safe oral feeding and the amount of time until oral feeding begins and the total amount of time until the reintroduction of normal oral feeding.

The last procedure identified, tracheostomy decannulation, is the only one that is specific to a group of patients. This procedure is different because of the impact of a tracheostomy cannula on SR. The effective management of this procedure is related not only to the number of tracheostomized patients who undergo SR, but is also related to the varying results of SR in these patients. SR performance in these patients should be evaluated based on the amount of time until the removal of the feeding tube, the amount of time until the reintroduction of oral feeding, and the amount of time until tracheostomy decannulation.

Stage II – Generating indicators and standardizing data collection

A series of descriptive forms provide specific information about each indicator. The standard form for each set of indicators must be carefully constructed to standardize data collection and produce quantifiable results that can be used for internal and external comparisons (Appendix 2).

Stage III – Identifying the correlations among indicators

The 12 proposed quality indicators were classified as either

procedure indicators or outcome indicators (Appendix 3 e 4). As described in Stage I, there are one or more procedure-specific indicators for each procedure. In turn, these indicators form a series of cause-and-effect relationships as illustrated below.

The swallowing evaluation index is numerically related to the number of hospital admissions; it explains the proportion of patients in the hospital requiring SR and is directly correlated, for example, with the number of patients per therapist and total number of patients in the hospital.

The individual care index not only measures quality of care, but also indicates how much this care is influenced by case severity and how much variations in individual care index impact outcome indicators (Appendix 4).

The SLP care index evaluates the efficiency of SLPs and its direct impact on the results of SR. Indirectly, is also correlated with the time until reintroduction of oral feeding (an outcome indicator). If the quality of care remains constant, the individual care index should increase as the SLP care index increases. Therefore, the time to return to exclusive oral feeding (without supplementation) should also be reduced.

The severity rate is based on a severity scale (or a functionality scale) and has a substantial influence on the established outcome indicators.

The swallowing rehabilitation demand index, the swallowing diagnosis rate per hospital unit and the SLP index per hospital bed reflect the quality of SR. These measurements indicate how well each hospital unit performs SR, and how much the quality of care is determined by the number of active SLPs.

The last indicator was the time until first swallowing evaluation. This indicator monitors the time between the implementation of an alternate feeding route (due to risks associated with oral feeding) and the request to evaluate swallowing and provide an early referral. When correlated with outcome indicators, this indicator may reveal a significant relationship between prognosis and the early implementation of SR.

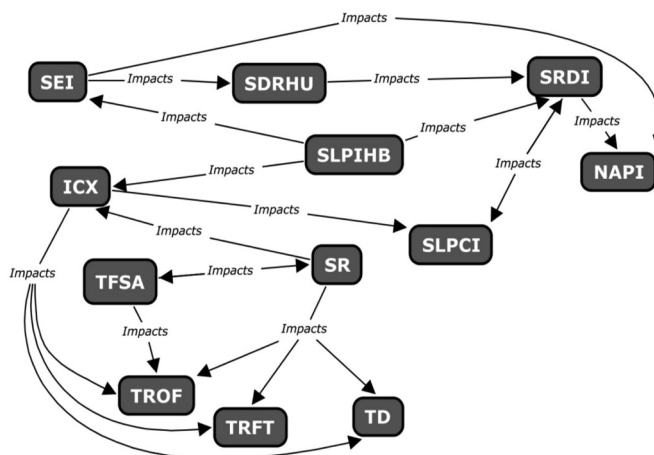
The proposed outcome indicators were time until reintroduction of oral feeding, time until removal of feeding tube, and time until decannulation. these times can be calculated as the mean or proportion of patients who return to oral feeding, who have their feeding tubes removed, or who have their tracheostomy cannula removed based on the following time scale: zero to five days, six to ten days, 11 to 15 days, and over 15 days.

Stage IV – Formulating the panel of indicators

In the last stage of the development process, a panel of indicators was established based on the cause and effect correlation. This panel includes the 12 indicators described in Stage III and identifies all significant correlations (Figure 1).

The direction of the arrows indicates these relationships and maps a network of cause and effect among them—the outcome of one influences the rest. The panel indicates, for example, that severity rate influences the individual care index and the time until reintroduction of oral feeding; following the same logic, severity rate is itself influenced by the time until first swallowing evaluation.

Swallowing Rehabilitation Indicators Panel for Hospital-Units



Legend: SEI = swallowing evaluation index; ICX = individual care index; SLPCI = SLP care index; NAPI = number of assisted patients index; SR = severity rate; SDRHU = swallowing diagnosis rate per hospital unit; SRDI = swallowing rehabilitation demand index; TFSA = time until first swallowing assessment; SLPIHB = SLP index per hospital bed; TRFT = time until removal of feeding tube; TROF = time until reintroduction to oral feeding; TD = time until decannulation

Figure 1. SR indicators panel for hospital units

DISCUSSION

The proposed indicators may be common among SRs. Because of the importance of managing SR, the ASHA⁽⁶⁾ maintains quality control standards and regulates dysphagia risk programs, providing the knowledge and skills necessary for SLPs to work with dysphagia patients. The ASHA also requires that the SLP understand all appropriate performance indicators in order to develop quality improvement programs.

Few studies have reported on quality indicators based on evidence from SRPs in hospitals^(7,8). More often, articles address particular aspects of the issue, evaluating or developing a new protocol, presenting results related to a specific disease, or collecting evidence from a specific group of patients.

Several studies have described outcome indicators similar to those presented in this study. For instance, the individual care index is measured by the number of sessions per patient; other studies have also used this measurement to evaluate dysphagia rehabilitation programs or to compare groups who received different therapeutic procedures⁽⁸⁾. However, some authors measure this indicator using the average time of intervention based on either minutes of interaction⁽⁷⁾ or duration (in months)⁽⁹⁾.

The individual care index allows the number of sessions per patient to be compared with the average time spent by the hospital unit, taking into account the presence of associated diseases and the incorporation of new procedures or technologies. The results provide information about the efficiency of SLP procedures over time and allow this information to be compared with the results of other studies.

The swallowing evaluation index to measure the patient’s need for SR relative to the number of admitted patients at the

same time was presented in one study⁽⁸⁾ arguing that, although this index was low (0.6%) in his study, the overall number of patients (222) was significant. The author also compares this result to a significantly larger index used in another hospital, justifying his result based on methodological differences in data collection. Using quality indicators to compare the quality of care among institutions will benefit hospitals and SLPs in their attempts to improve the quality of SR.

No previous studies have included a SLP care index. This measurement provides evidence about the efficiency and performance of SLPs, revealing how changes in the number of pathologists impact the methods and qualitative results of patient care. Nevertheless, this Index is commonly used in other specialties (e.g., nursing)⁽¹⁰⁾. Similarly, no previous studies have used SLP per hospital bed as a quality indicator, even though it directly impacts patient care.

The time until first swallowing evaluation as an indicator to predict the time until the patient returns to oral feeding⁽¹¹⁾. A time until first swallowing evaluation equal to zero (i.e., the SLP intervenes on the same day that the patient is examined) marks the earliest that this process can begin. Authors argue that this parameter is also a predictor of time until reintroduction of oral feeding.

The time until decannulation indicates the effectiveness and efficiency of the tracheostomy process while also allowing decannulation times to be compared among institutions⁽¹²⁾. This comparison aims to improve the tracheostomy process.

The severity rate indicator reveals the relative occurrence and functional results of varying degrees of dysphagia. The severity or functionality scale indicates the likely prognosis of the case and generates outcome indicators when compared with the pre- and post-therapy scale or the time of discharge^(8,12). The severity of the cases has an influence on the following procedures and determines variations on the others indicators. For example, determining the functional outcomes associated with cognitive measurements can play an important role in predicting and treating swallowing as well as improving survival during neurorehabilitation⁽¹³⁾.

The indexes measuring the time until reintroduction of oral feeding and the time until removal of feeding tube may be good parameters for evaluating the outcome of oropharyngeal dysphagia treatment⁽¹⁴⁾. Expressed in relation to the number of days from the first swallowing assessment, the time until reintroduction of oral feeding and the time until removal of feeding tube could be measured according to either the average time or the proportion of patients distributed at each point on a time scale⁽¹¹⁾.

The swallowing diagnosis rate per hospital unit reveals yearly variations in dysphagia treatment and identifies which units require more care. The number of patients admitted with oropharyngeal dysphagias in hospitals that offer intensive care seems to be stable. Several hospital units require SRPs, but they are especially necessary in those that care for neurological patients⁽⁸⁾. Moreover, this rate allows specific negative outcomes to be monitored, guiding the implementation or modification of procedures in specific units.

Previous studies have measured the swallowing rehabi-

litation demand index using the average number of sessions per patient, a method that only records the total number of interventions^(6,14). By comparing the number of swallowing rehabilitation intervention with the number of patients/day in the hospital, our Index allows daily care to be monitored.

The 12 measures included in our panel of indicators reveal the interrelations among these indicators and the procedures to which they correspond. Within this network, an improvement in one indicator can directly and/or indirectly impact the results of other indicators⁽¹⁵⁾.

The panel thus allows a hospital manager to monitor outcomes, suggesting possible procedural modifications that could result in better outcomes and improve the quality of care.

CONCLUSION

The proposed panel of indicators improves the management of dysphagia in a hospital setting. It is essential to introduce quality indicators in order to clearly understand and manage the quality of health care. Using quality indicators in hospital units improves the analysis of performance over time as new procedures and technology are introduced. In addition, it allows hospital units to be compared with other providers in the area. The management of hospital units using quality indicators also measures the effectiveness and efficiency of SRPs.

The adoption and use of quality indicators by SLPs will improve rehabilitation procedures and bring direct benefits to patients while strengthening evidence-based practice.

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Appendix 1. SR procedures to be monitored in Hospital Units (HU)

Swallowing rehabilitation procedures developed for HUs	Control protocol
Bedside evaluation process	Dysphagia risk evaluation protocol
Bedside swallowing rehabilitation process	Attendance form
Return to oral feeding process	Oral feeding transition protocol
Tracheostomy decannulation process	Decannulation protocol

Appendix 2. SR indicators form

Swallowing rehabilitation indicators form	
Setting: Hospital Units	
Name of indicator: In full	Abreviation:
Procedure: Identify to which procedure the indicator is related.	
Person in charge: Specify who is responsible for data collection and developing the indicator.	
Objective: Describe the primary reason for the creation of the indicator	
Source of information: Verify the documents, printed or electronic, used to obtain the data required to formulate the indicator	
Description of the indicator: Full description	
Formula for the indicator: Calculation method	
Method of data collection: Describe the source and methods of data collection and the composition of the sample	
Frequency: Frequency of collection	
Frequency of evaluation: Frequency of critical analysis	
Users: Identify the sectors that should receive the results in order to implement monitoring and management, trend analysis, or comparison with other providers.	
Date revision: Show the dates when the form was last revised and when indicators were developed.	

Appendix 3. Procedure indicator

Name of indicator	Objective	Formulae	Main indicators of correlation
Swallowing evaluation index	Monitor quality in terms of number of evaluations performed	Total evaluations/number of admissions	<ul style="list-style-type: none"> • SLP care index • SR demand index • Number of assisted patients index
Individual care index	Monitor the number of services rendered to each patient	Total number of services/ number of patients assisted	<ul style="list-style-type: none"> • Severity rate • SLP care index • Time until reintroduction of oral feeding • Time until removal of feeding tube • Time until decannulation
SLP care index	Monitor the number of interventions performed by each therapist	Total number of services/ number of SLP	<ul style="list-style-type: none"> • Numbers of assisted patients index • SR demand index
Number of assisted patients index	Monitor the number of patients seen per day relative to the patients/day of the hospital	Patients/day for SLP/ patients/day of hospital	<ul style="list-style-type: none"> • SR demand index • Diagnosis rate by hospital unit
Severity rate	Monitor the severity of cases	Number of cases in each severity classification/ number of cases	<ul style="list-style-type: none"> • Time until reintroduction of oral feeding • Individual care index • Time until removal of feeding tube • Time until decannulation • Time until swallowing evaluation
Diagnosis rate per hospital unit	Verify which hospital units require more assistance with swallowing rehabilitation	Number of diagnoses per hospital unit/total diagnosis	<ul style="list-style-type: none"> • SR demand index • SLP per hospital bed index
SR demand index	Identify the expressed demand of the SRP relative to the patients/day of hospital	Number of diagnoses/ number of patients/day	<ul style="list-style-type: none"> • Swallowing evaluation index • Number of assisted patients index
Time until first swallowing evaluation	Verify the time between the implementation of an alternate feeding method and the request for swallowing evaluation	Average number of days between the implementation of the alternate feeding method and the SLP evaluation	<ul style="list-style-type: none"> • Severity rate • Time until reintroduction of oral feeding • Time until decannulation
SLP per hospital bed index	Verify the number of SLPs and its correlation with patient results	Number of professionals per day/number of hospital beds	<ul style="list-style-type: none"> • Number of assisted patients index • SR demand index • Individual care index

Appendix 4. Outcome indicators

Name of indicator	Objective	Formulae	Main indicators of correlation
Time until removal of feeding tube	Verify the time (in days) from the first swallowing evaluation until the removal of the alternate feeding route	Average time and/or % patients who remove the alternate feeding route in 0-5 days or 6 to 10 or 11 to 15 or over 15 days	<ul style="list-style-type: none"> • Severity rate • Individual care index • SLP care index • Time until reintroduction of oral feeding
Time until reintroduction of oral feeding	Verify the time (in days) from the first swallowing evaluation until the reintroduction of oral feeding.	Average time and/or % patients who can start oral feeding after 0-5 days or 6 to 10 or 11 to 15 or over 15 days	<ul style="list-style-type: none"> • Severity rate • Individual care index • SLP care index
Time until decannulation	Verify the time (in days) spent from the first swallowing evaluation until the tracheostomy decannulation.	Average time and/or % patients that undergo decannulation in 0-5 days or 6 to 10 or 11 to 15 or over 15 days	<ul style="list-style-type: none"> • Severity rate • Individual care index • SLP care index • SR demand index