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Intensive care physicians' attitudes and perceptions on nutrition therapy: a web-based survey

Atitutes e percepções em terapia nutricional entre médicos intensivistas: um inquérito via internet

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ABSTRACT

Objective: Nutritional therapy is an important part of critical ill patient care. Although recognized as a specialty, multidisciplinary nutrition support teams are scarce in our country. Nutrition support therapy is most probably variably used by intensive care physicians. This study aimed to describe these specialists' perceptions and practices regarding enteral nutrition support.

Methods: An on-line platform questionnaire was developed. Following a pre-validation, it was sent via electronic mail to intensivists. After 30 days the answers were tabulated, considering only the fully completed questionnaires.

Results: One hundred and fourteen forms were returned, and 112 were analyzed. The respondents were mostly in the country's Southeastern region. Regarding nutritional support start, most of the answers reflect perceptions which are agreement with specialty societies recommendations. The respondents frequently perceived the use of supportive nutrition care protocols. After the nutrition support is started, the respondents' perceptions regarding their participation in therapeutic plan changes appear to be lower. The respondents self-perceived knowledge on the subject was 6.0 (arithmetic mean) in a 1 to 10 scale.

Conclusions: More studies are warranted to evaluate nutritional support practices among intensive care physicians. Alternatives to on-line platform should be considered. Possibly, intensive care physicians do better in the early phases of enteral support than during continued care. Intensive care physicians' knowledge on the issue is suboptimal.

Keywords: Nutrition support; Intensive care; Survey; Nutrition practices

INTRODUCTION

The relationship between a critically ill patient's prognosis and nutrition support is well-established.[1] The use of this therapy is associated with lower hospital complications rates, including infections, improved cicatrisation responses, and even reduced morbidity and hospital stay.[2-4] The health-care team knowledge is relevant for effective nutrition therapy. However, surveys point to apparent heterogeneous theoretical and practical nutrition therapy knowledge.[5,6]

Questionnaires evaluating the health care professionals knowledge on nutrition therapy are tools intended to map practices and identify activities for continued education internal programs.[7] Fluctuations on enteral

support prescriptions can be identified among professionals acting in a same hospital, and even among intensive care doctors in a very same department, with procedures which are eventually far away from the specialty societies consensus statements.[6,8,9]

To the extent of our knowledge, no evaluation is so far available in Brazil on nutrition therapy practices and procedures as usually prescribed by intensive care physicians. To map this is relevant not only to evaluate the compliance to specialty societies' recommendations, but also to identify possible intervention targets for consultant-specialists or multidisciplinary intensive care nutrition therapy teams. Thus, epidemiological inquires results may prove useful to guide future educational interventions. With this study we aimed to describe enteral nutrition therapy attitudes and practices among intensive care physicians by means of an electronic platform questionnaire.

METHODS

To study an intensive care physicians' population, a 14 multiple-choice questions anonymous questionnaire was prepared. The questions were structured to identify these specialists' perceptions on intensive care nutrition, their preferences on nutrition therapy start, and questions regarding the phase following its start (Appendix 1). Frequent daily intensive care unit practice issues were considered, complying with rules for web-based questionnaires development.[9] Multiple-choice single answer questions were used, in addition with questions for scoring according to provided scales. Seven demographic data questions were added. The questionnaire was prepared using electronic media in the online SurveyMonkey® platform.

In order to validate the tool, we conducted a pilot hard-copy questionnaire, personally presented to six enteral and parenteral nutrition therapy specialists, all of them accredited by the Brazilian Society of Enteral and Parenteral Therapy (SBNPE). In addition to the survey, these professionals (3 physicians and 3 intensive-care experienced nutritionists) received a second questionnaire to evaluate the first one: seven aspects were discussed (Chart 1).[10,11] Each of these aspects could be scored in 7 quality degrees, ranging from "unacceptable" to "very good". The questionnaire would be deemed valid if a > 75% "good" evaluation was received from the pre-evaluators for each proposed aspect. The categories analyzed were:

Chart 1 – Pre-evaluation questionnaire

Pre-evaluation questionnaire

1. How would you rate the questions propositions regarding their clarity?

☐ ☐ ☐ ☐ ☐ ☐ ☐
1 2 3 4 5 6 7
Unacceptable Bad Good Excellent

2. How would you rate the time spent for completing this tool?

☐ ☐ ☐ ☐ ☐ ☐ ☐
1 2 3 4 5 6 7
Unacceptable Bad Good Excellent

3. Did you find redundancy between this questionnaire questions?

☐ ☐ ☐ ☐ ☐ ☐ ☐
1 2 3 4 5 6 7
Unacceptable Bad Good Excellent

4. Do you think that this tool may retrieve true information on intensive care physicians' practices and attitudes on their nutrition practices?

☐ ☐ ☐ ☐ ☐ ☐ ☐
1 2 3 4 5 6 7
Unacceptable Bad Good Excellent

5. How do you rate this questionnaire's performance on approaching questions relevant to the intensive care physician's daily practice?

☐ ☐ ☐ ☐ ☐ ☐ ☐
1 2 3 4 5 6 7
Unacceptable Bad Good Excellent

6. Do you think that this tool has power to identify difference procedures types in this population?

☐ ☐ ☐ ☐ ☐ ☐ ☐
1 2 3 4 5 6 7
Unacceptable Bad Good Excellent

7. Considering the survey overall, how would you rate the questions structuring faults?

☐ ☐ ☐ ☐ ☐ ☐ ☐
1 2 3 4 5 6 7
Unacceptable Bad Good Excellent

- Clarity: if the propositions and alternatives were simple and easily understood;
- Time spent: the amount of time spent for completing the questionnaire;
- Redundancy: if propositions and alternatives were repeated;
- Precision: if the alternatives pointed to distinct situations;
- Relevance: if the questions approached relevant subjects;
- Discretion: the discriminatory power among respondents;
- Failures: general faults on the questionnaire preparation which would jeopardize its effectiveness.

In all analyzed categories, a "good" or higher score was received from 5 or more subjects (n=6).

The questionnaire was distributed by e-mail, including a study introduction letter, as well as its objectives. The Associação de Terapia Intensiva Brasileira [Brazilian Intensive Care Association] (AMIB) and Brazilian Research In Critical Care Medicine (BRICC Net) mail lists were used. The data collection phase lasted 3 weeks. After this, reception of new forms was terminated.

The SurveyMonkey® platform was used to record and store the questions. The Windows Excel®, Microsoft Corp. software was used for simple statistics calculations. The means were compared using the t Student test for non-parametrical variables. The frequencies were compared using the Chi Square test. Aiming a better clarification of intensive care accredited specialists, we compared two groups, either accredited and non-accredited, on subjects regarding enteral diet start, volume calculation, weight consideration and self-perceived knowledge.

Only fully completed questionnaires were considered for analysis. Discursive responses and opinions manifested on open spaces were considered under "OTHERS".

The study was submitted and approved by the Labs D'Or network Ethics Committee.

RESULTS

One hundred and fourteen forms were received, being 112 (98%) fully complete, and considered for analysis. The participants demographics is presented on Table 1; 89 (78%) of them reported living in Brazil's Southeastern region. Regarding accreditation by the Associação de Terapia Intensiva Brasileira (AMIB), 54% (n=61) were accredited, being the remainders under training or having continued practice in the field. Sixty nine per cent (n=79) of the study participants reported expending more than 50% of their weekly time in intensive care professional activity.

Table 1- Demographics

Demographic Data (N=114)	N (%)
Regions	
Southeast	89 (79)
Rio de Janeiro	68 (61)
São Paulo	12 (11)
Espírito Santo	8 (7)
Minas Gerais	1
Northeast	8 (7)
South	9 (8)
Center-West	2 (2)
Not informed	6 (5)
Intensive care accreditation	
TE-AMIB	61 (54)
Post-graduation and residents	22 (22)
Continued activity	23 (20)
Not informed	5 (4)
Intensive Care activity weekly time	
> 75%	53 (46)
Between 51 and 75%	26 (23)
Between 26 and 51%	18 (16)
< 25%	9 (8)
Not informed	8 (7)

TE-AMIB –Associação de Medicina Intensiva Brasileira's Accredited. Results expressed as number (%).

The first questionnaire's part regarded critically ill patients enteral nutrition care start: the start time, the admission weight loss, and formulas used for calories calculation (Table 2). More than 80% of the respondents took into considerations losses up to 10% admission body weight losses, considering this information relevant on their decision making for enteral support. About 84% reported their willingness to prescribe enteral nutrition to start up to 48 hours from the intensive care unit admission. The weight used for nutritional needs calculation was most frequently based on the ideal weight, direct bed-side current weight estimation, and current weight (64%, 41% and 28%, respectively). The total required energy calculation was performed using the 25-30 kcal/body weight kg pocket-rule and the Harris-Benedict equation (60 and 35%, respectively).

Table 2 – Early nutrition therapy practices

Which 30-days weight loss do you consider significant for ENT start?	
5%	40 (35)
10%	53 (46)
15%	6 (5)
20%	2 (2)
Others and not informed	11 (12)
Overall, how long do you consider as acceptable to wait before starting enteral nutrition in a sepsis ICU patient?	
Up to 48h	96 (84)
Up to 72h	6 (5)
Up to 5 days	1 (1)
Up to 7 days	0 (0)
Other and not informed	9 (1)
Which weight values do you use for daily critically ill patient caloric needs calculation?*	
Current weight	32 (28)
Lean weight	13 (11)
Ideal weight	73 (64)
Relatives-informed weight	24 (21)
Direct bed-side estimation	35 (31)
Do not use weight for calculation	0 (0)
Don't know	1 (1)
Others and not informed	5 (4)
Which formulas do you use for critically ill patients energy requirements calculation?*	
Harris-Benedict equation	40 (35)
Pocket-rule	97 (86)
Caloric target 1500-2000kcal/day	4 (4)
Indirect calorimetry	7 (6)
I don't know/do not use do calculate	4 (4)
Others and not informed	4 (3)

*Possible multiple responses; ENT – enteral nutrition therapy; ICU – intensive care unit. Results expressed as number (%).

The second group of questions involved continued care questions (Tables 3 and 4). The preferential access to the digestive tube was gastric in the majority (44%), and post-pyloric duodenal (40%), with endoscope-assisted placement not frequently perceived as immediately relevant. Sixty nine per cent of the respondents reported the use of gastric residue measurements to guide their procedures. Assistance enteral nutrition institution protocols are perceived as frequent; use of prokinetics (83%), head of bed above 30 degrees check (91%), blood glucose control protocol (96%), and 24 hours infused diet volume check (84%) were the most frequently perceived protocols. Most of the respondents mentioned non-interruption or up to 2 hours interruption following extubation (63%). The most

Table 3 – Enteral nutrition administration routine care

Which alternative describes better your PREFERENCE for INSTALLATION and POSITIONING on a mechanic ventilation WITH NO increased gastric residue pulmonary sepsis patient's enteral diet start?	
Manual installation at gastric level	50 (44)
Manual installation at post-pyloric duodenal level	46 (40)
Endoscopic installation at post-pyloric duodenal level	4 (4)
Manual installation at post-pyloric jejunal level	6 (5)
Endoscopic installation at post-pyloric jejunal level	4 (4)
Others	1
Which gastric residue volume (mL) you consider as borderline for making a decision for enteral diet interruption?	
<100 mL	1 (1)
100 – 200 mL	45 (40)
200 – 300 mL	19 (17)
>300 mL	16 (14)
Do not use	24 (21)
Not answered	3(3)
Algorithms/protocols use for daily care?	Yes/No/Not answered
Prokinetics use	93/15/6 (83,13,5)
Post-pyloric access installation	41/62/11 (37,55,10)
PN associated to ENT	46/57/11 (41,51,10)
Performing a procedure	81/26/7 (72,23,6)
Checking 30 degrees head of bed	103/7/4 (92,6,4)
Gastric residue protocol	83/25/6 (74,22,5)
Blood glucose control protocol	108/1/5 (96,1,4)
24 hours infused volume check	95/15/4 (85,13,4)
24 hours received calories calculation	78/29/7 (70,26,6)
24 hours received proteins calculation	42/57/15 (38,51,13)
Post-extubation return to enteral nutrition time	
1h	21 (19)
2h	18 (16)
3h	3 (3)
4h	13 (12)
6h	17 (15)
Do not interrupt	31 (28)
Others	11 (10)

Continued...

Table 3 – Continuation

ENT interruptions reasons*	N=Yes/N=No (%)
TCT	74/40 (66,36)
PVP	12/102 (11,91)
Chest CT	28/86 (25,77)
Intra-hospital transportation	38/76 (34,68)
Inter-hospital transportation	62/52 (55,46)
Bath	28/86 (25,77)
OTT repositioning	59/55 (53,49)
T piece test	20/94 (18,84)
Head of bed angle reduction	12/102 (11,91)
Pre- electrical cardioversion	60/54 (54,48)
Non-invasive post-extubation ventilation	62/52 (55,46)

*Possible multiple responses; PN – parenteral nutrition; TCH – tracheostomy; PVP – peripheral venous pressure; CT – computed tomography; OTT – orotracheal tube; NIV –non-invasive ventilation. Results expressed as number or number (%).

Table 4 – Procedures for constipation and diarrhea*

In a clinically stable patient, afebrile, extubated, recovering from pulmonary sepsis with a clinical presentation of liquid diarrhea (5x in 24h), what would you use? (in more than 74% of the times)	
Diet interruption for 12-24h	9 (7.9)
Diet infusion rate reduction	36 (31.6)
Use of fibers	71 (62.3)
Use of *Lactobacillus* or *Saccharomyces*	51 (44.7)
Use of pectin or kaopectate	32 (28.1)
Use of loperamide	5 (4.4)
Use of probiotics	41 (36)
How frequently do you use the following measures against constipation in critically ill patients? (in more than 74% of the times)	
Mannitol	1 (0.9)
Physostigmine	1 (0.9)
Rectal touch	42 (36.8)
Enema	21 (18.4)
Clyster	38 (33.3)
Lactulon	37 (32.5)
Mineral oil	40 (35.1)
Filtered water	33 (29)

*Possible multiple responses. Results expressed as number (%).

commonly mentioned causes for enteral diet interruptions were tracheostomy procedure (66%), inter-hospital transportation (55%), non-invasive post-extubation ventilation (55%), and electrical cardioversion (60%); the reasons mentioned as less causatives of enteral diet interruption were deep venous puncture (91%), reduced head of bed degree (91%), piece T testing (84%), bath and chest computed tomography (both 76%).

We also found among the respondents low perceptions of diet interruptions due to diarrhea episodes. However diet flow reduction was mentioned in 32% of the responses for these cases. Most of the respondents mentioned the use of at least one enteric adjunctive (soluble fibers, probiotics, loperamide, etc.) in > 60% of the times. Regarding approaches for constipation, the most frequently mentioned procedures were rectal touch in 38% (n=42), mineral oil (36%, n=40), and clysters (34%, n=38).

Asked on the frequency of intensivist intervention in the different times of enteral diet use, 93 of the respondents (83%) reported prescribing the enteral diet start, 79 (70%) reported increasing the enteral diet volume, and 62 (55%) change to the prescribed diet formulation.

The third group of questions evaluated aspects regarding the intensivist self-perception as nutrition therapy prescriber and activity in the field (Table 5). The respondents self-evaluated knowledge, in a 1 to

Table 5 – Intensivist's self-evaluation on enteral nutrition therapy practices

In your intensive care practice, how frequently do you decide to prescribe the following therapeutic measures (in more than 74% of the times)	
Enteral diet start	93 (81.6)
Prescribed volume diet increase	79 (69.3)
Change of the diet to be used	62 (54.4)
I have no technique to measure or categorize underfed intensive care patients	
Totally agree	12 (11)
Partially agree	24 (21)
Neutral	7 (6)
Partially disagree	22 (20)
Totally disagree	39 (35)
I find difficult organizing an enteral nutrition program for critically ill patients	
Totally agree	16 (14)
Partially agree	24 (21)
Neutral	16 (14)
Partially disagree	23 (20)
Totally disagree	25 (22)
How would you rate your knowledge on intensive care nutrition support, in a 1-10 scale?	
1	1 (1)
2	1 (1)
3	2 (2)
4	10 (9)
5	16 (14)
6	24 (21)
7	27 (24)
8	16 (14)
9	4 (4)
10	5 (4)

Arithmetic mean = 6.0. Results expressed as number (%).

10 score scale, was shown to be intermediate (arithmetic mean 6.0). In this sample we identified a growing amount of responses agreeing with the difficulty to identify underfed patients, to evaluate malnutrition and to institute a nutrition therapy program (30%, 32% and 35%, respectively).

Aiming a better understanding on the differences on nutrition therapy perceptions between participants who are accredited in intensive care therapy (TE) and those non-accredited (non-TE), we divided the respondents population in the groups: TE AMIB and non-TE AMIB. These were compared regarding their perceptions on diet start, weight considered for calculation, use of the 25-30 kcal/kg pocket-rule, and on their self-perceived knowledge. Statistical significance was found for the difference between accredited and non-accredited professionals regarding ideal weight calculation and pocket-rule use, more frequent in the accredited versus non-accredited population (Table 6). The comparison between the mean self-perception on enteral nutrition therapy knowledge scores was significant between the groups (Table 7).

Table 6 – Different practical nutrition therapy perceptions between intensive care accredited and non-accredited

	TE – AMIB (N)	Non-TE AMIB (N)	P value
Start of diet up to 48h			
Yes	52	41	0.25
Ideal weight			
Yes	46	27	0.03
25-30 pocket-rule			
Yes	46	23	0.01

TE-AMIB – intensive care accreditation by AMIB; Non-TE – no intensive care accreditation by AMIB. Results expressed as number (%).

Table 7 – Self-perception on nutrition therapy knowledge: comparison between accredited and non-accredited physicians

	Mean	SD
TE-AMIB	6.92	± 1.50
Non-TE	5.58*	± 1.78

*$p < 0.001$. SD – standard deviation; TE-AMIB – intensive care accreditation by AMIB; Non-TE – no intensive care accreditation by AMIB. Results expressed as number (%).

DISCUSSION

Multidisciplinary nutrition therapy teams are scarcely disseminated in Brazil. Frequently, nutrition care in the intensive care unit is prescribed by intensivist physicians. In this study we aimed to map these professionals' perceptions on enteral nutrition support start in intensive care units. Inquires on health care professionals perceptions on enteral therapy practices are frequent in hospitals, but not in the intensive care field. In addition to the study scope, this is the first nutrition therapy survey using a specialist- pre-validated questionnaire.

We chose the web distribution model aiming cost reductions, increased professionals scope, and easiness and practicality for the responses evaluation. The e-mail distributed questionnaires return rate is known to between 20 to 30%.[12,13] The power to predict a given population opinion is influenced by the sample size. Due to the distribution way, the questionnaire return rate couldn't be estimated, neither could the intensivists population reach, most probably resulting in a sample too small to represent the overall intensive care nutrition practices.[14] Considering the total of fully completed questionnaires, we consider satisfactory the full completion rate, that reached 96% of the total (n=109).

In this sample we identified participation of high intensive care weekly work load (79%), with participation of non-accredited (TE AMIB) professionals acting in the area (50%). These percentages are probably near to the observed in ours intensive cares. It was also interesting the high percent of Southeasters respondents – mainly from Rio de Janeiro – in comparison to other regions. This is probably due to a contribution of factors such as intensive care units' density, Internet users' density, but specially, due to informal study divulgation.

Regarding the enteral diet start, the set of responses suggests a concern with early nutrition start in critical illness, and the use of pocket-formulas for ready calculation of total calories values for nutrition intervention start. This agrees with American and European enteral and parenteral societies recommendations.

On the nutrition care segment, the respondents' perceptions appear to suggest a relatively disseminated use of decision making assistance protocols for enteral diet reduction for procedures – resulting in lower caloric and proteic offer and negative energy balance. The use of this type of standardization may contribute for improved nutrition therapy in intensive care units. The perception on diet interruptions for diarrhea episodes was higher than initially supposed.

This study also mapped the participants' perception on the procedures more frequently related to enteral nutrition interruption. The frequent enteral nutrition interruptions impact on the caloric balance is acknowledged.[15] The identification of the intensive care physicians perceptions on this subject may point to education intervention opportunities aimed to minimize these interruptions.

Before these results, it could be hypothesized on a possible intensivist's sufficiency regarding intensive care nutrition therapy start. However, as we can learn from the responses on autonomy for prescribing changes to the initially proposed nutrition schedule (Table 5), possibly this sufficiency is not true when the nutritional schedule must be reformulated during the maintenance phase. These data apparently do not disagree with the participants' self-perception on their knowledge.

It is relevant to analyze these hypotheses under the light of the regional and national lack of enteral and parenteral Nutrition Therapy Multidisciplinary Teams (NTMT). It is probable that continued education initiatives directed to the intensivist may mitigate the problem, until NTMTs are more disseminated.

We consider the reduced sample size and the screening biases the main study limitations. The distribution by e-mail, if on one hand allowed reaching more respondents, on the other hand inserted a screening bias, as only screened respondents among those with easy access to the Web or specifically interested either on the matter or on the evaluation form. Possibly the use of printed questionnaires personally delivered to intensive care units members, either or not with added financial compensation, could favor the compliance to the completion, increasing the respondents sample.

This study didn't allow drawing generalized conclusions on intensive care physicians' nutritional practices. As this was a preliminary measurement and subject to screening bias, we chose not to perform statistical analysis beyond simple percent description. However, national surveys with individually delivered forms, supported by regional societies and local intensive care units heads, could provide more detailed portrait on this matter.

CONCLUSION

Additional studies on intensive care physicians' nutritional practices are warranted. Alternative to online forms distribution should be considered.

Possibly, intensive care doctors do better in the early enteral nutrition care phases than in the maintenance phase.

Intensive care physicians overall have a perception of sub-optimal knowledge on enteral nutritional therapy.

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RESUMO

Objetivo: Terapia nutricional é elemento importante no cuidado ao paciente grave. Mesmo reconhecida enquanto especialidade, a existência de equipes multidisciplinares ainda é escassa nas unidades terapia intensiva. Possivelmente a aplicação de cuidados em terapia nutricional seja variada entre intensivistas. O objetivo do estudo foi descrever percepções destes especialistas sobre atitudes e práticas em terapia nutricional enteral.

Métodos: Elaboramos questionário em plataforma *on-line*. Após fase de pré-validação, o instrumento foi distribuído via eletrônica. Após 30 dias as respostas foram computadas, considerando-se apenas os formulários completos.

Resultados: Cento e quatorze formulários foram devolvidos, 112 foram analisados. Os respondedores concentraram-se predominantemente na região sudeste do país. Sobre a instituição do suporte enteral, a maioria das respostas reflete percepções coadunadas às orientações de sociedades de especialistas. Os respondedores percebem frequentemente a aplicação de protocolos assistenciais relativos aos cuidados nutricionais. Após o início dos cuidados nutricionais, a percepção dos respondedores sobre a participação em modificações no plano terapêutico nutricional aparenta ser menor. O auto-conhecimento sobre o tema "terapia enteral" entre os respondedores foi quantificado em 6,0 (média aritmética), em escala de 1 a 10.

Conclusões: Mais estudos para avaliação de práticas nutricionais entre médicos intensivistas são necessários. Alternativas à distribuição via plataforma on-line devem ser consideradas. Possivelmente intensivistas lidam melhor com as fases iniciais de instituição dos cuidados com nutrição enteral do que em relação à continuidade dos cuidados ou mudança na programação nutricional. Médicos intensivistas percebem em geral conhecimento sub-ótimo sobre o tema terapia nutricional enteral.

Descritores: Suporte nutricional; Terapia intensiva; Inquérito; Práticas nutricionais

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Appendix 1 – Questionnaire

Nutrition therapy attitudes and perceptions

1. Which 30 days weight loss percent you consider as significant for your critically ill patients nutrition support decision making?
( ) 5% ( ) 10% ( ) 15% ( ) 20% ( ) Others: _____

2. Generally, how long do you consider acceptable to wait before starting enteral nutrition in an ICU sepsis patient?
( ) Up to 24h ( ) Up to 48 h ( ) Up to 72 h ( ) Up to 5 days ( ) Up to 7 days
( ) Others (specify):_____

3. Which weight values do you use for daily calories needs calculation in the critically ill patient? (multiple responses possible)
( ) Current weight ( ) Lean weight ( ) Ideal weight
( ) Relatives informed weight
( ) Direct bedside weight estimation
( ) I don't use weight for the calculation ( ) I don't know
( ) Others (specify): _____

4. Which formulas do you use for critically ill patients' energy needs calculation?(multiple responses possible)
( ) Harris-Benedict equation
( ) Pocket rule: 20-24 kcal/kg
( ) Pocket rule: 25-30 kcal/kg
( ) Pocket rule: 30-35 kcal/kg
( ) Target 1500-2000 kcal / day ( ) Indirect Calorimetry
( ) I usually do not calculate ( ) I don't know
( ) Others (specify):_____

5. On daily basis, do you use any algorithm, protocol or check list for the following situations?

Head of bed elevation checking	( ) Yes	( ) No
24 hours caloric offer checking	( ) Yes	( ) No
24 hours protein offer checking	( ) Yes	( ) No
Diet volume received checking	( ) Yes	( ) No
Blood glucose control	( ) Yes	( ) No
Post-pyloric nutrition institution	( ) Yes	( ) No
Parenteral nutrition associated to enteral institution	( ) Yes	( ) No
Diet interruption for procedures	( ) Yes	( ) No
Gastric residue measuring	( ) Yes	( ) No
Use of prokinetic agents	( ) Yes	( ) No

6. Which gastric residue volume (in mL) you consider as threshold for decision on enteral diet interruption? If you do not use this measure, please note "NU" (Not used):_____

7. Which alternative describes better your PREFERENCE for INSTALLATION and POSITIONING for starting enteral diet in a pulmonary sepsis mechanic ventilation patient WO DOES NOT HAVE increased gastric residue.
( ) Manual catheter installation at gastric level
( ) MANUAL catheter installation, at post-pyloric duodenal level
( ) ENDOSCOPIC catheter installation at post-pyloric duodenal level
( ) MANUAL catheter installation at post-pyloric JEJUNAL level
( ) ENDOSCOPIC catheter installation at post-pyloric JEJUNAL level
( ) Others / comments:_____

8. In a pneumonia, intubated, mechanically ventilated hemodynamically stable patient, in which situations you deem necessary to PREVIOUSLY interrupt the enteral diet? (multiple responses possible)
( ) Performing tracheostomy
( ) Deep venous puncture
( ) Chest computed tomography
( ) INTRA-hospital transportation
( ) INTER-hospital transportation
( ) Bath
( ) Orotracheal tube repositioning
( ) T piece testing
( ) Patient's head of bed angle reduction.
( ) Electric cardioversion
( ) Post-extubation NIV
( ) Others (specify):_____

9. How long after a patient's extubation you authorize restarting enteral diet infusion?
( ) 1 hour ( ) 2 hours ( ) 3 hours ( ) 4 hours ( ) 6 hours
( ) I do not stop enteral diet for extubation

10. How frequently do you use the following measures for critically ill patients constipation?

	Never, close to 0%)	Infrequently, around 25% of the times)	Sometimes (around 50% of the times)	Frequently (around 75% of the times)	Always (close to 100%)
Filtered water by NEC	( )	( )	( )	( )	( )
Mineral oil	( )	( )	( )	( )	( )
Lactulone	( )	( )	( )	( )	( )
Gycerinated clysters	( )	( )	( )	( )	( )
Fleet enema	( )	( )	( )	( )	( )
Rectal touch	( )	( )	( )	( )	( )
Phytostigmine	( )	( )	( )	( )	( )
Mannitol	( )	( )	( )	( )	( )

Others (specify)_____

11. In a clinically stable, afebrile, extubated, recovering from pulmonary sepsis patient featuring liquid diarrhea (5x in 24 hours), which would be your procedure?

	Never, close to 0%)	Infrequently, around 25% of the times)	Sometimes (around 50% of the times)	Frequently (around 75% of the times)	Always (close to 100%)
Diet interruption for 12-24 hours	( )	( )	( )	( )	( )
Decrease of enteral diet infusion rate	( )	( )	( )	( )	( )
Start using fibers	( )	( )	( )	( )	( )
Start using Lactobacillus or Saccharomyces	( )	( )	( )	( )	( )
Start using pectin/kaolin	( )	( )	( )	( )	( )
Start using loperamide	( )	( )	( )	( )	( )
Start using probiotics	( )	( )	( )	( )	( )

Others (specify)_____

12. In your intensivist practice, how frequently you decide to prescribe the following therapeutic elements?

	Never, close to 0%)	Infrequently, around 25% of the times)	Sometimes (around 50% of the times)	Frequently (around 75% of the times)	Always (close to 100%)
Start of enteral diet	( )	( )	( )	( )	( )
Increase of the prescribed enteral diet volume	( )	( )	( )	( )	( )
Change of the type of diet to be used	( )	( )	( )	( )	( )

13. How much do you agree with the statements below?

"I find difficult recognizing intensive care patients under nutritional risk."

( ) Totally disagree
( ) Partially disagree
( ) Neutral
( ) Partially agree
( ) Totally agree

"I have no techniques for measuring or categorizing intensive care underfed patients".

( ) Totally disagree
( ) Partially disagree
( ) Neutral
( ) Partially agree
( ) Totally agree

"I find difficult to organize an enteral nutritional program for critically ill patients."
( ) Totally disagree
( ) Partially disagree
( ) Neutral
( ) Partially agree
( ) Totally agree

14. How would you rate your knowledge on intensive care nutritional support
( )1 ( )2 ( )3 ( )4 ( )5 ( )6 ( )7 ( )8 ( )9 ( )10

Demographic data

15. Please inform your graduation year? (e.g.: 1994). R:_____

16. Please inform the State where you work (capital letters, please, e.g.: RJ). R:_____

17. For how many years have you been working in intensive care?
( ) < 5 years
( ) between 5 and 10 years
( ) between 11 and 15 years
( ) between 16 and 20 years
( ) For more than 20 years

18. Please inform you training degree in intensive care? (multiple responses possible)
( ) Post-graduation or specialization (completed)
( ) Intensive Care Residency (completed)
( ) AMIB Specialist Accreditation
( ) Continued practice in intensive care

19. How much time do you expend in intensive care assistance weekly?
( ) < 25%
( ) between 25 and 50%
( ) between 50 and 75%
( ) > 75%

20. Which roles do you play in intensive care? (multiple responses possible)
( ) Doctor on Duty
( ) Daily labor/ Routine
( ) Head/Coordination
( ) Pos graduation student / Resident

21. Which types of patients are you used to care?
( ) Post-operative/ surgical intensive care
( ) Critical clinical patients
( ) Coronary disease patients/cardio-intensive care
( ) Neuro critical patients
( ) Ventilatory unit
( ) Semi-intensive unit/intermediate unit
( ) Others (specify):_____