IX sessione:
La Nutrizione nel paziente con
Disfagia Neurogena

Problematiche nutrizionali nelle disfagie neurogene delle Sindromi Parkinsoniane

Emanuele Cereda MD, PhD
Clinical Nutrition and Dietetics Unit,
Fondazione IRCCS Policlinico “San Matteo”
E-mail: e.cereda@smatteo.pv.it
- **Dehydration** (↓ fluids intake)
- **Malnutrition** (↓ calorie intake)
- **Aspiration pneumonia** (life-threatening)

Nutritional management is crucial to the health of patients
Prevalence of malnutrition/malnutrition risk and nutrition-related risk factors among patients with Parkinson’s disease: systematic review and meta-analysis

Ji Fu, Zhuo Li, Fang Wang and Kang Yu

Methods: PubMed, EMBASE, and Cochrane Library were systematically searched. Literatures published between 1 January 1995 and 1 November 2020, subjects were patients with idiopathic PD underwent Mini Nutritional Assessment (MNA) were included.

Result: Sixteen articles, including 1650 PwP from 13 countries/regions, were included in the meta-analysis. The prevalence of malnutrition and malnutrition risk were 8.8% (Confidence interval [CI] 95%, 5.3%-12.2%) and 35.3% (CI 95%, 29.0%-41.7%), and the prevalence of nutritional disorders was 42.3% (CI 95%, 33.7%-51%). The prevalence of malnutrition in developing countries was higher than that in the developed countries. Meta-analysis reveals there were significant differences in the course of the disease (0.88 years; 95% CI, 0.26–1.50), levodopa equivalent daily dose (LEDD; 60.77 mg/day; 95% CI, 2.7–118.8), Hoehn and Yahr (H&Y) staging (0.323; CI 95%, 0.164–0.482), and unified Parkinson’s disease rating scale (UPDRS) scores (total: 13.66, CI 95%: 10.57-16.75 and part III: 5.52, CI 95%: 3.79–7.25) between normal and nutritional disorder groups.

# Mini Nutritional Assessment

*Emanuele Cereda*

## Table 1. Summary of factors potentially involved in nutritional derangements

<table>
<thead>
<tr>
<th>The ‘9 Ds’ [8]</th>
<th>The acronym ‘MEALS ON WHEELS’ [9]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dementia</td>
<td>Medication effects</td>
</tr>
<tr>
<td>Depression</td>
<td>Emotional problems (especially depression)</td>
</tr>
<tr>
<td>Disease (acute and chronic)</td>
<td>Anorexia nervosa or alcoholism</td>
</tr>
<tr>
<td><strong>Dysphagia</strong></td>
<td>Late life paranoia</td>
</tr>
<tr>
<td>Dysgeusia</td>
<td><strong>Swallowing disorders</strong></td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>Oral factors such as poorly fitting dentures, caries</td>
</tr>
<tr>
<td>Drugs</td>
<td>No money</td>
</tr>
<tr>
<td>Dentition</td>
<td>Wandering and other dementia related behaviours</td>
</tr>
<tr>
<td>Dysfunction (functional disability)</td>
<td>Hyperthyroidism or hypothyroidism or hyperparathyroidism or hypoadrenalism</td>
</tr>
<tr>
<td></td>
<td>Enteric problems</td>
</tr>
<tr>
<td></td>
<td>Eating problems (such as inability to feed self)</td>
</tr>
<tr>
<td></td>
<td>Low salt, low-cholesterol diet</td>
</tr>
<tr>
<td></td>
<td>Stones, social problems (such as isolation, inability to obtain preferred foods)</td>
</tr>
</tbody>
</table>

*Curr Opin Clin Nutr Metab Care* 2012, 15:29 – 41
DOI:10.1097/MCO.0b013e32834d7647
A ROLE FOR NUTRITIONAL CARE

ESPEN guideline clinical nutrition in neurology

Rosa Burgos a,*, Irene Bretón b, Emanuele Cereda c, d, Jean Claude Desport e, Rainer Dziewas f, Laurence Genton g, Filomena Gomes h, Pierre Jésus e, Andreas Leischker i, Maurizio Muscaritoli j, Kalliopi-Anna Poulia k, Jean Charles Preiser l, Marjolein Van der Marck m, Rainer Wirth n, Pierre Singer o, Stephan C. Bischoff p

Major Nutritional Issues in the Management of Parkinson’s Disease

Michela Barichella, MD,1 Emanuele Cereda, MD,1,2* and Gianni Pezzoli, MD1

Movement Disorders, Vol. 24, No. 13, 2009
Body mass index in Parkinson’s disease: A meta-analysis

Marjolein A. van der Marck, Heleen C. Dicke, Ergun Y. Uc, Zippora H.A. Kentin, George F. Borm, Bastiaan R. Bloem, Sebastiaan Overeem, Marten Munneke

Difference in BMI between patients with Parkinson’s disease and healthy controls
WEIGHT LOSS

Dyskinesias
Motor impairment

↑ energy expenditures
↓ calorie intake

Disability
Dysphagia (GI dysfunction)
Depression

Cereda E
Nutritional risk and gastrointestinal dysautonomia symptoms in Parkinson's disease outpatients hospitalised on a scheduled basis

Michela Barichella¹, Emanuele Cereda²*, Carmen Madio¹, Laura Iorio¹, Chiara Pusani¹, Raffaella Cancellò¹, Riccardo Caccialanza², Gianni Pezzoli¹ and Erica Cassani¹

¹Parkinson Institute, Istituti Clinici di Perfezionamento (ICP), via Bignami 1, 20126 Milan, Italy
²Nutrition and Dietetics Service, Fondazione IRCCS Policlinico San Matteo, Viale Golgi 19, 27100 Pavia, Italy

Table 3. Associations with nutritional risk (Malnutrition Universal Screening Tool score ≥ 1): logistic regression analyses of non-collinear variables (Odds ratios and 95% confidence intervals)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Univariate analysis</th>
<th>Multivariate analysis</th>
<th>Multivariate analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
<td>P</td>
</tr>
<tr>
<td>Age (years)</td>
<td>0.99</td>
<td>0.96–1.03</td>
<td>0.777</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.62</td>
<td>0.29–1.29</td>
<td></td>
</tr>
<tr>
<td>Disease duration (years)</td>
<td>1.03</td>
<td>0.97–1.09</td>
<td>0.321</td>
</tr>
<tr>
<td>Disease duration (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UPDRS score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part II</td>
<td>1.01</td>
<td>0.95–1.08</td>
<td>0.777</td>
</tr>
<tr>
<td>Part III</td>
<td>1.01</td>
<td>0.97–1.04</td>
<td>0.714</td>
</tr>
<tr>
<td>Hoenh and Yahr stage</td>
<td>1.72</td>
<td>1.08–2.73</td>
<td>0.021</td>
</tr>
<tr>
<td>Levodopa dose (mg/kg per d)</td>
<td>1.19</td>
<td>1.07–1.32</td>
<td>0.002</td>
</tr>
<tr>
<td>SCS-PD score &gt; 11</td>
<td>3.18</td>
<td>1.22–8.29</td>
<td>0.018</td>
</tr>
<tr>
<td>SQD score &gt; 11</td>
<td>1.45</td>
<td>0.50–4.23</td>
<td>0.494</td>
</tr>
<tr>
<td>Constipation</td>
<td>1.43</td>
<td>0.67–3.06</td>
<td>0.350</td>
</tr>
<tr>
<td>Dysautonomia symptoms†</td>
<td>1.45</td>
<td>1.00–2.11</td>
<td>0.049</td>
</tr>
</tbody>
</table>

UPDRS, unified Parkinson's disease rating scale (part II, activity of daily living; part III, motor examination); SCS-PD, sialorhoea clinical scale for Parkinson’s disease; SQD, swallowing disturbance questionnaire.

* Variables arbitrarily included were those having a P < 0.25 at univariate analyses.
† OR per additional symptom (SCS-PD score > 11, SQD total score > 11, SQD score for liquids ≥ 2 and presence of constipation).
- **sialorrhea**
- **dysphagia**
- **constipation**
Dysautonomia Rating Scales in Parkinson’s Disease: Sialorrhea, Dysphagia, and Constipation—Critique and Recommendations by Movement Disorders Task Force on Rating Scales for Parkinson’s Disease

Marian L. Evatt, MD, MS,1,6 K. Ray Chaudhuri, MD, FRCP,2 Kelvin L. Chou, MD,3 Ester Cubo, MD, PhD,4 Vanessa Hinson, MD, PhD,5 Katie Kompoliti, MD,6 Chengwu Yang, MS, PhD,7 Werner Poewe, MD,7 Olivier Rascol, MD,8 Cristina Sampaio, MD, PhD,9 Glenn T. Stebbins, PhD,6 and Christopher G. Goetz, MD9

Abstract: Upper and lower gastrointestinal dysautonomia symptoms (GIDS)—sialorrhea, dysphagia, and constipation—are common in Parkinson’s disease (PD) and often socially as well as physically disabling for patients. Available invasive quantitative measures for assessing these symptoms and their response to therapy are time-consuming, require specialized equipment, can cause patient discomfort and present patients with risk. The Movement Disorders Society commissioned a task force to assess available clinical rating scales, critique their clinimetric properties, and make recommendations regarding their clinical utility. Six clinical researchers and a biostatistician systematically searched the literature for scales of sialorrhea, dysphagia, and constipation, evaluated the

Movement Disorders
Vol. 24, No. 5, 2009, pp. 635–646
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SIALORRHEA

Phychological > nutritional

Anticipates severe swallowing disturbances

Neurogenic → dysphagia for fluids

No codified nutritional management

(↓ strength of flavours and saliva production)

INCREASED SURVEILLANCE IS RECOMMENDED

Production of saliva is normal or even reduced
Swallowing disturbances in Parkinson's disease: A multivariate analysis of contributing factors

Emanuele Cereda, Roberto Cilia, Catherine Klersy, Margherita Canesi, Anna Lena Zecchinelli, Claudio Bruno Mariani, Silvana Tesei, Giorgio Sacilotto, Nicoletta Meucci, Michela Zini, Ioannis Ugo Isaias, Erica Cassani, Stefano Goldwurm, Michela Barichella, Gianni Pezzoli

Prevalence of oropharyngeal dysphagia in Parkinson’s disease: A meta-analysis

J.G. Kalf, B.J.M. de Swart, B.R. Bloem, M. Munneke

Self-perceived prevalence: 15-30%
Instrumental prevalence: ~80%
“Have you experienced any difficulty in swallowing food or drink or problem with choking?”

The Nondeclaration of Nonmotor Symptoms of Parkinson’s Disease to Health Care Professionals: An International Study Using the Nonmotor Symptoms Questionnaire

Movement Disorders
Vol. 25, No. 6, 2010, pp. 704–709
© 2010 Movement Disorder Society

35%
Dysphagia in Parkinson’s disease is responsive to levodopa

James P. Sutton

Parkinsonism and Related Disorders 19 (2013) 282–284

Swallowing improvement after levodopa treatment in idiopathic Parkinson’s disease: Lack of evidence

Ailton Melo, Larissa Monteiro

Parkinsonism and Related Disorders 19 (2013) 279–281
Assessment and feeding **ALWAYS** in ‘ON-drug’ state

**Recommendation 28:**
Optimization of the antiparkinsonian treatment should be advised to ameliorate the motor symptoms that contribute to dysphagia in PD patients.

**Grade of recommendation:** B- strong consensus (100% agreement)
Diet

- texture-modified
- appropriate quality
- tailored energy density

Gastrostomy
(long-term enteral nutrition)

Temperature, flavour, variety, posture

↑ Calorie intake
↓ Meal interruption
↓ Feeding assistance
**Dietary habits and neurological features of Parkinson's disease patients: Implications for practice**

Michela Barichella a, Emanuele Cereda b,*, Erica Cassani a, Giovanna Pinelli a, Laura Iorio a, Valentina Ferri a, Giulia Privitera a, Marianna Pasqua a, Angela Valentino a, Fatemeh Monajemi a, Serena Caronni a, Caterina Lignola a, Chiara Pusani a, Carlotta Bollieri a, Samanta A. Faierman a, Alessandro Lubisco c, Giuseppe Frazzitta d, Maria L. Petroni e, Gianni Pezzoli a


**Underestimation of requirements by standard methods of daily clinical practice**
Patients with dysphagia drank less water, milk and fluids in general but consumed more fizzy drinks. They preferred softer and more viscous foods, such as yogurt, pasta and potatoes (instead of bread and pizza), cooked and pureed vegetables (instead of raw ones), milk puddings and custards (instead of other sweet snacks and chocolate) and consumed more oil (instead of other dressings). However, no effect on MeDi score was detected.
Low cardiometabolic risk in Parkinson’s disease is independent of nutritional status, body composition and fat distribution

Emanuele Cereda\textsuperscript{a,b,*}, Erica Cassani\textsuperscript{a}, Michela Barichella\textsuperscript{a}, Angela Spadafranca\textsuperscript{c}, Riccardo Caccialanza\textsuperscript{b}, Simona Bertoli\textsuperscript{a,b}, Alberto Battezzati\textsuperscript{a,b}, Gianni Pezzoli\textsuperscript{a}

Case-control study (80 PD vs. 80 controls) - Matched for sex, age and nutritional status

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Model 1\textsuperscript{a}</th>
<th>Model 2\textsuperscript{b}</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effect for PD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coefficient [95% CI]</td>
<td>Coefficient [95% CI]</td>
</tr>
<tr>
<td></td>
<td>\textit{P}-value</td>
<td>\textit{P}-value</td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>\text{9.6 [–15.0, –4.4]}</td>
<td>\text{–8.1 [–15.1, –1.1]}</td>
</tr>
<tr>
<td>Total cholesterol (mg/dL)</td>
<td>\text{32.1 [–43.6, –20.6]}</td>
<td>\text{–30.7 [–45.3, –16.1]}</td>
</tr>
<tr>
<td>HDL cholesterol (mg/dL)</td>
<td>\text{9.1 [–8.3, 0.1]}</td>
<td>\text{–3.1 [–8.5, 2.3]}</td>
</tr>
<tr>
<td>LDL cholesterol (mg/dL)</td>
<td>\text{22.7 [–33.6, –11.8]}</td>
<td>\text{–23.1 [–36.9, –9.3]}</td>
</tr>
<tr>
<td>Triglycerides (mg/dL)</td>
<td>\text{20.9 [–38.2, –3.6]}</td>
<td>\text{–16.4 [–32.1, –0.7]}</td>
</tr>
<tr>
<td>AST (UI/dL)</td>
<td>\text{4.3 [–7.3, 1.3]}</td>
<td>\text{–4.0 [–7.7, 0.3]}</td>
</tr>
<tr>
<td>ALT (UI/dL)</td>
<td>\text{10.5 [–14.7, –6.4]}</td>
<td>\text{–9.1 [–14.5, –3.7]}</td>
</tr>
<tr>
<td>MetS criteria (n)</td>
<td>\text{0.1 [–0.3, 0.1]}</td>
<td>\text{–0.1 [–0.5, 0.3]}</td>
</tr>
</tbody>
</table>

\textit{a} Models adjusted for sex, age, smoking status and body mass index.

\textit{b} Models adjusted for sex, age, smoking status, percentage of body fat and waist circumference.

ESPEN guideline clinical nutrition in neurology

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Recommendation 33:

PD patients with constipation can benefit from the use of fermented milk containing probiotics and prebiotic fiber in addition to common dietary advices aimed at increasing the intake of water and fiber.

Grade of recommendation: B – strong consensus (91% agreement)

Fluid thickeners
Prevalence ~60%

Abdominal distension and psychological discomfort

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Dietary habits and neurological features of Parkinson’s disease patients: Implications for practice

Michela Barichella a, Emanuele Cereda b, *, Erica Cassani a, Giovanna Pinelli a, Laura Iorio a, Valentina Ferri a, Giulia Privitera a, Marianna Pasqua a, Angela Valentino a, Fatemeh Monajemi a, Serena Caronni a, Caterina Lignola a, Chiara Pusani a, Carlotta Bollini a, Samanta A. Faierman a, Alessandro Lubisco c, Giuseppe Frazzitta d, Maria L. Petroni e, Gianni Pezzoli a

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Linear regression of variables associated with daily levodopa dose (mg/kg/day: patients receiving levodopa therapy, *N = 510*).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Univariable linear regression models</th>
<th>Multivariate analysis (Model 1)b</th>
<th>Multivariate analysis (Model 2)c</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β-coefficient (SE) (mg/kg/day)</td>
<td>P-value</td>
<td>β-coefficient (SE) (mg/kg/day)</td>
</tr>
<tr>
<td>Age at onset (years)</td>
<td>0.083 (0.022)</td>
<td>&lt;0.001</td>
<td>0.109 (0.247)</td>
</tr>
<tr>
<td>Male gender</td>
<td>0.377 (0.414)</td>
<td>0.363</td>
<td>0.321 (0.468)</td>
</tr>
<tr>
<td>Disease duration (years)</td>
<td>0.180 (0.028)</td>
<td>&lt;0.001</td>
<td>–</td>
</tr>
<tr>
<td>Hoehn–Yahr stage (1-class increase)</td>
<td>1.065 (0.262)</td>
<td>&lt;0.001</td>
<td>–</td>
</tr>
<tr>
<td>Dopamine-agonist use (yes)</td>
<td>1.023 (0.465)</td>
<td>0.029</td>
<td>0.768 (0.479)</td>
</tr>
<tr>
<td>Constipation (yes)</td>
<td>1.054 (0.411)</td>
<td>0.011</td>
<td>0.954 (0.449)</td>
</tr>
<tr>
<td>Excess in protein intakea (g/day)</td>
<td>0.084 (0.008)</td>
<td>&lt;0.001</td>
<td>0.058 (0.011)</td>
</tr>
<tr>
<td>Protein redistribution diet (yes)</td>
<td>-1.059 (0.423)</td>
<td>0.006</td>
<td>-0.998 (0.446)</td>
</tr>
</tbody>
</table>

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50 mg/day more (70 kg of body weight)
Levodopa and protein intake

Levodopa-dietary proteins (neutral aminoacids) interactions
Low-protein breakfast and lunch and consumption of a second-course - with no restrictions - only at dinner

ESPEN guideline clinical nutrition in neurology

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Recommendation 31:

In addition to advising PD patient to take levodopa medications at least 30 min before meals, we recommend advising those experiencing motor fluctuations to try complying with a protein-redistribution dietary regimen to maximize levodopa absorption and efficacy.

Grade of recommendation B – strong consensus (90% agreement)
Low-Protein and Protein-Redistribution Diets for Parkinson’s Disease Patients with Motor Fluctuations: A Systematic Review

Emanuele Cereda, MD, PhD,1* Michela Barichella, MD,1 Carlo Pedrolli, MD,2 and Gianni Pezzoli, MD1

COMPLICATIONS

- Severe dyskinesias (↓ levodopa)
- Weight loss
- Hunger before dinner

EARLY DROP-OUT
Overdosage of levodopa (+++)
No efficacy (rare)

LATE DROP-OUT
Changes in dietary habits (+++)

Low-protein foods for renal failure patients
### Dietary habits and neurological features of Parkinson's disease patients: Implications for practice

Michela Barichella, Emanuele Cereda, Erica Cassani, Giovanna Pinelli, Laura Iorio, Valentina Ferri, Giulia Privitera, Marianna Pasqua, Angela Valentino, Fatemeh Monajemi, Serena Caronni, Caterina Lignola, Chiara Pusani, Carlotta Bolli, Samanta A. Faierman, Alessandro Lubisco, Giuseppe Frazzitta, Maria L. Petroni, Gianni Pezzoli

#### Table

<table>
<thead>
<tr>
<th>Variable</th>
<th>Adherence (N=277)</th>
<th>No adherence (N=233)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body mass index</strong>, kg/m² [Mean (SD)]</td>
<td>26.6 (4.8)</td>
<td>25.7 (4.8)</td>
<td>0.037</td>
</tr>
<tr>
<td><strong>Levodopa dose</strong>, mg/day [Mean (SD)]</td>
<td>488 (278)</td>
<td>556 (296)</td>
<td>0.008</td>
</tr>
<tr>
<td><strong>Levodopa dose</strong>, mg/kg/day [Mean (SD)]</td>
<td>6.8 (4.5)</td>
<td>7.9 (4.7)</td>
<td>0.007</td>
</tr>
<tr>
<td><strong>Motor complication score</strong>&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyskinesias&lt;sup&gt;c&lt;/sup&gt;, Mean [SD]</td>
<td>1.4 (2.0)</td>
<td>1.1 (1.8)</td>
<td>0.078</td>
</tr>
<tr>
<td>OFF state&lt;sup&gt;d&lt;/sup&gt;, Mean [SD]</td>
<td>1.1 (1.4)</td>
<td>1.5 (1.5)</td>
<td>0.002</td>
</tr>
<tr>
<td><strong>Hoehn-Yahr stage</strong>, Mean (SD)</td>
<td>2.4 (0.9)</td>
<td>2.5 (0.9)</td>
<td>0.212</td>
</tr>
<tr>
<td><strong>TDEE</strong>, kcal/kg/day [Mean (SD)]</td>
<td>20.7 (2.8)</td>
<td>20.8 (2.7)</td>
<td>0.683</td>
</tr>
<tr>
<td><strong>Calorie intake</strong>, kcal/kg/day [Mean (SD)]</td>
<td>30.4 (9.6)</td>
<td>32.1 (9.8)</td>
<td>0.049</td>
</tr>
<tr>
<td><strong>Protein intake</strong>, g/kg/day [Mean (SD)]</td>
<td>1.1 (0.4)</td>
<td>1.3 (0.4)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
ESPEN guideline clinical nutrition in neurology

Rosa Burgos a, Irene Bretón b, Emanuele Cereda c, d, Jean Claude Desport e, Rainer Dziewas f, Laurence Genton g, Filomena Gomes h, Pierre Jésus e, Andreas Leischker i, Maurizio Muscaritoli j, Kalliopi-Anna Poulia k, Jean Charles Preiser l, Marjolein Van der Marck m, Rainer Wirth n, Pierre Singer o, Stephan C. Bischoff p

Recommendation 23:

We recommend that PD patients should undergo regular monitoring of nutritional and vitamin status during the course of the disease. Particularly, attention should be focused on changes in body weight, and the need of supplementing vitamin D, folic acid and vitamin B12.

Grade of recommendation B – strong consensus (91% agreement)
Vitamin B12 and folate

PD patients treated with levodopa show an elevation of homocysteine. This is greater in patients on higher doses of levodopa and is due to levodopa methylation by catechol-O-methyl-transferase (COMT). Accordingly, the concomitant use of COMT inhibitors may limit the raising of plasma levels, although the regulation is closely linked to vitamin B12 and folate status.

Interestingly, studies have shown that levodopa-treated PD patients have also lower circulating levels of folate and vitamin B12. On the other hand, administration of these vitamins is effective in reducing homocysteine levels and should be always considered to prevent neuropathy and other complications associated with hyper-homocysteinemia.

Check homocysteine along with vitamin B12 and folate status in patients assuming levodopa
B) What are the treatment options for dysphagia in PD?

B1. Optimization of PD treatments (Class II-III-IV level studies and expert opinion)

B1I. Patients should be tested during both the ON- and OFF-state to assess the impact of dopaminergic treatment on swallowing function.

B1II. Dopaminergic treatment should be optimized in patients with PD and dysphagia.

B1III. Patients with PD and dysphagia should preferably consume meals during their best ON-state.

....

B2. Swallowing therapy (Class II-III-IV level studies and expert opinion)

....

B2II. Liquid thickeners may be beneficial in dysphagia associated to PD provided that the viscosity selection is guided instrumentally and the risk of dehydration is monitored.

....
C) What are the nutritional interventions for patients with PD and dysphagia?  
(Statements are based on expert opinion)

C1. Nutritional intervention should be prescribed based on a multidisciplinary evaluation (including neurologist, ENT, phoniatician, gastroenterologists, speech-language pathologists, dietitians, and clinical nutritionists) and may include dietary counseling (including oral nutritional supplements), texture modified diet, as well as artificial nutrition.

C2. Intervention should focus not only on safety and efficiency of swallowing, swallowing-related QOL, but also on both general (nutritional status, hydration status, energy balance) and disease-specific (levodopa containing medications and protein intake interactions, vitamin status, fiber intake) issues.
RIVALUTAZIONE PERIODICA DELLO STATO NUTRIZIONALE
(Peso e sue variazioni recenti, esami del sangue, modello dietetico ed apporti calorici)

SUGGERIRE DIETA MEDITERRANEA BILANCIATA
(58-60%, carboidrati; 12-15%, proteine; 25-30%, grassi)

INTEGRATORI NUTRIZIONALI
(Low-protein)

DIETA A CONTENUTO CALORICO DEFINITO
(Prodotti aproteici)

CONSIGLI DIETETICI PER RIDURRE L’APPORTO PROTEICO
(Introdurre l’uso di prodotti aproteici)

CONSIGLI DIETETICI PER LA RIDISTRIBUZIONE DELL’APPORTO PROTEICO
(Secondo piatto solo a cena)

SUGGERIRE DIETA MEDITERRANEA BILANCIATA
(58-60%, carboidrati; 12-15%, proteine; 25-30%, grassi)

ACQUA
(almeno 1.500 L/die)

ATTIVITA’ FISICA REGOLARE
(Bassa intensità e lunga durata)

FIBRA
(30-35 grammi/die)
ACKNOWLEDGMENTS

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Brain and Malnutrition in Chronic Diseases Association-ONLUS”