

# Bölüm 1

## PARENTERAL BESLENME

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### GİRİŞ

Beslenme, hastane yatışlarında her hasta için sağlanması gereken önemli bir tedavi birleşimidir. Beslenmenin sağlanmasında öncelikli yol olarak besinleri ağızdan alınması önerilmektedir. Bunun mümkün olmadığı durumlarda ise mide veya bağırsağa yerleştirilecek yardımcı tüpler sayesinde hastanın beslenmesi sağlanabilir. Bu yolların da kullanımı mümkün olmadığı hastalarda ise parenteral beslenmeye geçilmesi gerekmektedir. Parenteral beslenme ise hastaların büyük veya küçük toplardamarları kullanılır. Bu damarlara yerleştirilecek kanüllerle toplardamarlara ulaşım sağlanır. Damar yolundan verilecek besin maddeleri sayesinde hastanın ihtiyaç duyduğu enerji, protein, yağ, vitamin ve mineraller sağlanır (1).

### 1. ENDİKASYONLAR (HANGİ DURUMLARDA KULLANILIR?)

Beslenme desteğine başlamak için hastalar çeşitli risk skorlama (NRS-2002: Nutrisyonel Risk Tarama-2002, NUTRIC Score: Nutrisyonel Risk Skorlama Sistemi) yöntemleri ile değerlendirilir (2,3). 2015' de Avrupa Klinik Beslenme ve Metabolizma Derneği (ESPEN); vücut kitle indeksi  $18,5 \text{ kg/m}^2$ 'nin altında olan, 3 ayda %5' den daha fazla kilo kaybının olması ve 70 yaşından büyüklerin vücut kitle indeksinin %20 veya %22' den daha düşük olmasının beslenme yetersizliği olarak belirlemişlerdir (4). Bu değerlendirmeler sonucunda kişilere beslenme desteği başlanmaktadır. Bu destekte öncelikli olarak ağız yoluyla alınabilecek besinler tercih edilir. Hasta eğer ağız yoluyla besin alamıyor ve bağırsak sistemi kullanılmayacak durumdaysa hastalar parenteral beslenme desteğinde bulunulabilir. Bağırsakların yeterince çalışmıyıp parenteral beslenme desteğine ihtiyaç duyulabilecek durumlar tablo 1' de özetlenmiştir (5-7).

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## **KAYNAKÇA**

1. Singer P, Blaser AR, Berger MM, et al. ESPEN guideline on clinical nutrition in the intensive care unit. *Clin Nutr.* 2019;38:48-79. DOI:<https://doi.org/10.1016/j.clnu.2018.08.037>.
2. Kondrup J, Rasmussen HH, Hamberg OLE et al. Nutritional risk screening (NRS 2002): a new method based on an analysis of controlled clinical trials. *Clin Nutr.* 2003;22:321-336. DOI:[https://doi.org/10.1016/S0261-5614\(02\)00214-5](https://doi.org/10.1016/S0261-5614(02)00214-5).
3. Heyland DK, Dhaliwal R, Jiang X, et al. Identifying critically ill patients who benefit the most from nutrition therapy: the development and initial validation of a novel risk assessment tool. *Crit Care.* 2011;15:R268. DOI:<https://doi.org/10.1186/cc10546>.
4. Cederholm T, Barazzoni R, Austin P, et al. ESPEN guidelines on definitions and terminology of clinical nutrition. *Clin Nutr.* 2017;36:49-64. DOI:<https://doi.org/10.1016/j.clnu.2016.09.004>.
5. Peroni L, Arends J, Bozzetti F, et al. ESPEN guidelines on chronic intestinal failure. *Clin Nutr.* 2016;35:247-307. DOI:10.1016/j.clnu.2016.01.020.
6. Abu-Elmagd KM, Costa G, McMichael D, et al. Autologous reconstruction and visceral transplantation for management of patients with gut failure after bariatric surgery. *Ann Surg.* 2015;262:586-601. DOI:<https://doi.org/10.1097/SLA.0000000000001440>.
7. O'Keefe S, Buchman AL, Fishbein TM, et al. Short bowel syndrome and intestinal failure: consensus definitions and overview. *Clin Gastroenterol Hepatol.* 2006;4:6-10. DOI:<https://doi.org/10.1016/j.cgh.2005.10.002>.
8. McClave SA, Taylor BE, Martindale RG, et al. Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient. *J Parenter Enteral Nutr.* 2016;40:159-211. DOI:10.1177/0148607115621863.
9. Phillips MS, Ponsky JL. Overview of enteral and parenteral feeding Access techniques: principles and practice. *Surg Clin North Am.* 2011;91:897- 911. DOI:<https://doi.org/10.1016/j.suc.2011.04.006>.
10. Boullata JI, Carrera AL, Harvey L, et al. ASPEN safe practices for enteral nutrition therapy. *J Parenter Enteral Nutr.* 2016;20:1-89. DOI:10.1177/0148607116673053.
11. Pittiruti M, Hamilton H, Biffi R, et al. ESPEN Guidelines on Parenteral Nutrition: central venous catheters (access, care, diagnosis and therapy of complications). *Clin Nutr.* 2009;28:365-377. DOI:10.1016/j.clnu.2009.03.015.
12. Ziegler TR. Parenteral nutrition in the critically ill patient. *N Engl J Med.* 2009;361:1088-1097. DOI:10.1056/NEJMc0806956.
13. Versleijen M, Vissers R, Wanten G. Excellent quality of life after 31 years of parenteral nutrition via an arteriovenous fistula. *Eur J Clin Nutr.* 2008;62:1253-1254. DOI:<https://doi.org/10.1038/sj.ejcn.1602864>.
14. Carsten CG, Taylor SM, Cull DL, et al. The surgically created arteriovenous fistula: a forgotten alternative to venous access. *Ann Vasc Surg.* 2004;18:635-639. DOI:<https://doi.org/10.1007/s10016-004-0104-8>.
15. MW Versleijen, GJ Huisman-de Waal, MC Kock, et al. Arteriovenous fistulae as an alternative to central venous catheters for delivery of long-term home parenteral nutrition. *Gastroenterology.* 2009; 136:1577-1584. DOI:<https://doi.org/10.1053/j.gastro.2009.02.005>.
16. Staun M, Pironi L, Bozzetti F, et al. ESPEN Guidelines on Parenteral Nutrition: home parenteral nutrition (HPN) in adult patients. *Clin Nutr.* 2009;28:467-479. DOI: <https://doi.org/10.1016/j.clnu.2009.04.001>.
17. Hortencio TDR, Arendt BM, Teterina A, et al. Changes in Home Parenteral Nutrition Practice Based on the Canadian Home Parenteral Nutrition Patient Registry. *J Parenter Enteral Nutr.* 2015;40:1-7. DOI:10.1177/0148607115609289.
18. Winkler MF, DiMaria-Ghalili RA, Guenter P, et al. Characteristics of a cohort of home parenteral nutrition patients at the time of enrollment in the Sustain registry. *J Parenter Enteral Nutr.* 2016;40:1140-1149. DOI:10.1177/0148607115586575.
19. Kovacevich DS, Corrigan M, Ross VM et al. American Society for Parenteral and Enteral Nutrition Guidelines for the Selection and Care of Central Venous Access Devices for Adult Home Parenteral Nutrition Administration. 2019;43:15-31. DOI: <https://doi.org/10.1002/jpen.1455>.

20. Gaggioti G, Orlandoni P, Boccoli G, et al. Percutaneous vs. totally implantable catheters in home parenteral nutrition. *Clin Nutr.* 1986;5:33-40. DOI: [https://doi.org/10.1016/0261-5614\(86\)90040-3](https://doi.org/10.1016/0261-5614(86)90040-3).
21. Toure A, Duchamp A, Peraldi C, et al. A comparative study of peripherally-inserted and Broviac catheter complications in home parenteral nutrition patients. *Clin Nutr.*2015;34:49-52. DOI:<https://doi.org/10.1016/j.clnu.2013.12.017>.
22. Christensen LD, Holst M, Bech LF, et al. Comparison of complications associated with peripherally inserted central catheters and Hickman catheters in patients with intestinal failure receiving home parenteral nutrition. Six-year follow up study. *Clin Nutr.* 2016;35:912-917. Doi:<https://doi.org/10.1016/j.clnu.2015.06.009>.
23. Staun M, Pironi L, Bozzetti F, et al. ESPEN guidelines on parenteral nutrition: home parenteral nutrition (HPN) in adult patients. *Clin Nutr.* 2009;28:467-79. DOI:<https://doi.org/10.1016/j.clnu.2009.04.001>.
24. Mirtallo J, Canada T, Johnson D, et al. Safe practices for parenteral nutrition. *J Parenter Enteral Nutr.* 2004;28:39-70. DOI:<https://doi.org/10.1177/01486071040280S601>.
25. ironi L, Arends J, Bozzetti F, et al. ESPEN guidelines on chronic intestinal failure in adults. *Clin Nutr.*2016;35:247-307. DOI:<https://doi.org/10.1016/j.clnu.2016.01.020>.
26. Maisonneuve N, Raguso CA, Paoloni-Giacobino A, et al. Parenteral nutrition practices in hospital pharmacies in Switzerland, France, and Belgium. *Nutrition* 2004;20:528-535. DOI: 10.1016/j.nut.2004.03.020.
27. Raper S, Milanov S, Park GR. The cost of multicompartiment 'big bag' total parenteral nutrition in an ICU. *Anaesthesia.*2002;57:96-97. DOI:[https://doi.org/10.1046/j.1365-2044.2002.2412\\_26.x](https://doi.org/10.1046/j.1365-2044.2002.2412_26.x).
28. Parienti JJ, Mongardon N, Mégarbane B, et al. Intravascular complications of central venous catheterization by insertion site. *N Engl J Med* 2015;373:1220-1229. DOI:10.1056/NEJ-Moa1500964.
29. Gosmanov AR, Umpierrez GE. Management of hyperglycemia during enteral and parenteral nutrition therapy. *Curr Diab Rep.* 2013;13:155-162. DOI:<https://doi.org/10.1007/s11892-012-0335-y>.
30. McMahon MM, Nystrom E, Braunschweig C, et al. A.S.P.E.N. clinical guidelines: nutrition support of adult patients with hyperglycemia. *J Parenter Enteral Nutr.* 2013;37:23-36. DOI:<https://doi.org/10.1177/0148607112452001>.
31. Friedli N, Stanga Z, Sobotka L, et al. Revisiting the refeeding syndrome: results of a systematic review. *Nutrition.* 2017;35:151-160. DOI:<https://doi.org/10.1016/j.nut.2016.05.016>.
32. Friedli N, Stanga Z, Culkin A, et al. Management and prevention of refeeding syndrome in medical inpatients: An evidence-based and consensus-supported algorithm. *Nutrition.*2018;47:13-20. DOI:<https://doi.org/10.1016/j.nut.2017.09.007>.
33. Błasiak R, Ławiński M, Majewska K, et al. Damage of central catheters in home parenteral nutrition patients. *Pol Prezgl Chir.* 2015;87:579-586. DOI:10.1515/pjs-2016-0006.
34. Magill SS, Edwards JR, Bamberg W, et al. Multistate point-prevalence survey of health care-associated infections. *N Engl J Med.* 2014;370:1198-1208. DOI:10.1056/NEJMoa1306801.
35. Ross VM, Guenter P, Corrigan ML, et al. Central venous catheter infections in home parenteral nutrition patients: outcomes from sustain: American Society for Parenteral and Enteral Nutrition's National Patient Registry for Nutrition Care. *Am J Infect Cont.* 2016;44:1462-1468. DOI:<https://doi.org/10.1016/j.ajic.2016.06.028>.
36. Pronovost P, Needham D, Berenholtz S, et al. An intervention to decrease catheter-related bloodstream infections in the ICU. *N Engl J Med.* 2006;355:2725-2732. DOI:10.1056/NEJ-Moa061115.
37. Cavicchi M, Beau P, Crenn P, et al. Prevalence of liver disease and contributing factors in patients receiving home parenteral nutrition for permanent intestinal failure. *Ann Intern Med.* 2000;132:525-532. DOI:<https://doi.org/10.7326/0003-4819-132-7-200004040-00003>.
38. Davila J, Konrad D. Metabolic Complications of Home Parenteral Nutrition. *Nutr Clin Pract.* 2017;32:753-768. DOI:<https://doi.org/10.1177/0884533617735089>.

39. Pironi L, Arends J, Baxter J, et al. ESPEN endorsed recommendations. Definition and classification of intestinal failure in adults. *Clin Nutr.* 2015;34:171–180. DOI:<https://doi.org/10.1016/j.clnu.2014.08.017>.
40. Messing B, Bories C, Kunstlinger F, et al. Does total parenteral nutrition induce gallbladder sludge formation and lithiasis? *Gastroenterology.*1983;84:1012–1019. DOI:[https://doi.org/10.1016/0016-5085\(83\)90204-4](https://doi.org/10.1016/0016-5085(83)90204-4).
41. Pironi L, Labate AM, Pertkiewicz M, et al. Prevalence of bone disease in patients on home parenteral nutrition. *Clin Nutr.* 2002;21:289–96. DOI:<https://doi.org/10.1054/clnu.2002.0548>.
42. Wood RJ, Sitrin MD, Cusson GJ, et al. Reduction of total parenteral nutrition induced urinary calcium loss by increasing the phosphorus in the total parenteral nutrition prescription. *J Parenter Enteral Nutr.* 1986;10:188–90. DOI:<https://doi.org/10.1177/0148607186010002188>
43. Verhage AH, Cheong WK, Allard JP, et al. Increase in lumbar spine bone mineral content in patients on long-term parenteral nutrition without vitamin D supplementation. *J Parenter Enteral Nutr.* 1995;19:431–436. DOI: <https://doi.org/10.1177/0148607195019006431>.
44. Moukarzel AA, Ament ME, Buchman A, et al. Renal function of children receiving long-term parenteral nutrition. *J Pediatr.* 1991;119:864–868. DOI:[https://doi.org/10.1016/S0022-3476\(05\)83034-3](https://doi.org/10.1016/S0022-3476(05)83034-3).