



Nutrition Support and Disease-Related Malnutrition in China

Chen Wei, MD

In recent years, Chinese hospitals have focused more seriously on malnutrition prevalence than they did 30 years ago. This discussion examines four major aspects of this focus: the epidemiology of disease-related malnutrition, approaches to and indications for nutrition support in China, the issue of who can provide nutrition support, and the management of nutrition support in China.

As is well known, malnutrition is prevalent among patients with many different diseases—from 10% to 80% of patients—but we still lack a “gold standard” for nutrition assessment. Healthcare providers still find it difficult to identify which patients are malnourished or at risk for malnutrition. Even the Royal College of Physicians has emphasized that all physicians should be able to diagnose nutritional deficiencies.

Organizations in many countries have established guidelines to improve the knowledge of malnutrition among healthcare providers. For example, the American Society for Parenteral and Enteral Nutrition has said that all patients should be screened within 24 hours of admission. Those identified as having nutritional risk factors should undergo nutrition assessment, and specialized nutrition support should be initiated in patients with inadequate intake, or expected inadequate intake over 7–14 days.¹ The European Society for Clinical Nutrition and Metabolism indicated that all healthcare institutions should have a policy and specific protocol for identifying patients at nutritional risk. All patients should be screened upon admission, and enteral nutrition is recommended for all patients not expected to be on a full oral diet within 3 days.² The Chinese Society of Parenteral and Enteral Nutrition recommends that all patients be screened within 24 to 48 hours of admission, and those at risk should undergo nutrition assessment.³

Nutrition Support and Disease-Related Malnutrition in China

Table 1 below shows that the in-hospital prevalence of nutritional risk differs in different countries.

Table 1. Comparison of Malnutrition Prevalence in Hospitals in the UK vs China

| Author | N | Prevalence nutritional risk (%) | Medium risk (%) | High risk (%) | BMI <20 kg/m ² (%) | BMI <18.5 kg/m ² (%) |
|--------------------------------------|-------|---------------------------------|-----------------|---------------|-------------------------------|---------------------------------|
| UK (MUST medium and high risk) | | | | | | |
| Russell and Elia ⁴ (2011) | 9668 | 34 | 14 | 21 | 13 | 7 |
| Russell and Elia ⁵ (2009) | 5089 | 28 | 6 | 22 | 11 | 6 |
| Russell and Elia ⁶ (2008) | 9336 | 28 | 6 | 22 | 13 | 7 |
| China (NRS-2002 $\geq 3^*$) | | | | | | |
| Jiang et al ⁷ (2008) | 15098 | 35.5 | | | | 12.1 |

MUST=Malnutrition Universal Screening Tool, NRS=Nutritional Risk Screening

*A score of ≥ 3 =severe nutritional risk

We also carried out a whole-country survey in 13 big cities in 2005 and 2006 using the 2002 Nutritional Risk Screening (NRS) tool. The incidence of nutritional risk was 35.5%, and the incidence of undernutrition/malnutrition was 12.0%. The data also showed that 32.7% of people at nutritional risk in the hospital received nutrition support. As shown in Table 2, the incidence of malnutrition in Chinese hospitals differs by diagnoses.⁷



Table 2. Prevalence of Malnutrition in Chinese Hospitals by Diagnosis⁷

| | Non-NR <3 (%)* | NR ≥3 (%)* | Undernutrition/ Malnutrition (%)* |
|-------------------------|--------------------------|-------------------|--|
| Respiratory | 1635 (63.6) | 937 (36.4) | 343 (13.3) |
| General-surgical | 1862 (66.1) | 955 (33.9) | 329 (11.7) |
| Neurology | 1736 (63.4) | 1004 (36.6) | 116 (4.2) |
| Renal | 1722 (74.5) | 590 (25.5) | 325 (14.1) |
| GI | 1396 (55.3) | 1130 (44.7) | 429 (17.0) |
| Chest | 1380 (64.8) | 751 (35.2) | 263 (12.3) |
| Total | 9731 (64.5) | 5367 (35.5) | 1805 (12.0) |

NR=nutritional risk

*A score of 0=no nutritional risk; a score of 1–2=mild to moderate nutritional risk; a score of ≥3=severe nutritional risk

The research data also showed that the ratio of parenteral nutrition (PN) supplementation to enteral nutrition (EN) supplementation was 6 to 1—a ratio that differs markedly from the preferred, evidence-based use of EN in other countries (EN to PN ratio of approximately 9 to 1).

In China, nutrition therapy in hospitals includes nutrition counseling, nutrition assessment, evaluation of nutritional status, and determination of nutritional risk. Thus, we can recommend the nutrition support route (enteral or parenteral), type of nutrition, and appropriate access.

The clinical nutrition support methods in China include diet, oral nutritional supplements (ONS), EN, and PN. Although there is no examining and approving system, we use ONS in the clinical setting. Every year, the ONS cost is from 40 million to 4 billion renminbi (RMB) for China’s very large population. Our indicator for use of ONS is a patient’s inability to take in sufficient nutrients and energy, even with nutrition counseling. ONS is the simplest, most natural, and least invasive

Nutrition Support and Disease-Related Malnutrition in China

method of increasing nutrient intake in all patients. Many studies have verified the benefits of their use for reducing complications and mortality rates. Now we are trying to establish national standards for ONS, including the standard for products, imports, and advertising.

EN access includes gastric and postpyloric feeding. The former uses nasogastric tubes, percutaneous endoscopic gastrostomy (PEG) tubes (placed primarily by gastroenterologists), and open gastrostomy. Postpyloric feeding uses nasoduodenal tubes, PEG–jejunostomy (PEG–J) tubes, and open laparoscopic jejunostomy. PN is used most frequently after surgery. Indications include postoperative bowel dysfunction and fistulas (pancreatic surgery and tertiary referral).

Who can provide nutrition therapy in China? We try to set up nutrition support teams (NSTs). The actions of NSTs include the following:

- Recognition and treatment of malnutrition
- Reduction of the mechanical and metabolic complications of PN and EN
- Reduction in morbidity and mortality
- Reduction in improper use of nutritional supplements
- Reduction in costly waste of nutritional formulas
- Provision of more cost-effective selection of products
- Reduction in length of stay and costs to the hospital

Doctors, nurses, and dietitians can work in the nutrition department in Chinese hospitals, but they may not have formal nutrition education. China still does not have a dietitian certification system with examinations. There are only 2,500 clinical dietitians in the whole country, although there are 4,000 management dietitians who work in nutrition mess halls and cannot prescribe drugs. Two or three large hospitals have some specialized dietitians in the renal or diabetes department who have trained a few nurses to provide nutrition counseling.

The tasks of clinical dietitians in China include assessing patients' nutritional status; screening inpatients for nutritional risk; recommending the amounts for calorie, protein, and other nutrient intake; selecting PN/EN access and formulas; calculating food and nutrient intake; assessing the result of nutrition support; evaluating nutritional products; and carrying out nutrition intervention procedures. Clinical dietitians also do clinical nutrition research.



Physician training is needed to increase awareness of the benefits of nutrition therapies in hospital care, and hospital dietitians should be used more often and more effectively to reduce malnutrition-related conditions. Finally, further research is needed in Chinese hospitals to test the efficacy of nutrition strategies.

References

1. American Society for Parenteral and Enteral Nutrition. Available at <http://www.nutritioncare.org/>. Accessed November 5, 2012.
2. European Society for Clinical Nutrition and Metabolism. Available at <http://www.espen.org/>. Accessed November 6, 2012.
3. Chinese Society for Parenteral and Enteral Nutrition. *Guidelines for Parenteral and Enteral Nutrition*. Beijing: People's Medical Publishing House;2008.
4. Russell CA, Elia M. Nutrition Screening Survey in the UK and Republic of Ireland in 2010: A Report by the British Association for Parenteral and Enteral Nutrition (BAPEN). Available at http://www.bapen.org.uk/pdfs/nsw/nsw10/nsw10_report.pdf. Accessed Dec 29, 2012.
5. Russell CA, Elia M. Nutrition Screening Survey in the UK in 2008: A Report by the British Association for Parenteral and Enteral Nutrition (BAPEN). Available at http://www.bapen.org.uk/pdfs/nsw/nsw_report2008-09.pdf. Accessed Dec 29, 2012.
6. Russell CA, Elia M. Nutrition Screening Survey in the UK in 2007: A Report by the British Association for Parenteral and Enteral Nutrition (BAPEN). Available at http://www.bapen.org.uk/pdfs/nsw/nsw07_report.pdf. Accessed Dec 29, 2012.
7. Jiang ZM, Chen W, Zhu SN, et al. Survey of the incidence of malnutrition (undernutrition), nutrition risk and the application of nutrition support in big hospitals in western, eastern, and middle China. *Chin J Clin Nutr*. 2008;12: 335-336.