SUMMARY
We aimed to determine the outcome of nutritional intervention in children with moderate to severe malnutrition following persistent diarrhoea (PD), referred to a tertiary referral unit in Malaysia. Thirty-one (44%) of the 71 children (median age 19 months) with PD had moderate to severe malnutrition on admission. Fifty-three (75%) required dietary modification and 15 (21%) needed parenteral nutrition (PN, median duration 96 days). Of the 70 patients in whom remission of diarrhoea could be ascertained, 64 (91%) achieved remission. Three required home PN. At three months after discharge, there was a significant improvement in the mean weight-for-height z-score as compared to the original score at initial presentation (from -1.83 ± -1.77 to -0.80 ± -1.17; p < 0.001), although 12 (22%) of the 55 patients in whom nutritional status could be ascertained still had moderate to severe malnutrition. In conclusion, moderate to severe malnutrition was a common complication following PD resulting from diverse causes. With appropriate therapy, remission can be achieved in majority of patients, although a small number of patients needed home PN because of persistence of diarrhoea.

KEY WORDS: Persistent diarrhoea, Malnutrition, Nutritional intervention

INTRODUCTION
Persistent diarrhoea (PD) is generally defined as diarrhoea lasting longer than 14 days' duration. The aetiology of childhood PD is diverse, with multiple consecutive infections of the gastrointestinal tract leading to secondary lactose intolerance, cow milk protein intolerance (CMPI) and postenteritis syndrome as important causes of PD in developing countries. In developed countries, however, the role of enteric infections has become less important over the last few decades. Primary disorders of the gut, such as autoimmune enteropathy, microvillous inclusion diseases (MvID), and other enteropathies causing protracted diarrhoea, have become important causes of PD in childhood. Irrespective its cause, malnutrition remains a serious complication of PD. Recent studies have shown that in certain selected cases, home parenteral nutrition (PN) and intestinal transplantation, and the resources necessary for home PN is generally unavailable in many developing countries. Enteral nutrition (EN) remains an important mode of nutritional intervention in malnutrition following PD. We have previously observed that the causes of PD in Malaysian children were varied and the outcome was generally good. The aims of the present study are to ascertain the severity of malnutrition and the outcome of nutritional intervention in children with moderate to severe malnutrition resulting from PD seen at a tertiary referral unit in Malaysia.

MATERIALS AND METHODS
The present study was conducted at the Department of Paediatrics, University of Malaya Medical Centre (UMMC), Kuala Lumpur, from January 1998 to December 2004.

Setting and design
It was a retrospective, hospital-based review, and was approved by the Ethical Committee of UMMC. UMMC is a tertiary referral centre for paediatrics in Malaysia but also serves the local population of Kuala Lumpur. Throughout the study period, experience on home PN was gradually developed in UMMC, but intestinal transplantation was not available in Malaysia.

Inclusion criteria
PD was defined as passage of loose or watery stool of at least three episodes per day for 14 days or more. Patients aged younger than 12 years with PD admitted to the Department of Paediatrics, UMMC, over a 7-year period (January 1998 to December 2004) were included. Patients with diarrhoea due to an underlying malignancy or the effects of chemotherapy and those with incomplete medical records were excluded.

Case Selection
Hospital admission records of Department of Paediatrics, UMMC during the study period were screened for the following key words: PD, CMPI, lactose intolerance, gastrointestinal infection, chronic inflammatory bowel disease (CIBD), chronic liver problems and surgical gastrointestinal problems. In addition, patients with diarrhoeal diseases with hospitalisation ≥ 10 days during the study period were also screened. The clinical records of patients were retrieved from the Department of Medical Records and were reviewed.