Patients undergoing surgery face many metabolic and physiological challenges that may compromise nutritional status. Patients with preoperative undernutrition have a significantly higher risk of postoperative undernutrition have a significantly higher risk of postoperative complications and death than those well nourished prior to surgery.

The main goals of perioperative nutritional support are to minimize negative protein balance by avoiding starvation, with the purpose of maintaining muscle, immune, and cognitive function and to enhance postoperative recovery. Postoperative parenteral nutrition is recommended in patients who cannot meet their caloric requirements within 7-10 days orally or enterally.

1. When is preoperative PN indicated?

In severely undernourished patients who cannot be adequately orally or enterally fed (Grade A).

2. When is postoperative PN indicated?

Parenteral nutrition is beneficial in the following circumstances: in undernourished in whom enteral nutrition is not feasible or not tolerated (Grade A); in patients with postoperative complications impairing gastrointestinal function who are unable to receive and absorb adequate amounts of oral/enteral feeding for at least 7 days (Grade A).

In patients who require postoperative artificial nutrition, enteral feeding or a combination of enteral and supplementary parenteral feeding is the first choice (Grade A).

3. Is preoperative metabolic preparation of elective patients using carbohydrate treatment useful?

For most patients preoperative carbohydrate loading using the oral route is recommended (Grade A).

4. What are the energy and protein requirements in the perioperative period?

The commonly used formula of 25 kcal/kg ideal body weight furnishes an approximate estimate of daily energy expenditure and requirements (Grade B). Under conditions of severe stress requirements
may approach 30 kcal/kg ideal body weight (Grade B).

In illness/stressed conditions a daily nitrogen delivery equivalent to a protein intake of 1.5 g/kg ideal body weight (or approximately 20% of total energy expenditures) is generally effective to limit nitrogen losses (Grade B).

5. Which is the optimal glucose:lipid ratio?

At present, there is a tendency to increase the glucose:fat calorie ratio from 50:50 to 60:40 or even 70:30 of the non-protein calories, due to the problems encountered regarding hyperlipidemia and fatty liver, which is sometimes accompanied by cholestasis and in some patients may progress to non-alcoholic steatohepatitis (Grade C).

6. Which is the optimal PN mixture?

Optimal nitrogen sparing has been shown to be achieved when all components of the parenteral nutrition mix are administered simultaneously over 24h (Grade A).

7. Standard versus individualized nutrition?

Individualized nutrition is often unnecessary in patients without serious co-morbidity (Grade A).

8. Should specific nutrients be added to standard PN to obtain a clinical benefit?

The optimal PN regimen for critically ill surgical patients should probably include supplemental n-3 fatty acids (grade C). The evidence-base for such recommendations requires further input from prospective randomized trials.

9. Should vitamins/trace elements be used in perioperative PN?

In those patients after surgery who are unable to fed via the enteral route, and in whom total or near total parenteral nutrition is required, a full range of vitamins and trace elements should be supplemented on a daily basis (Grade C).

10. Is weaning from PN necessary?

No