

Nutrition Support Milestones

Enteral Nutrition

3100 BCE



Enteral nutrition dates back to Egyptian times with rectal feedings and various formulas and devices.

1598

Capivaceus introduced nutrient substances into the esophagus with a hollow tube.

1790

John Hunter successfully fed patients with a nasogastric tube.

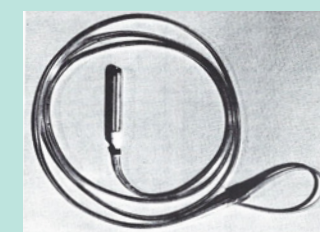
1969



Dr. Henry T. Randall spearheaded the renewed interest in chemically defined foods based upon the then-currently available elemental formulae.

1976

Introduction of first enteral nutrition feeding tube, the Dobbhoff, from Drs. Dobbie and Hoffmeister.



Parenteral Nutrition

1965



Dr. Stanley Dudrick successfully administered parenteral nutrition (PN) to six beagle puppies, demonstrating normal growth and development compared to those fed orally.

1966-1967

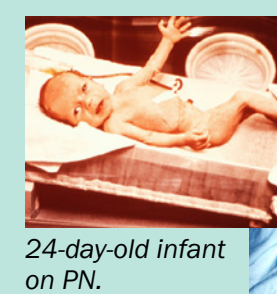
The successful administration of PN with positive nitrogen balance was achieved in six consecutive malnourished adult patients with chronic, complicated GI diseases.

1966-1969

Over 300 adult patients with multiple different diseases resulting in malnutrition secondary to intestinal failure were successfully treated with PN, resulting in weight gain and increased strength.

1967

PN was successfully administered to a 24-day-old severely malnourished infant with near total atresia of the small intestine.



24-day-old infant on PN.



Same infant after 400 days of PN.

1968

The first patient was treated with home parenteral nutrition.

1960s

The original PN, developed at the Hospital of the University of Pennsylvania, was compounded in a 1-liter bottle.



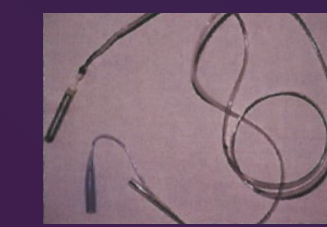
Swedish scientists successfully developed a fat solution that could be added to parenteral nutrition. Lipid injectable emulsion (ILE) was FDA-approved in the U.S. in the mid-1970s.

1960s-1970s

Hydrolyzed feeding formulas were introduced. These formulas were chemically broken down to improve digestion and absorption for individuals with certain diseases and conditions.

1970s

Small bore feeding tubes were developed. These thinner tubes could be placed in the stomach or small bowel for EN.



Home PN programs started.

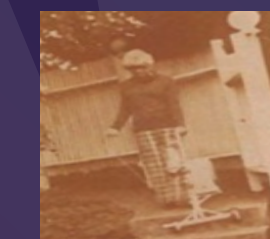


1970s-1980s

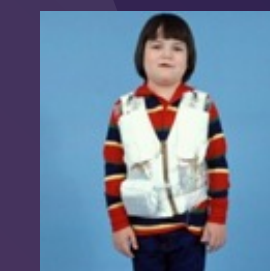
Anthropometric techniques to measure body composition in nutrition assessment were implemented.



1980s



Portable PN and EN pumps were introduced, coinciding with advancements in home healthcare technologies and the increasing emphasis on improving patient mobility and independence.



1980s-PRESENT

The use of commercially available multi-chamber bag PN (MCB-PN), formerly known as premixed PN, has increased in the U.S. due to facilities reducing the number of products compounded and recent medication shortages of PN components.



1989-PRESENT

Evolution of PN automated compounding devices.

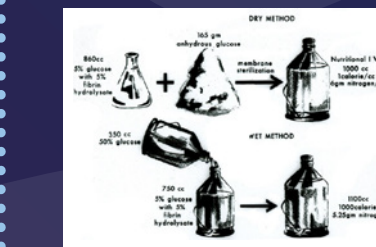


Photo courtesy of Baxter

1990s-PRESENT

Ready-to-hang closed feeding systems became widely available and are most often used in acute and long-term care settings.



Alternative intravenous lipid emulsions were introduced globally to address the limitations of soybean oil-based emulsions, such as their high omega-6 fatty acid content and pro-inflammatory effects. These emulsions were later approved by the FDA for use in the U.S.

2000s-PRESENT

Guided feeding tube placement techniques became popular including direct and real-time indirect visualization placement technology.



Commercially blenderized EN formulas have become more available. Formula manufacturers began to offer these whole food formulas for use in all healthcare settings.

2010s-PRESENT

ENFit® connectors were introduced as part of a global initiative to reduce medical errors related to misconnections of tubing and connectors in healthcare settings.

