In the 1960s dialysis was scheduled once a week, with little or no dietary restriction [1], but the "underdialysis syndrome" forced nephrologists to change to a 2–3 times a week schedule [2].

Later on, nephrologists involved in studies on conservative therapy of uremia again tried to reduce the frequency of dialysis with the aid of improved nutritional treatment. Although interesting, some of these studies [3–10] were only experimental or were done in a small number of patients and for a short period of time.

In the last few years, combined therapy (CT), nutritional management, and infrequent dialysis, have become routine in our renal units for patients who could no longer stay on conservative therapy alone, but do not yet need standard maintenance hemodialysis (MHD), and for selected patients already on standard replacement therapy [11–16].

In this chapter we examine the methods and results of the treatment.

**SELECTION OF PATIENTS**

Some criteria for patient selection are needed:

1. Urinary output: a daily volume of urine sufficient to avoid overhydration is required.
2. Compliance with dietary prescription is imperative for good clinical results, [17].
3. Severe hypertension with overhydration resistant to pharmacological treatment is a contraindication.
4. Anorexia, nausea, and severe vomiting, interfere with adequate feeding and cause protein-energy malnutrition and thus are also exclusion criteria.

DIET AND DIALYSIS
The Pisa group’s patients follow the special vegan supplemented diet (Chapter 20) and are allowed a free mixed diet on the day of dialysis. This is to replace losses of amino acids [18, 19] and because the patients comply better on the remaining 6 days. Patients on CT come after months or years of conservative therapy, and this free day provides a very important psychological support.

Patients in the Lecco group are submitted to nutritional management consisting of a protein (PR)-restricted diet (0.4 g/kg/day PR, 40% of which is of high biological value) supplemented with 9.6 g of 1-EAAs (isoleucine 0.9 g, lysine 1.6 g, methionine 8.8 g, phenylalanine 1.4 g, threonine 0.9 g, tryptophan 0.2 g, valine 1.2 g, histidine 1 g). On the day of dialysis, patients are allowed an unrestricted but controlled diet to avoid the danger of hyperkalemia.

DIALYSIS VERSUS CONSERVATIVE TREATMENT
Apart from the utility of a PR-restricted diet in slowing the progression of CRF, the rationale of the CT of uremia is based on the fact that uremic symptoms are correlated to the plasma concentration of urea (UR), which is more a main marker of toxicity than being directly toxic per se.

Plasma UR is in turn a function of the factors determining its mass balance, i.e., generation, accumulation, and removal. In patients with CRF, high plasma UR reflects UR accumulation in the body because of reduced renal removal. This accumulation can be limited only by reducing urea generation, hence the rationale of the PR-restricted diet to control plasma UR before the start of dialysis.

In order to start dialytic treatment and quantify adequate therapy requirements, the level of UR accumulation up to which the uremic syndrome is “under control” must be defined. Plasma UR corresponding to this accumulation can be considered as the landmark for adequate conservative and/or replacement therapy. A review of the literature proposes three main dialysis models, which establish an index of treatment adequacy: the Nephroid clearance model (NC) by Ginn and Teschan [20], the urea kinetics model (UKM) by Gotch and Sargent [21], and the dialysis index (DI) by Babb and Scribner [22].

If we consider these models to be correct, any adequate treatment (conservative or substitutive) must maintain the serum UR within the limits set by these indexes, repeating that UR is assumed to be a marker of uremic toxicity more than being actually toxic itself. Therefore we must know the level of UR retention and work out the UR concentration that can be considered adequate according to these three models.