

Manuel Alvarado\* and Marcelo Fattorini\*

# Optimum design essential for dialysis centres

The design, management and construction of a network of outpatient dialysis centres, in the period 1994 to 2008, are subjects examined in this article.

It was in the early 1990s, amid a globalisation and economic advancing process in emerging countries, that the American company National Medical Care arrived in Argentina to broaden its dialysis centres network.

This highly specialised company had much experience, mainly in the United States and Europe, which made it possible to add new technologies and procedures for this dialysis in Argentina.

Later, Fresenius Medical Care, from Germany, took over and started managing this centre network all over the world.

From the beginning of this process and up to the present, in our capacity as architects, and starting from very precise and accurate regulations and standards, we have been developing new construction projects, updating functions and enlarging over 80 centres in a network that covers the whole of Argentina.

We have also applied this experience and expertise to other Latin American countries such as Brazil, Colombia and Chile.

The medical procedures and technology called for an architectural response appropriate for the different geographical settings and cultures of each country while keeping a common identity and meeting stipulated, general, criteria.

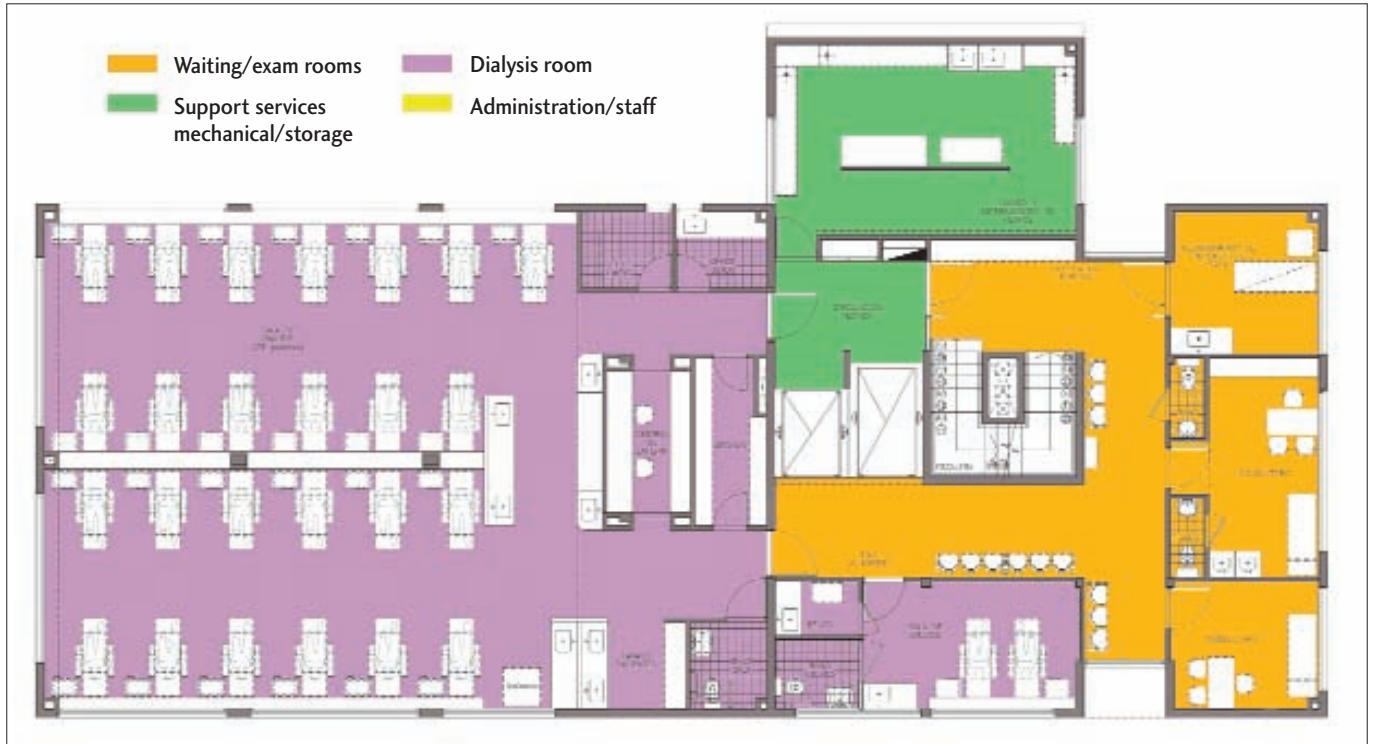
‘The experience gained in design and its verification through the use of premises helps in the development of increasingly efficient models and in the optimisation of economic resources.’

\* Manuel Alvarado and Marcelo Fattorini are architects with Estudio Alvarado Font Sartorio, Argentina.

FMC/Ciudadela Dialysis Center, Buenos Aires, Argentina.



Schematic of the NephroCare Dialysis Center, Providencia, Chile.



**Working methodology**

For the development of these projects, the regional management, the medical board of directors and the bioengineering department of the client institution, together with the architects, make up an interdisciplinary team that articulates the relevant programme needs, medical procedures, biotechnology and design factors surrounding patients' treatment and comfort.

Similarly, a solid interchange with the regulating entities and the social services departments that refer their patients to these centres and audit the resources, helps with agreement on, and updating of, regulations to be applied. The goal is always to improve the quality of services.

**Design guidelines**

Design guidelines are concerned with:

- **Patient comfort:** Humanisation of the environment which is built taking into account the frequency and duration of chronic patient treatment.
- **Logistics:** Technical access and movement to facilitate logistics in the movement of supplies, materials, staff, dialysis devices, etc.
- **Medical requirements:** Operational efficiency, infection control.
- **Maintenance:** There is a requirement for speed and simplicity as buildings are used highly intensively.

The chronic patient undergoing extracorporeal dialysis receives ongoing treatment approximately three times a week for four hours at a time.

This brings about a dependence relationship and a sense of belonging to the



Interior of the NephroCare Dialysis Center, Providencia, Chile.

place where the patient is assisted. That is why we, as architects, consider that the quality of the design, apart from impacting on the efficiency of the treatment, is supposed to contribute to the perception the patient has of the space in which treatment is provided.

A dialysis centre may be part of a service in a hospital, with all the complexity that is necessary to cater for an emergency, or may be a self-contained peripheral unit in the area of a referring hospital.

The peripheral centres must have a recovery area fully equipped for emergency and later referrals.

Architects carry out the feasibility studies and select the places to build these centres.

In the case of peripheral centres, the

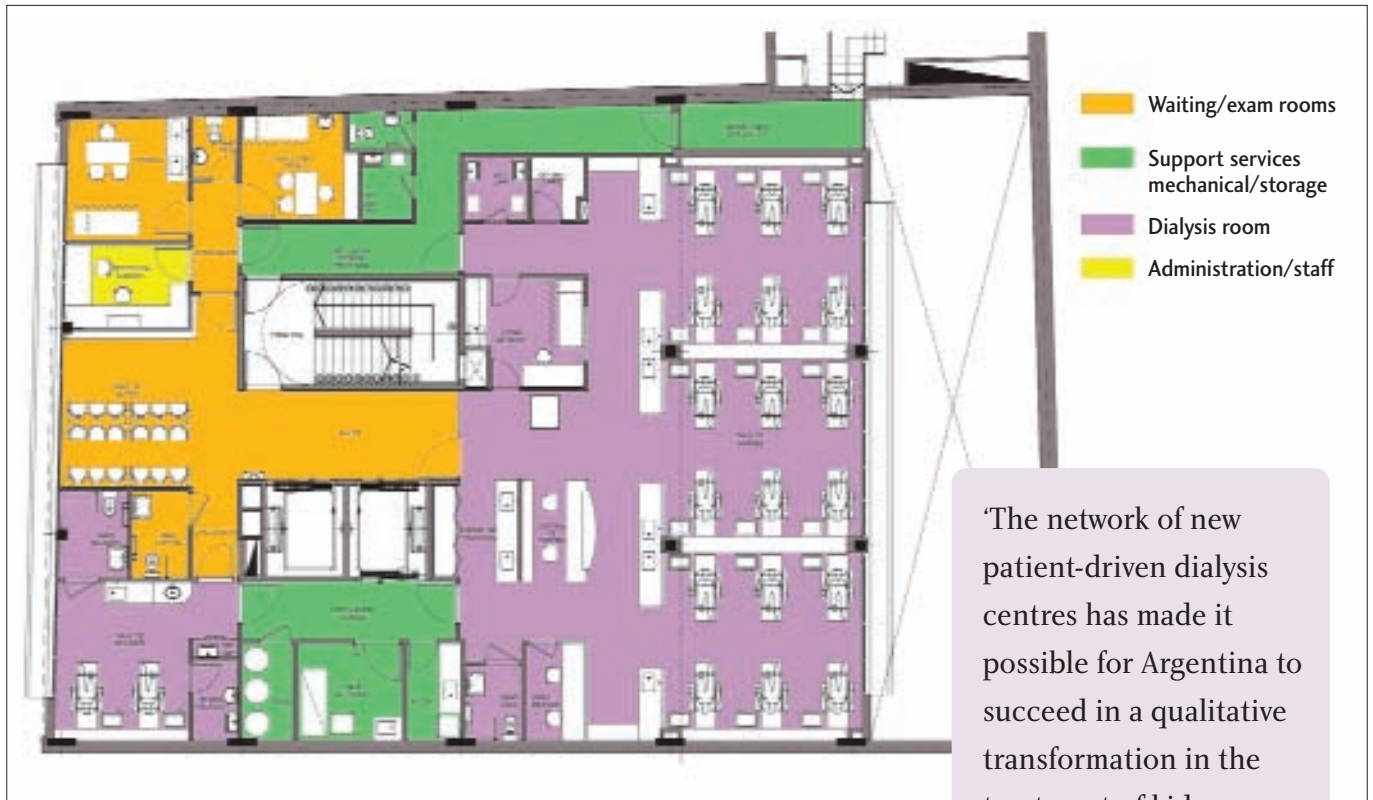
search is focused on the need to find sites that are sufficiently large to host as many functional areas as possible in just one storey – at ground level.

Having ground level premises facilitates the movement of patients, most of whom have motor disabilities, while speeding up the movement of supplies.

In highly populated urban areas, where the cost of land is very high and land lots are smaller, architects have to choose more compact sites on which premises with several levels are constructed. As a priority, patient treatment areas are placed in lower levels. Complementary functional and technical areas are located in upper levels.

The experience gained in design and its verification through the use of premises helps

Schematic of the FMC/Fundación Favalaro Dialysis Center, Buenos Aires, Argentina.



‘The network of new patient-driven dialysis centres has made it possible for Argentina to succeed in a qualitative transformation in the treatment of kidney failure chronic patients in recent years.’

in the development of increasingly efficient models and in the optimisation of economic resources.

With a network of centres, it is possible to set a benchmark to measure the quality and efficiency of the processes.

#### Utility services

Water and electricity supplies must be guaranteed on a permanent basis.

The centres have a water reserve that enables a 24-hour autonomy, and generator sets that are used in the event of an electricity supply problem.

It is necessary to have specially treated water for dialysis. In order to assure a permanent supply, the building has a pre-filter system as well as a reverse osmosis machine.

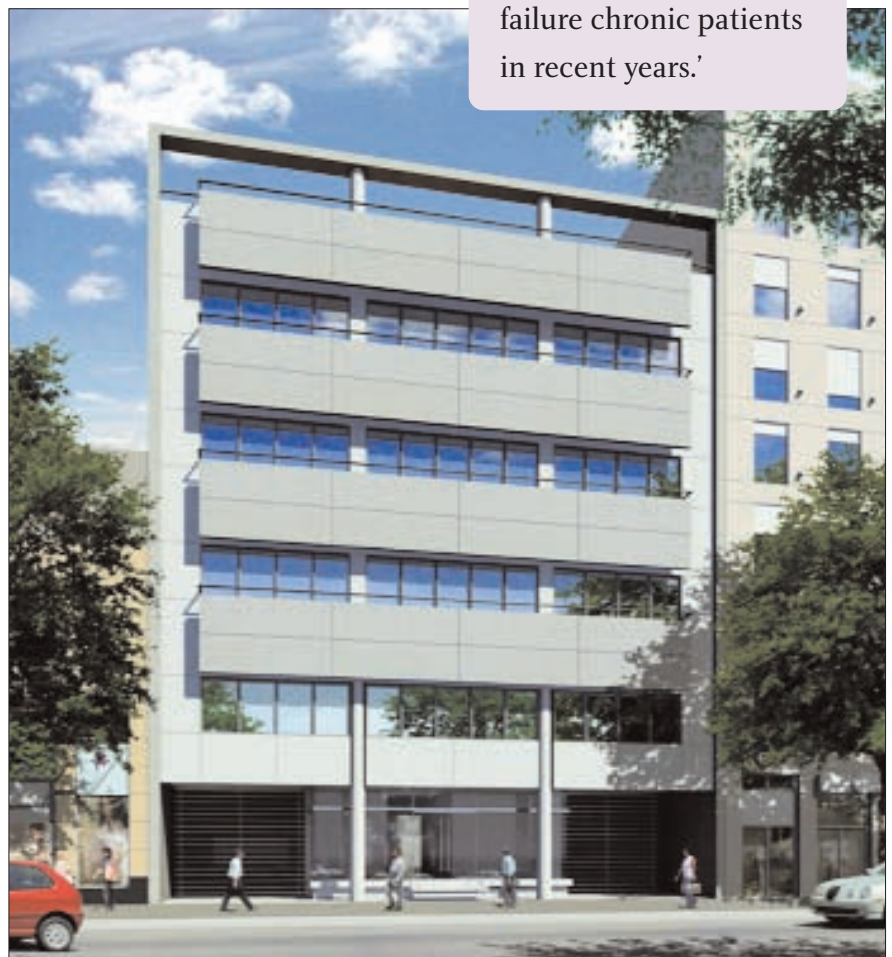
The treated water is distributed by a loop that feeds all dialysis devices. A pump system keeps the water in constant recirculation through the loop.

Each dialysis unit has its own electricity connection with its own protection, treated water supply connection, and indirect waste lines.

These connections reach each unit by a dialysis counter, the design of which assists access for easy maintenance – front panels just have to be removed.

#### Conclusion

The network of new patient-driven dialysis centres has made it possible for Argentina to succeed in a qualitative transformation in the treatment of kidney failure chronic patients in recent years.



FMC/Fundación Favalaro Dialysis Center, Buenos Aires, Argentina.