

The 21st Century National Medical Center

Thirty years ago the National Medical Center (NMC) was founded in Mexico City to provide workers with medical and hospital services. When the September 19, 1985 earthquake severely damaged NMC, it seemed that the Center's twenty-four-year record of uninterrupted service might suffer the same fate as its buildings. Yet despite the earthquake, NMC's doctors, scientists and workers continued to carry out their duties.

Seven years later, on April 27, 1992, the Mexican Institute of Social Security's (IMSS) 21st Century National Medical Center (21C-NMC) opened its doors.

The first thing that strikes the observer upon entering the complex from the subway is its magnificent art gallery. There are works by José Chávez Morado and Luis Nishisawa, a mural by Luis y Aragón and a stunning stained-glass window by Jesús Ruiz Mejía. Siqueiros' "Eulogy to the future rectory of medical science against cancer" looks dramatically to the future while the "Memorial to the workers who died on September 19, 1985" recalls the tragedy of the past. There is a beautifully designed garden with an excellent sculpture collection.

The 21C-NMC uses a sophisticated system of electric cars to transport staff, patients and visitors within the huge complex, which includes Cardiology, Oncology, Specialty and Pediatric hospitals, pharmacies, a cafeteria and exhibition square, administration buildings and a volunteer center, several parking lots,

the National Academies of Medicine and Surgery, as well as an impressive conference center, temporarily used for meetings of the Mexican Congress' House of Deputies. The complex occupies over 22,000 square meters and cost over 200 million dollars to build.

We present below our interviews with the directors of the four hospitals that are part of the 21st Century National Medical Center.

Cardiology hospital

● *Dinorah Issak*: How did Mexico achieve international recognition in the area of cardiology?

■ *Dr. Rubén Argüero*: It took a number of decades. Mexico was a pioneer in electrocardiology and vectocardiology. Since the 60's we have trained thousands of Mexican

and foreign cardiologists. This was our first step toward achieving prestige in clinical and research fields. Then the IMSS created Mexico's first Heart Surgery Center at the former NMC. That was a magic moment: we were suddenly able to perform 1,200 open-heart surgeries a year, instead of only 446. The most impressive change occurred with the opening of the Thorax Infections Hospital, the first of its kind in Latin America, where the first heart transplant in Mexico took place.

● *DI*: As director of the cardiology hospital, what are the most important tasks that you would like to see it focus on?

■ *RA*: We want to make it a different kind of hospital; one that would be academically and clinically outstanding. One example is our work



Francisco Zúñiga, Medical allegory, detail (aluminum, 1958).

Jorge Pablo de Aguinaco.

Jorge Pablo de Aguinaco.



Luis Nishizawa, Air is life (acrylic, 1958).

in the area of cardiomyoplasty, an alternative to heart transplants for patients who are not suitable transplant candidates.

Cardiomyoplasty consists of removing a muscle from the chest and placing it around the heart so that it can be made to contract and thus cause the heart to contract when stimulated by signals received from an electronic device.

We are also pioneers in microcirculation, a technique which eliminates the need for large amounts of blood. We are conducting research in this area in conjunction with Munich University. We are also researching ways of preserving transplant organs for longer periods of time. We are working on a joint project with UNAM to perfect a laser-beam system for correcting previously untreatable cases of arrhythmia. This system has already been successfully tested, offering the

Jorge Pablo de Aguinaco.



José Chávez Morado, Homage to rescue (1988-1989).

hope of increased life expectancy, not only in cardiac patients, but also in cancer patients.

● *DI*: An operation's success may often depend on the patient's psychological state. Do you do

well-known for their kindness and affection toward our patients. They are responsible for the most important part of post-operation care because they are the ones who encourage the patients and their families, providing them with

Some historical facts

The National Medical Center opened its doors on May 11, 1961, with the goal of offering the Mexican population a new model of institutional medicine. The foremost medical experts collaborated on this project, laying the groundwork for the center's tradition of high-quality medical care.

The center soon developed undergraduate and graduate courses for training specialists in various branches of clinical medicine: internal medicine, surgery, pediatrics and gynecology, among others.

Several ground-breaking scientific advancements have been made at the center. These include intra-uterine identification of a large number of innate metabolic errors and chromosomal alterations; *in vitro* fertilization; and research on thousands of new medications. Moreover, open-heart operations with external circulating pumps have been performed, and intensive neonatal and coronary post-surgical therapies have been carried out. Advances have been made in the treatment of neoplastic and chronic-degenerative diseases such as diabetes mellitus, and diseases of the immune system. The center's expertise in organ transplants is also noteworthy.

Due to the 1985 earthquake, activities at the National Medical Center were interrupted, and the medical and hospital services provided there were decentralized and transferred to various other hospitals affiliated to the Mexican Social Security Institute in the metropolitan area.

In October 1986 reconstruction and repair of the National Medical Center began, based on an architectural design which takes into account the requirements of state-of-the-art technology, and projections on the future needs for medical care at the facility.

On April 27, 1992, what is now known as the 21st Century National Medical Center was inaugurated. This facility is the most prestigious of the ten national medical centers operated by the Mexican Social Security Institute throughout the country, as well as being the most advanced in all of Latin America.

anything special to prepare your patients psychologically for surgery?

■ *RA*: We try to help patients recover something they may have lost along with their health—a warm atmosphere at home and their friendships at work. Our nurses are wonderful. They are

inner strength. The administrative staff and social workers share this same caring attitude.

● *DI*: Is there anything you would like to add?

■ *RA*: I think we need to change our attitudes and be less selfish. There is a

need for organ donors. We have the necessary medical and scientific knowledge, infrastructure, legal basis, as well as the church's approval and the

21st Century National Medical Center

Includes the hospitals of:

- Cardiology
- Pediatrics
- Oncology
- Adult Specialties

Complementary service areas:

- Central pharmacy
- Cafeteria
- Exhibition hall
- Administrative areas
- Conference auditorium
- Cultural center
- Gardens
- Parking facilities
- Vehicle and pedestrian mall

Total medical-care facilities in the hospital complex:

- 717 beds
- 144 examination rooms and physicians' offices for diagnosis and treatment of complex illnesses
- 175 clinical and research laboratories,
- 36 surgical theaters
- 22 X-ray rooms
- 37 imaging facilities

The 21st Century National Medical Center has the capacity to provide medical care to 4,400,000 patients.

Pope's blessing. We have the ability to perform thousands of transplants that we can't carry out because of a chronic shortage of available organs. As long as our attitudes don't change, the hopes

of thousands of people of all ages waiting for a second opportunity at life will continue to be buried. Let's stop being so selfish and give up what we won't be needing any longer to give other people a chance to live longer.

Oncology hospital

● *Dinorah Isaak*: What medical strategy do you recommend for dealing with patients?

■ *Dr. José Vázquez Curiel*: Patients who come to this hospital are usually frightened because they have been told they have cancer. Most of the 800 patients we receive every day are disoriented and unaware of the extent of their illness. Their lack of information generates anxiety. For that reason our first contact with the patient is extremely important. At this "pre-consultation" we provide explanation and orientation for the patient as well as calming him or her down. We believe that the human part of medical practice is more important than the technological part because machines do not provide the sensitivity and affection that human beings require.

● *DI*: Can we make generalizations about cancer?

■ *JV*: Well, there are 200 different types of tumors, some are benign, but others are very aggressive from the outset. 50% of tumors are curable at any stage. This means that a person with cancer will not necessarily die or be a hopeless case.

● *DI*: When the hospital was rebuilt, a number of new structures were added to the original building. What were the benefits of this?

■ *JV*: Although it was necessary to build a new extension to the hospital, we were also able to renovate parts of the old building, such as the Surgery, Radiotherapy and X-Ray departments. We have thus been able to utilize part of the old hospital. We recovered our interdisciplinary Pain Clinic where oncologists, psychologists, social workers, psychiatrists, pain specialists,

Jorge Pablo de Aguinaco.



Jesús Ruiz Mejía, Stellar butterflies (stained-glass, 1991).

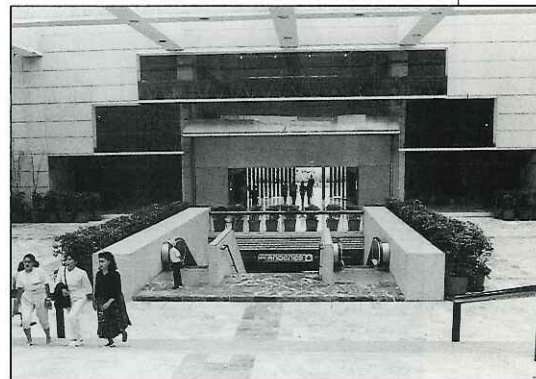
a radiotherapist and a chemotherapist work together to help cancer patients.

We now have two endoscopic devices which provide an extremely clear picture of the inside of a patient's body which can then be videotaped and used for comparative studies.

We recently opened an outpatient department to enable our patients to avoid unnecessary hospitalizations and return to their homes sooner. For example, a woman who needs breast surgery can have it done in our outpatient surgery department and be discharged the same day. A patient can come for treatment to our outpatient chemotherapy department and leave immediately afterwards.

● *DI*: What lines of research are you developing?

■ *JV*: For a number of years we have been involved in oncological research, including bone-marrow



Upon exiting the subway, one enters a magnificent art gallery.

transplants. Our hematologists will soon become involved in this area too. It is important for us to catch up with other oncological centers in the world and make use of our own experience and creativity.

● *DI*: Is there anything else you would like to add?

■ *JV*: I would like to say that cancer is not the illness it has been made out to be. People should stop being frightened and concentrate instead on cancer prevention. There should be more public information campaigns directed against known causative factors like smoking.

Medical specialties hospital

● *Dinorah Issak*: What line of research are you currently carrying out?

■ *Dr. Ignacio Madrazo*: Our focus has always been the regeneration of the nervous system. At present, we are seeking less aggressive and more adequate methods for treating Parkinson's disease, a fundamental area in which we are looking for health benefits deriving from nervous system transplants.

One of the projects we have just presented internationally is the first transplant as a treatment in cases of what is popularly known as Saint Vitus' disease.

● *DI*: What kind of reception did that get?

■ *IM*: We presented the work at the World Congress of Neuroscientists in New Orleans, and the journal *Lancet*

stated that among the 17,000 presentations, ours was among the four most outstanding. Although the disease is not significant as measured by the number of cases, it is important from an epidemiological standpoint, given that it is hereditary, occurs between the ages of 30 and 40 and, in addition to causing discomfort, is fatal. At our hospital, we have gathered 17 families suffering from this disease.

We are also attempting to treat medullar lesions, and patients who have become paralyzed as a result of blows to the spinal column, often during the productive years of their lives. This is a particularly difficult scientific challenge, given that the spinal column is a structure measuring one centimeter in diameter, and yet carries out important functions such as governing internal and external movements of the organism. In brain surgery, it is much easier to achieve neuron reconnections, because of the relatively small area one has to work with. However, in the case of the spinal column, we are talking about neurons measuring more than one meter, and which descend from the brain to the spinal cord. Obviously, in order for this "cable," if we might call it that, to grow again and reconnect itself, we need to use a procedure which, up until now, has proven quite complex.

● *DI*: Are spinal-cord transplants already being performed?

■ *IM*: At the experimental level, with animals. We even have a laboratory dedicated exclusively to the study of spinal function. This laboratory, or "Project Walk," is a private institution working in cooperation with ourselves, the *UNAM*, *IMSS* and the Ministry of Public Health.

● *DI*: What other projects are currently under way in cooperation with *UNAM*?

■ *IM*: We have a very ambitious project involving Alzheimer's disease. This disease has grown in importance since longevity rates have increased, which means there are more elderly people, the group most affected by this ailment. The developed countries have a significant public health problem relating to Alzheimer. In the United States, for example, it is estimated that in the year 2000, this will be the most frequent of all public health problems. The project is very interesting, with significant prospects for benefitting humanity.

The experimental part of the project is being carried out at the School of Psychology at *UNAM*. We are developing the clinical portion, involving patients, at the Specialties hospital. We share both efforts and results. The progress in transplant research, as in many other areas, is due to joint work. All of our research is carried out in conjunction with *UNAM*. Because of this, we have been able to make progress, even



Left to right: Luis Jasso, José Vázquez, Rubén Argüero and Ignacio Madrazo.

without the resources available in other countries.

● *DI*: Who receives treatment at the Medical Specialties hospital?

■ *IM*: Only those persons whose complaints require a high degree of technological sophistication and highly-specialized personnel. In other words, we treat the particularly difficult cases. We have a total of 22 specialties, apart from those available at the three hospitals which comprise the 21st Century National Medical Center.



Jorge Pablo de Aguinaco.

Adrián Brum, Allegory of national symbols and solidarity (jewelry enamel, 1991).

We are also involved in teaching; we have almost 800 physicians on medical residencies, doing graduate work with us, as well as research.

● *DI*: What are the guidelines for this research?

■ *IM*: We have two very clear focuses. We carry out public health research on pressing problems, as well as research on the most frequent pathologies, such as diabetes mellitus. On the other hand, we do what we call "excellence projects," considered important because of their degree of theoretical or practical development, although they may not have immediate applications.

Pediatrics hospital

● *Dinorah Issak*: What role does research play here?

■ *Dr. Luis Jasso*: About one hundred research projects are carried out annually, and published in Mexican and international journals. Two types of researchers work here: professional researchers and pediatric physicians who carry out projects based on their clinical experience. We have six research groups, and this is the only hospital in Mexico with a constellation of top researchers integrated into a single hospital unit.

● *DI*: What are the fields of these six research groups?

■ *LJ*: In the first place, there is the unit on Infectious and Parasitic diseases, where compounds and treatments are studied to prevent and cure diarrhea and pneumonia, for example. Field work and epidemiological studies are carried out through community action projects.

The second unit is known as Clinical Genetics, where field work is also carried out on population genetics, with links between tumors and cancerous diseases in children, due to genetic factors.

The third unit, Immunology and Rheumatology, carries out very sophisticated cellular studies, as well as studies on degenerative diseases such as rheumatoid arthritis and erithmatoid lupus.

The fourth unit is Epidemiology, the modern science of the interaction between diseases and their environment. This unit provides outstanding support to Mexico's public health campaigns.

The fifth unit, Nutrition, Growth and Development, conducts studies on pregnant women up until the day of birth.

The last unit is Pharmacology, which studies medicinal plants. This unit verifies whether plants are truly medicinal or if curative qualities have been attributed to them for purely mythical reasons.

Jorge Pablo de Aguinaco.



José Chávez Morado, The evolution and future of medical science (stone, 1957-59).

● *DI*: We have heard that the organization of patients in the Pediatrics hospital is totally different and that it breaks with tradition....

■ *LJ*: Traditionally, patients are grouped by the area of specialization. This is the first hospital in Mexico, and one of the first in the world, where they are divided by age. Each of these biological age groups is under the care of a pediatrician, providing integrated attention to the children of the given group.

● *DI*: What other aspect of the medical care provided here is especially noteworthy?

■ *LJ*: Every child who is admitted, together with his or her family, is immediately placed under the care of a mental health specialist. The goal is to provide patients and families with support so that they can face the illness with the best attitude possible. It must be remembered that health is not just the absence of disease, but biological, social and psychological well-being, and the important thing here is that we are applying this principle.

The 21st Century National Medical Center is a space for science, art and humanism at the service of Mexico and the world, but above all, it reflects the significance of the concepts of health and well-being ✘

Dinorah Isaak
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