International Conference
“Scientific and Technological Innovation:
National Experience and International Cooperation”

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Fondazione Santa Lucia IRCCS, Rome - High
speciality in Neurorehabilitation

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TOPICS

• The patient at the center of care
• The principles of rehabilitation
• Assistance in neurorehabilitation
• History of Fondazione Santa Lucia
• Structure of Fondazione Santa Lucia
• Clinical activities
• Scientific research
International Classification of Impairments Disabilities and Handicaps - ICIDH (WHO, 1980)

disease $\rightarrow$ impairment $\rightarrow$ disability $\rightarrow$ handicap

without consideration of the person in its subjective, relational and motivational aspects.

International Classification of Functioning, Disability and Health – ICF (WHO, 2001)

bio-psycho-social model

who considers the "person with disability" not as a patient but "as a person having rights".
ASSISTANCE IN NEUROREHABILITATION

The high speciality in neurorehabilitation identifies the assistance for patients with outcomes of:
- spinal cord injury
- coma
- serious brain injury such as severe hemorrhage secondary to vascular malformations
- severe brain disorders derived from primary or secondary cancer
- degenerative cerebral diseases (multiple sclerosis, Parkinson's, etc.), Guillain Barre Syndrome and similar with the coexistence of serious physical, cognitive and behavioral and psychological disorders that cause multiple and complex disabilities that involves high consumption of resources for diagnosis and therapies.
The assistance involvement of the Santa Lucia Foundation began in 1960 when, under a different name, the facility was devoted to the care of disabled veterans of World War Two. The concept of rehabilitation at that time was almost unknown. An innovative process was thus started: programmes of functional rehabilitation, social and employment reintegration of the disabled persons together with different proposals of sport therapy.
During the Eighties, the Management of the present-day Foundation promoted intense research work and allocated part of its budget to funding projects for the study of neurological damage. Italian and foreign scientists, all from universities and research institutions, participated in this high-level work and results of the research have been published in national and international scientific journals.
On 7 August 1992, the Ministry of Health and the Ministry of the University and Scientific and Technological Research, granted the Santa Lucia Foundation the status of Scientific Institute for Hospitalisation and Treatment of National Importance and High-level Specialisation in Neurorehabilitation, (in italian language: Istituto di Ricovero e Cura a Carattere Scientifico - IRCCS) in recognition of its constant involvement in clinical assistance, research and teaching activities.
THE FOUNDATION’S HOSPITAL

A modern, high-technology six-storey building, covering a total area of over 30,000 sq.m, houses the new Santa Lucia Foundation hospital. Disabled persons, Users and the voluntary organizations working at the Institute have been involved with their suggestions in the creation of all the facilities and for examination and testing the proposed designs.

The hospital has **325 beds accredited by the National Health Service:**

- 293 beds for ordinary hospitalisation;
- 32 day-hospital beds.
GENERAL PLANIMETRY
Every floor of the building houses 53 very high-technology beds, in rooms of 46 sq.m with bathroom, and a gym of about 350 sq.m for physiokinesitherapy.
THE GYM OF THE WARD FOR THERAPY
THE PLANIMETRY OF THE ROOM
THE ROOM
HEALTH SERVICES FOR DIAGNOSIS AND TREATMENT

- Respiratory Rehabilitation Service
- Phoniatriic Service
- Speech Therapy Service
- Neuropsychological Diagnosis and Treatment Service
- Neurophysiopathology Service
- Occupational Therapy
- General Outpatients’ Department
- Analysis Laboratory
- Hydrokinesitherapy Service (312.5 sq.m swimming pool)
- Imaging Diagnosis Service, with the following machines:
  - TC 64 Slides
  - MRI Full Body 1 T
  - MRI 3T (Only for Brain)
  - MRI Full Body 3T
  - Radiological Information System
  - Picture Archiving and Communication System
THE POOL
SUPPORT SERVICES

MEDICAL SERVICES
• STERILIZATION SERVICE
• DIETARY SERVICE
• SOCIAL SERVICE
• SERVICE FOR THE RELIGIOUS
• ORTHOPAEDIC WORKSHOP
• MORTUARY SERVICE
• DISINFECTION AND DISINFESTATION SERVICE
• CHEMISTRY

OTHER SERVICES
• KITCHEN AND CAFETERIA
• LAUNDRY
• ADMINISTRATIVE MANAGEMENT SERVICES
• SECURITY
<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>51</td>
</tr>
<tr>
<td>Other graduates</td>
<td>16</td>
</tr>
<tr>
<td>Nurses</td>
<td>223</td>
</tr>
<tr>
<td>Therapists (physio and speech)</td>
<td>190</td>
</tr>
<tr>
<td>Administrative staff</td>
<td>53</td>
</tr>
<tr>
<td>Other technicians</td>
<td>126</td>
</tr>
<tr>
<td>Researchers</td>
<td>230</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>889</strong></td>
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</tbody>
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**DATA OF CLINICAL ACTIVITY**

<table>
<thead>
<tr>
<th>Year</th>
<th>In-patient</th>
<th>Day Hospital</th>
<th>Out-patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>1530</td>
<td>930</td>
<td>230.585</td>
</tr>
<tr>
<td>2008</td>
<td>1447</td>
<td>890</td>
<td>249.661</td>
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<tr>
<td>2009</td>
<td>1364</td>
<td>904</td>
<td>251.699</td>
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<tr>
<td>2010</td>
<td>1393</td>
<td>872</td>
<td>241.021</td>
</tr>
<tr>
<td>2011</td>
<td>1361</td>
<td>842</td>
<td>233.709</td>
</tr>
</tbody>
</table>

**Legend:**
- **In-patient**
- **Day hospital**
- **Out-patient**
As a Scientific Institute for Hospitalisation and Treatment, the Santa Lucia Foundation carries out intensive research work in the fields of neuromotor rehabilitation and neuroscience.

Experimental work is closely linked with care and that is why the Patient may be contacted and invited to participate in a scientific project, subject to informed consent.

Research programmes are an essential activity in the field of care because they make it possible to discover new rehabilitation approaches and treatments in the interests of the Patient and by the community.

An Ethics Committee operates in the Foundation.

Before being included in a “research protocol” the Patient is adequately informed about the project and the tests to be conducted in it through the completion and signature of the special “informed consent” form.
FIELDS OF RESEARCH

Research line A: CLINICAL AND BEHAVIOURAL NEUROLOGY
Clinical assessment, prognosis and rehabilitation of the Central Nervous System Diseases.

Research line B: NEUROMOTOR PHYSIOLOGY
Neurophysiology of locomotion and its interactions with the posture. These studies also use the information collected during space missions in situations of absence of gravity.
SCIENTIFIC RESEARCH OF SANTA LUCIA “IN SPACE”

Shuttle Discovery 23 october – 7 november 2007

Paolo Angelo Nespoli
FIELDS OF RESEARCH

Research line A: CLINICAL AND BEHAVIOURAL NEUROLOGY
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Neurophysiology of locomotion and its interactions with the posture. These studies also use the information collected during space missions in situations of absence of gravity.

Research line C: EXPERIMENTAL NEUROSCIENCES
Mechanisms of action of neuroprotective drugs in the Central and Peripheral Nervous System.

Research line D: NEUROPSYCHOLOGY
Neuropsychology and rehabilitation of disorders of language and visuospatial abilities in brain-injured patients and in carriers of developmental dyslexia.

Research line E: CLINICAL NEUROPHYSIOPATHOLOGY
Neurophysiology with various techniques (electroencephalography, evoked potentials, transcranial magnetic stimulation) in patients with stroke, Parkinson’s and epileptic symptoms.

Research line F: FUNCTIONAL NEUROIMAGING
Functional neuroimaging of sensory motor system and cognitive tasks in normal subjects and brain damaged.

Research line G: CLINICAL TRANSLATIONAL RESEARCH
Preparation and validation of protocols aimed at improving the clinical management of the patient through the optimization of the diagnostic-therapeutic and rehabilitation.
Clinical Applications of Brain Computer Interfaces

Recently, the design and testing of electronic devices that enhance communication skills and management of the home environment have brought new hope to patients with severe movement disorders (Assistive Technology). Electroencephalography (EEG) is the most studied potential non-invasive interface, mainly due to its fine temporal resolution, ease of use, portability and low set-up cost.
IMPACT FACTOR POINT FOR SCIENTIFIC ACTIVITY

IF point

2007 2008 2009 2010 2011

year

IF point

0 200 400 600 800 1000 1200 1400 1600 1800

1144 1189 1402 1646 1738
The internal Teaching Pole is one of the most important training centres for health workers in the Lazio Region. Under an agreement with the “Tor Vergata “ University of Rome, it conducts first-level degree courses for health professions (Nurses, Physiotherapists, Speech therapists and Neurophysiopathology Technicians), attended by about 400 students a year.

Also, under an agreement with the “La Sapienza” University of Rome, it houses the School of Specialisation in Neuropsychology.

The teaching staff consists of university lecturers, graduate staff of the Foundation and high-ranking professionals for the specific degree courses.
Sport is universally recognized as an important instrument for the containment of psychophysical stress and for improving behavior. As a complementary therapy, moreover, it allows the patient to respond actively, thus favoring recovery and self-confidence.

As a result, sports therapy is undertaken in order to get over the injury or illness and its consequences. With the authorization of the Director of Rehabilitation Ward, it is possible, and indeed is recommended, to do one or more of the following sports activities in the hospital's structures:

- Wheelchair basketball
- Swimming
- Ping pong
- Archery
THE GYM FOR SPORT THERAPY
SPORT ACTIVITIES
CONCLUSION

The Vienna World Conference on the elderly adopted as the official emblem "the banyan tree - ficus bengalensis" as a symbol of longevity, independence, the continued growth and community meeting place.

In the current perception people with disabilities are persons who have rights and should therefore receive attention and health and social strategies that eliminate all forms of exclusion barrier, in according to the guidelines established for the WHO European Region with the 2008 Tallinn Charter.
THANKS FOR YOUR ATTENTION!