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### The Italian Association of Telemedicine&Medical Informatics

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#### Health Informatics and Telemedicine in Italy

The development of Health Informatics and Telemedicine in Italy started several years ago, following the development of Information and Communication Technologies. More recently, in the '70s and '80s, different projects and products were developed in this field (Finalized Programs of National Council of Research on Parallel Computing and Expert Systems and

Epidemiological Diseases Risk Factors). In 1991 the Ministry of Research financed a 350 million initiative (TELEMED) that for 10 years represented a focal point for several applications in radiological teleconsulting, telecardiology, network of excellence

Hospitals (institutes and centres of oncology, neurology, etc.), teletraining in medicine, etc. The main results of the TELEMED project were to initiate prototypal platforms in radiological, cardiological and oncological fields and in the implementation of some Hospital information Systems Network.

Since 2001, the Italian Health System has been decentralised. Health policy and management is now under the government of Regions.

The Regional Authorities have started different projects and applications in health informatics and telemedicine, involving their hospitals, ambulatories of health districts and GPs (from regional level to national level now the new Italian Health Information System in the development phase). The development of health informatics and telemedicine systems in Italy needs to improve networking backbones with high bandwidth, in order to improve speed and the quality of data and images during teleconsulting / telediagnosis applications.

In Italy, as in other countries, Health Informatics and Telemedicine services have captured the attention of the medical community and of the health authorities as a tool to improve the access to quality assistance. Such services offer the potential to improve the quality of treatment and care, while reducing costs.

#### The Italian Association of Telemedicine and Medical Informatics

The Italian Association on Telemedicine and Medical Informatics (@ITIM) has held a leading role in improving the co-operation and diffusion of medical informatics and telemedicine culture and application in the whole Italian Health System.

The main purposes and activities of the @ITIM are:

- + To promote the study, research and application of information technologies, telecommunications (computer science and data transmission) and methodologies used in healthcare.
- + To develop an awareness of the administrative, social, cultural, technical and scientific healthcare IT structures of these themes at local, regional and national levels.

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- + To develop professional qualifications in the field.
- + To develop standard technologies, methodologies, and guidelines.
- + To develop research on technologies, methodologies, guidelines and protocols used in telemedicine and healthcare information systems.
- + To participate in research and development projects and plans at regional, national, European and international levels on the topics of medical informatics and telemedicine (i.e hospital information systems, clinical databases, medical records and health cards, medical decision support systems, statistical software, etc.).
- + To promote the use of information technologies in the diagnostic-therapeutic process, the careful monitoring and surveillance of authorized medicinal products during their market life, the quality of care, and cost reductions of the Health Service at local, regional and national levels.
- + To contribute to the utilization of information technologies and telematics in the treatment of data for health prevention and the improvement of the quality of the life of citizens.
- + To promote the diffusion of information and communication activities, such as the publication of journals, newsletters, books, general and organizational information bulletins, profiles of national and international training courses, conventions and exhibitions, etc..
- + To involve associations, healthcare and hospital organizations, regional and local administrations (ministries, government agencies, etc.), university and research networks, cultural and social organisations, public and private companies with various forms of collaboration.

#### **Examples of Telemedicine and Telecare Systems in Italy**

The list of telemedicine and telecare systems in Italy is very long. These systems have been developed within the framework of both local and national health ICT programs and even within the context of European projects. Some examples are:

- + Telematic Cardiological Ambulatory: a network between ambulatories of General Practitioners (GPs) and Cardiologists (L. Sacco Hospital, Milan).
- + Telemedicine INRCA (National Institute of Research and Treatment of the Elderly, Ancona): Telecardiology and telespirometry for home treatment via ECG transmission through the phone, spirometry test at the INRCA, active 24 hours a day, with telephone assistance in case of emergency.
- + M2DM (Pavia): Multi-access services for diabetes management to provide sustainable care to diabetes patients at home and when out of the house.
- + e-CARE Medical Expert System for continuity of care and healthy lifestyle (EU - ALDIA, Pavia): Home monitoring for patients with chronic pathologies, those in postoperation recovery, or those predisposed to the risk of serious pathologies that require constant contact with the doctor;
- + Web-based real time system for home monitoring of vital parameters in pain therapy (Rome): An operating model for home telecare activities able to support real-time activities in pain therapy.
- + Teleassistance of children with peritoneal dialysis (Clinical Institutes of Improvement, Milan): Home monitoring via the Internet of a child as he undergoes peritoneal dialysis.

#### **Telecare for Respiratory Diseases**

In Italy, there are also telemonitoring services for patients with severe respiratory illnesses requiring long-term oxygen therapy.

Patients were initially monitored at home for 12 months; during that time a determination of arterial oxygen saturation and heart rate were performed twice a week and automatically transmitted to the hospital's processing centre via a normal telephone line. The results showed a reduction of acute exacerbations and hospital admissions during the telemonitoring phase.

Another service in this field is delivered by INRCA of Casatenovo (Lombardia region). In this case, different methods are employed to monitor, at home, patients affected by respiratory insufficiencies and who are mechanically ventilated. This project, begun in June 2001, is different from others because some patients who are on ventilation 24 hours a day are monitored with the possibility to directly modify the ventilator settings from the Respiratory Unit, which is located far from the patients' houses. Many of the patients monitored were also affected by Amyotrophic Lateral Sclerosis.

In recent years, other investigators have followed their respiratory patients by telemedicine systems. Dal Negro in Bussolengo follows oxygen dependent patients at home and Vitacca in Gussago follows ventilated patients at home by simple pulse oximeters, able to transfer the recorded data by normal telephone line.

#### **Benefits of Telemedicine and Telecare Services in Italy**

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Telemedicine and Telecare systems permit a more cost-effective solution for health care delivery, providing better clinical outcomes as well as improving patient quality of life.

The impact of these applications particularly affects disease management, the management of ageing populations, reduction of waiting lists and second opinions, improving data collection and epidemiological databases, etc.

In general, the benefits associated with the introduction of Telemedicine and Telecare services in Italy are:

- + Health education of healthcare professionals, people and users.
- + Employment opportunities for healthcare professional at a peripheral levels.
- + Availability of normal (or on demand) health treatments, in distant areas to prevent the population from moving away.
- + Improvement of health indicators used by the WHO and by national governments.

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