COPD and asthma

Telespirometry and Teleoximetry

The advent of internet and wireless technology greatly increased the scope of remote monitoring possibilities. Benefits include a decrease in hospital admissions and an increase of the patients’ involvement in the management of their own disease. Telespirometry and teleoximetry are just two examples of a modern “virtual clinic” approach to disease management.

Public Health issues

According to the Global Burden Disease Study, respiratory diseases are currently estimated as the third most frequent cause of death worldwide, and several scientific studies show that in the next two decades both COPD (Chronic Obstructive Pulmonary Disease) and asthma are set to increase at an alarming rate. A recent projection has estimated that COPD alone will be the third leading cause of death, and the fifth leading cause of disability, by the year 2020. Many eminent pulmonologists who support GOLD (Global initiative for chronic Obstructive Lung Disease) believe that COPD will be the third Millennium’s epidemic.

Patients with COPD present themselves for treatment only when they have advanced symptoms of the disease (initial symptoms arise 7-10 years after its onset) and 75% of them are not aware of being affected by this pathology, the symptoms of which mark just the beginning of a very serious health problem. Frequency and distribution of COPD is greatly underestimated due to limited diffusion of preventative diagnostic practices. The lack of current knowledge regarding the positive impact of COPD awareness could be addressed by educating patients and healthcare professionals about preventative screening programmes.

Direct and indirect costs of COPD and asthma

International reports show that the average direct annual cost for a patient with severe COPD is over €12000 and at least €5000 for a patient with moderate symptoms. In developed and developing countries it has been estimated that the average treatment cost for a COPD patient is as high as 9 to 14% of the entire annual family budget. In addition, indirect economic costs, in terms of loss of work time and decrease of productivity, need to be estimated to have a full assessment of the burden of this disease.

Attention should also be given to the psychological effects COPD has on the patients. They are faced with a chronic debilitating disease preventing them from carrying out simple everyday activities, such as climbing stairs, eating or sleeping. By improving the way the disease is managed in the primary stages, with early diagnosis and preventative treatment, the pathology could be reduced, and consequently hospital and healthcare costs too.

The vital signs

A recent general medical report recommended that the lung function parameters (FEV1), and oxygen saturation (%SpO2) should be included along with the regular check-ups of the vital signs (i.e. body temperature, weight, blood pressure, cholesterol and glycaemia values) for prevention of chronic disease. The implementation of effective programmes for diagnosis and management of COPD and a common line of prevention strategies are about to be introduced worldwide.

International guidelines strongly recommend spirometry and measurement of SpO2 as part of routine vital-signs monitoring practice. Early diagnosis of the disease, as well as the early detection of acute exacerbations, with consequent therapeutic intervention, can partially reverse the onset of the disease, thereby improving the patient’s quality of life.

Internet Telemonitoring

A new generation of the Spirotel now integrates spirometry and oximetry in a single product, making it a pocket-sized device with an interactive method of patient monitoring by remote data management.

It has been shown that patients, after correct training, are able to carry out effective spirometry and oximetry tests from the comfort of their own home. There is evidence that the results of these tests are as reliable as those obtained in a lung function laboratory. The instrument can be used by the doctor for screening or by the patient for monitoring at home. This new system for the management of chronic respiratory disease offers several advantages and opens a new frontier in patient monitoring, thanks to the Internet.

The patient transmits the data by simply placing the telephone handset near the Spirotel and pressing the key marked with the telephone icon. The transmission of the data is wireless, without the need to use a cable or a modem. The data sent are automatically received by a secure, continuously on-line and automated medical server (MIRTEL), which then makes the patient records accessible via the Web.

Doctors are able automatically to access their patients’ data at any time, at a remote workstation, via the Internet. Using Winspiro PRO software, a complete and accurate interpretation of information is made available including spirometry curves, graphics, parameters, heart rate value, %SpO2 with overnight oximetry and level of desaturation.

This information can be shared with other medical specialists and, on request in urgent cases, the MIRTEL Server is able to transmit both the F/V curve as well as the oximetry results directly to the doctor’s mobile phone via MMS. This system enables the doctor to prevent any deterioration of the patient’s condition and to offer a course of therapy in real time, assuring a correct and constant follow-up.

Highly protected data management technology ensures that doctors can only view the data of their own patients.

Advantages of a virtual clinic

The concept of the “Virtual Clinic” offers the services of a real hospital at home. Patients with asthma or COPD can, from the comfort of his own home, feel confident that their physician monitors their condition on a daily basis and is able to intervene where necessary and provide reassurance about oxygenation levels.

The approach carries with it a range of benefits. First of all, the patient will gain a closer awareness of the disease and the degree of its severity. The knowledge and understanding of the disease process may consequently lead to the patient’s closer adhesion to the diagnostic-therapeutic strategy.

Not only can the patient’s condition be closely monitored, thus giving timely warning of a deterioration and consequent rapid admission in case of high risk, but the system may even contribute to a reduction in the number of unnecessary hospital admissions.

Telespirometry and teleoximetry can also be used in a wide variety of remote locations (islands, aboard ships) using satellite telephone systems, and can thus help reducing healthcare costs while maintaining the same level of efficiency and quality. The Spirotel device can also be easily integrated or linked to other existing centralised telemedical systems.