TELe-Health

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Multidisciplinary Teleconsultation in Developing Countries

Springer

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Recent advances in technology and medicine are rapidly changing the face of health care. A revolution is occurring in diagnosis and treatment thanks to the implementation of instrumentation and techniques deriving from engineering and research. In addition, a cultural conversion is taking place in which geographical and social boundaries are about to be overcome, resulting in enhanced availability and quality of care. Telemedicine has been considered a possible means of improving health care worldwide that is likely to change the way in which doctors deal with patients and diseases. While various restraints continue to limit the application of telemedicine in different settings and different areas of health, the innovations emerging from eHealth and telecare could stimulate a great leap forward for medicine, provided that some basic rules are taken into consideration and followed.In this series, diverse aspects of tele-health – preventive, promotive, and curative – will be covered by leading experts in the field with the aim of realizing the full potential of the new and exciting technological solutions at our disposal.

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Foreword

Nowadays, globalisation is perceived as something negative, an inevitable evil that creates inequality, and something that nobody seems to be able to avoid. Consequently, anything that brings people together and lets them communicate with each other is seen as suspicious. Threats such as an increase in the migration flows and the spread of terrorism, which appear to be encouraged by globalisation itself, only increase people's fear.

The reality is actually more complex than that. History, for example, is full of periods of migration, like those involving Italy, between 1800 and 1900. Likewise, there have been other times of terror, even in recent European history.

Nonetheless, there is another aspect of globalisation, which is related to the development of technology, infrastructures, connections and greater accessibility. This is the case of the improvement of the global health service which has come about through the opportunities offered by new forms of advanced communication. In this way, high-income and technologically developed countries could offer support to those left behind, making life in poor-resource settings easier at a relatively low cost. Helping people in their own countries would give one reason less for them to leave their home.

This book in fact deals with the creation of technological networks to be used for training and health. In technical terms, this is called "telemedicine"; it offers "best practices" through connections between places that are very far away from each other—a sort of globalisation of medicine. This subject is fully discussed in the following pages: it is a way to create a new form of international cooperation through technology, which will bring a future and development not only to the countries that benefit from it directly but to both sides of the network.

Until 2011, there had been a decrease in the Italian commitment to International Cooperation in Africa. In the 1990s and in the 2000s, donations were significantly lower compared to the previous decades; sub-Saharan Africa was particularly affected by that. During these years, support to Africa was granted mainly by non-government organizations that received money from the Catholic Church and other religious movements, or from NGOs and government organizations. However, fund-raising for health projects and developing programs became increasingly difficult. In 2012 the trend was reversed and now Italy is again one of the main EU, G7 and OECD donors.

We also changed our approach: in August 2014, a new cooperation law was approved[1] (n. 125), which we had been looking forward to for 20 years. As a result there was the creation of the Development Agency and the possibility for the Deposits and Loans Fund to become an Italian development bank. There was also an expansion in terms of the types of people involved, with the diasporas, the private sector, the non-profit organisations and the non-profit sector in general. This immediately caused an all-round increase in the number of people involved and in the number of projects, and it also heightened the interest of the European Commission. The missions to Africa and the African delegations passing through Rome became far more numerous.

It is not just a matter of renewed Italian interest aiming to increase humanitarian works and projects in some countries that lack infrastructures. Africa has become a strategic priority, as former Italian Prime Minister Matteo Renzi stated during his visit to Mozambique: "an opportunity and not only a continent receiving development assistance".[2] This new strategic presence is the result of having understood that Africa is of strategic value for Italy, for Europe and for the future global geostrategic balance.

Africa has changed too. The continent has grown and there are new opportunities for Italy and for Europe. The presence of activism of China, Turkey, and other Asian countries, which to date is well consolidated, expresses this new global interest in the continent. Africa is a young continent today. Forty-three per cent of the population of sub-Sahara is under 14 years old[3]—a generation born with digital technology—and despite the digital divide, they are perfectly technology savvy. Practically everyone owns a smartphone today, and this can become a vehicle for development and closeness.

During the years, I have been responsible for Italian international cooperation and have visited several excellent health facilities in Africa, set up by many of our NGOs. Last November I went to the Global Health Telemedicine multi-specialist teleconsultation centre in Bangui, Central Africa. With this system, Central African doctors can request and receive any consultation from specialists in the West who are in the network, in real time. Clinical records, admission charts, or consultation notes, together with imaging, and reports from instrumental and laboratory tests are easily accessible and sharable. This allows real-time or delayed consultations offering support for diagnosis and treatment. With this technology, even very poor Central Africa can come out of isolation and benefit from the best treatments. One of the problems with the global medical sector is in fact its separation, which technology

[1] http://www.gazzettaufficiale.it/eli/id/2014/08/28/14G00130/sg

[2] http://www.huffingtonpost.it/2016/05/18/conferenza-italia-africa_n_10024618.html

[3] https://www.internazionale.it/opinione/nicolo-cavalli/2015/08/20/africa-economia-sviluppo

can overcome, and the same technology can be used to provide data that is useful for medicine in rich countries.

Everything described in these pages is scientifically based; it is not just a series of success stories in health cooperation but it represents a model that can be replicated in other geographical contexts and, why not, even in our countries. I visited many DREAM centres (in Mozambique, Malawi, Tanzania, etc.) and people with HIV who started living again. I also met motivated, well-trained African health staff, with career prospects, precisely because they can operate within a network and use the best instruments and devices. These are Italian projects that express not only a new health model that consists of the highest quality treatment and diagnostics but also warmth, support, development and training.

A while ago, the Health Minister of Guinea, a doctor, told me unhappily that all the students who graduated from African universities ended up working in European hospitals. I realised that it was not just for the salary: if a recently graduated African student expects to be isolated from the continuous cycle of research, which is particularly true in medicine, he will go where the information is. So how can you keep healthcare in Africa at a level of excellence and also hold on to its doctors? Technology can solve this problem by creating a global network. The network of exchanges and contacts that are created through the thorough application of telemedicine represents a form of long-distance training, as well as an exchange of data and research. This provides dignity and increases the scientific knowledge and awareness on both sides: health models that are integrated and can spread and grow.

It is not true that poor healthcare is enough for Africa because Africa is poor: the experiences described in this book show that there is only one kind of healthcare and only one kind of health, that is, for everyone.

Rome, Italy

Mario Giro
Deputy Foreign Minister
Responsible for
International Cooperation

Foreword

The richest and most developed countries in the world have a series of services for their many daily healthcare needs that are extremely evolved, although they do have their limits and problems. They reach almost all the population, and in general they also create an element of social stability. We are so used to them that we do not even ask ourselves how they are set up, how much they cost and what it takes to keep them going. We just use them; that's all. In more advanced healthcare systems, like in Italy, we are able to make treatments and assistance, involving considerably complex technological and organisational aspects, easily accessible. One example is the fact that in some Italian regions, it is even possible to have a blood sample taken at home; it is taken immediately and safely to a laboratory that operates within the regional health service. The laboratory performs the blood test and records the information in the region's computer systems, the administrative work is carried out and the laboratory is then paid through an electronic bank transfer. People who use this service can receive their results in just a few hours and forward them to their doctor in real time in the Internet. This all appears to be quite natural to them. Actually this service works, thanks to this complex system that absorbs considerable economic resources and requires that the infrastructures involved be working perfectly, like the electric power distribution and the Internet connection networks.

Unfortunately, systems like this are not yet practical in developing countries, like those of sub-Saharan Africa. There are many reasons for this, but it is mainly because of the lack of resources that has obstructed the evolution of the infrastructures and the distribution networks (of drugs, biomedical products, instruments, etc.). It is therefore difficult for healthcare organisations to be set up throughout the whole country, and progress in the use of digital technologies is very limited. Then the healthcare facilities, most of which are private, do not collaborate with each other to create an organised system, so they are unable to carry out effective prevention and provide continuing assistance.

In order to look at this in realistic terms, one can consider the idea of moving the whole laboratory of our example above to one of these countries. If it were handed over to the people who live there, they would not be able to make the services work on their own. In fact they would not be able to provide the necessary infrastructures and supplies, which in developed countries are considered routine and in fact do involve routine activities. They would not have, for example, efficient electric power supply networks to avoid the malfunctioning of any of the sophisticated electronic laboratory systems. Neither would they have enough qualified technicians to take care of the maintenance of the equipment and repairing breakdowns. Moreover, the Internet connections would be unstable and not even be available in every part of the country.

In the poorest countries, these issues concern all the healthcare activities, both the most basic ones and even more so the highly technological activities, such as telemedicine. So it looks as though it would be very difficult to set up telemedicine services and impossible to keep them running efficiently, in the very places that would benefit from them most.

The benefit of the collaboration between the DREAM project of the Community of Sant'Egidio and the Global Health Telemedicine (GHT) non-profit organisation is that it proposed an effective solution to the above-mentioned problems, which can be maintained over time, and this solution has already been successfully set up in several countries in Africa. In fact, by using the features of telemedicine and the brilliant innovations in terms of the IT processes, the DREAM and GHT network, in collaboration with the local authorities, is able to overcome these apparently unresolvable issues, and it also covers the costs of setting up and running all the necessary IT systems. With extensive telemonitoring and clinical teleconsultation services, this network makes it possible for the African healthcare staff to use biomedical devices and receive specialist medical consulting free of charge.

What has made it possible to achieve this extremely valuable result is basically the fact that the whole telemedicine system was designed and set up with the very highest clinical standards. This is why the Italian Society of Digital Health and Telemedicine is actively promoting the DREAM and GHT platform, which has already been supported by authoritative Italian experts, and is looking forward to and encouraging a more and more extensive use of this solution.

Another interesting aspect of this solution is that the teleconsultation activities performed by the GHT network have made it possible to increase the collaboration between Italian experts and local health staff.

The local health staff obviously had to be trained to be able to use the digital instruments and become familiar with the innovations in the processes used. On the other hand, the Italian GHT Teleconsultation specialists sometimes found themselves dealing with severe clinical situations, without being able to resort to sophisticated diagnostic instruments. They had to rely on simple rural healthcare centres, maybe run by just one nurse, for the advice they gave regarding diagnosis and treatment. This was a new situation that the specialists, although experts in their field, had to quickly learn to cope with, from both a technical and a human point of view, in order to "rethink" their operative clinical responses.

It was a question of directing the therapeutic solutions towards the good practices they are used to and of finding solutions that could be applied in the local context.

This involved a process of adapting to "feasible" clinical work in situations with extremely limited resources, which made the results achieved even more exciting.

The telemedicine system set up by GHT is efficient from an economic and organisational point of view and effective from a clinical point of view. It is versatile in that it can be used in different situations and geographic areas, and it contributes to the progress of developing countries by providing training for local healthcare staff.

The GHT programme therefore guarantees a new form of healthcare cooperation with a high impact and low cost, and it eliminates the distance between specialists and patients.

We hope that the Italian National Health System will also be able to benefit from this experience. Now that the experimental phase is finally over, this seems to be the right time to develop operational support for healthcare activities in various contexts, making them consistent and accessible. The experiences described in this book represent the concrete proof that when the procedures are streamlined, this is perfectly feasible.

We greatly appreciate this book and its operational context, and we believe that projects like this can demonstrate how essential telemedicine is in ensuring high-quality healthcare activities for everyone. What has been done in a precarious organisational context with limited infrastructures can certainly be planned and set up in well-organised places with adequate infrastructures, like in Italy with our National Health System.

So this is a great opportunity for our readers to find out about a revolutionary vision.

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In memory
Giorgio Scaffidi
Enrico Fraschetti

Introduction

We live in a world in which divisions, particularism and ethnicism lead to an increase in the number of walls and barriers. In 1989, with the fall of the Berlin wall, it looked as though the world was at the beginning of a new era in which the divisions and barriers were going to disappear. Today, 25 years later, there are 70 walls dividing countries, which is 47 more than before, and more walls are likely to be built in the future.

These are real, concrete barriers, but maybe even more than that, they are cultural barriers that increase the distance between a rich world and many countries that live in obviously difficult conditions.

Considering this situation, the cross-border telemedicine services[4] discussed in this book do not only represent an undeniably useful healthcare service; they can also be a bridge that crosses those sometimes insurmountable walls and creates proximity and training.

One aspect of healthcare cooperation that is sometimes not taken into account is that it brings together populations that are physically and culturally far apart.

Teleconsultation and telemonitoring thousands of patients who, because of their geographic location, would otherwise never be able to receive a medical opinion from the best doctors and hospitals not only has positive repercussions on their health but also on their families. Telemedicine also provides benefits for the local healthcare staff who, even though they work in unstable conditions, with just a click are able to reach specialists who are prepared to offer a second opinion. This service goes far beyond the albeit high value of a single teleconsultation; it represents a kind of valid continuous long-distance training.

DREAM, of the Community of Sant'Egidio, and Global Health Telemedicine have always aimed to avoid a minimalist approach and to offer excellence not only in their training but also in terms of electromedical devices and laboratory equipment.

[4]Italian Ministry of Health. National telemedicine guidelines. 2014—Sect. 8.4.

The DREAM programme was the first cooperation project to take the antiretroviral therapy to Africa, and it introduced the viral load as an essential test for everyone.

In the same way, Global Health Telemedicine has always used latest generation devices, refusing to take equipment that is no longer used in Europe, which used to be donated with the idea that it was "better than nothing".

In conclusion, this book describes not only a successful international project; it does more than that: it is the story of the tenacity of professionals who have invested personally in a dream of development for a village, a town, a country and a continent. These projects are already a point of reference for many people and they can spread to many other countries. In an increasingly globalised world, we have seen that, particularly in the field of healthcare, countries that are far away from each other are connected. One example of this is the mobilisation that came about for the global health Ebola emergency. This was a joint international effort to counter a threat that could easily have spread to other continents. The whole world is closely connected, and thinking that we can isolate ourselves is just an illusion.

This book shows that investing in healthcare cooperation opens possibilities for development, for the future in general, and even for peace.

That is quite something!

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