Chapter 66
Telemedicine in Emergency:
A First Aid Hospital Network Experience

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ABSTRACT

Emergency events are always very critical to manage as in most cases there is a human life risk. Such events could become even more serious when occurring in remote areas not equipped with adequate healthcare facilities, able to manage life risk. This is the case in many rural geographical areas. In such scenarios telemedicine can play a very important and determinant role. This is mainly the basis of the experience described in the following chapter about telemedicine application in a small hospital located in the town of Branca, near Gubbio Italy. The first aid department, responsible for emergency support in a territory where distances between houses and hospital is quite important and the lack of healthcare structures and speedways connections makes it even more difficult, has decided to use telemedicine solutions to face the emergency events. The experience has shown how the use of video communication based telemedicine systems has improved the service and what procedural impact the adoption of such technology has required. A brief description of the experience and highlights of the service still under experimentation will be shown in the following.

INTRODUCTION

The term "telemedicine" is a neologism arising from the composition of two terms: telematics (i.e. the set of applications derived from the integration of information technology with telecommunications, based on the exchange of data or the access to archives through the telephone network) and medicine. Telemedicine de facto involves the use of telecommunications, information and computer technologies to support the healthcare providers. Fittingly, then, telemedicine is defined as "the use of remote medical competence in the place where the need arises" and wide areas a very appropriate for such applications (see Figure 1).

Upon this principle the Branca hospital Emergency department has recently started a very new experience. The department was equipped

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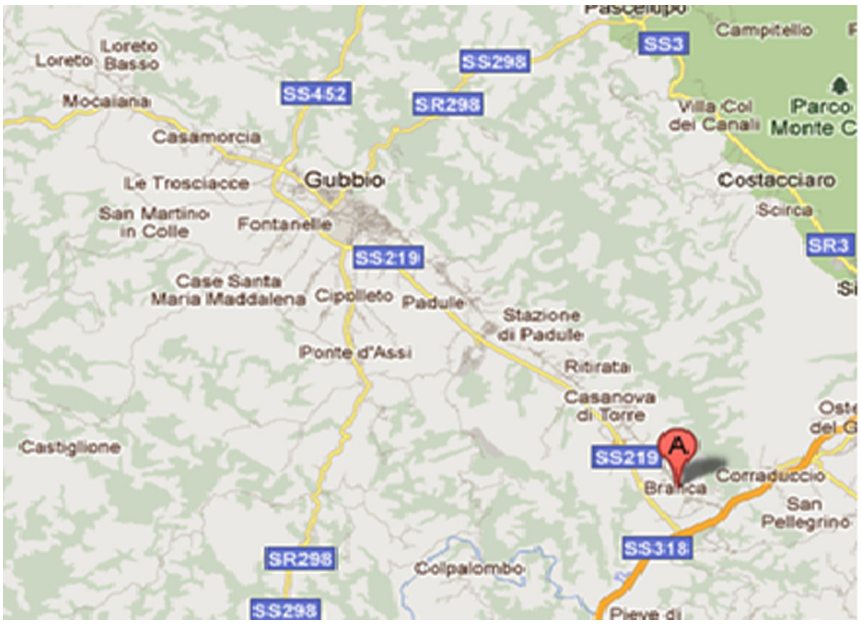
Figure 1. Map of the area covered by the service provision



with a new telemedicine system able to create a two way video link with rescue crews during an emergency intervention, provide a real time medical consultation and guidelines to the onsite crew to manage the event. It is in fact a centralized system which enables the emergency physician to monitor the patient, subject to an emergency intervention directly in the ambulance or in the patient's own home, thanks to the use of video communication and mobile 3G connections. Such a system is revealed as an instrument of great value. It is optimal for supported medical resources that provide assistance to extended geographical areas but sparsely populated and the distances between the patient's home and hospital are often important (Oh, Rizo, Enkin, & Jadad, 2005; Pattichis et al., 2002).

BACKGROUND

Our experience has shown that telemedicine can provide many advantages to the NHS, to service providers, healthcare organizations, physicians and patients. With regard to the NHS, it is undeniable that the uptake of telemedicine can lead to a significant lowering of direct and indirect costs of healthcare (just think of the reduction of unnecessary administrative work, greater rationalization in the use of staff, as well as greater effectiveness in prevention). For companies and service providers or healthcare organizations, telemedicine may involve the general improvement of services and increase simplification in cooperation between specialized care centers and primary health care centers, particularly in emergencies and in acute cases, as well as the possibility of adaptation of healthcare to sudden rises of the number of patients (e.g. during earthquakes or disasters). Thus remains evident that telemedicine is able to provide medical services in remote areas, especially in cases where this is imposed by the need to eliminate the space-time distances when emergency events occur. For physicians and healthcare workers generally the use of telemedicine involves definitely an incentive to increase professionalism through systems such as Teleconsultation and videoconferencing,