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Telemedicine in Pediatric Emergency Care: An Overview and Description of a Novel Service in Israel

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Telemedicine is a field that deals with monitoring and providing medical advice via the media, where the caregiver and patient are physically apart and cannot communicate unless using this technology. This far-reaching technological innovation of the last and present century has led to breakthroughs in current communications options between caregiver and patient.

Telemedicine made a significant leap in the 60s when various American Space Association (NASA) technological means were required to monitor in real-time the physiological condition of the astronauts in space. To this end, resources were invested in developing methods which are used to this very day, such as portable ECG devices transmitting remote results for deciphering [1-3].

The development of home computers, internet connections, use of home internet webcam and last, but not least, the introduction of the smartphone, has brought about a situation where the physician can obtain varied information about the patient, where the latter is at home, or even where both of them are at their respective homes.

The use of telemedicine has won recognition, although still not an independent specialty, guidelines have been defined by several official organizations, such as the World Medical Association [4], and in Israel by Israel Medical Association (IMA) [5]. In the U.S., an organization named the American Telemedicine Association deals with writing clinical guidelines, promoting professional journals [6, 7], e.g. Journal of Telemedicine and Telecare, and publishing academic research on the subject [8].

The use of telemedicine has been also implemented in intensive care units [9-11].

Here in Israel, extensive and fruitful discussions and research were also carried out in the field of telemedicine. In an editorial published in “The Medicine” in March 2013 [12], the author discusses the possible implications of the increasing use of telemedicine on the traditional approaches in medicine. The study presented here implements what was written in the last paragraph: "In summary, there is no escape from discussing the new digital world continually emerging before our eyes, such as smartphones with applications for remote diagnostic testing, to study it and develop new medical applications derived from it."

You can separate the use of telemedicine into two types:

1. Real-time patient consultation without communication, for example in the fields of radiology, dermatology and pathology.

2. Real-time consultation with the patient himself or through a mediator caregiver.

For example, in Israel and worldwide, a home cardiac monitoring device is commonly used when necessary for consultation with the physician, including a diagnosis of E.K.G. reading in real-time [13, 14]. In France, Spain and other countries, one can get consultation over the phone at all hours of the day by the Public Service of Emergency Medicine [15].

In Israel in 2009, a unique service of the Clalit Health Services was established, nowadays through Femi Premium LTD and supervised by specialists of the Schneider Children’s Medical Center of Israel, for the providing of remote consultation by pediatric specialists [16]. The service was created to meet the need of parents to receive medical consultation for their children beyond community clinics' operating hours. The physicians have at their disposal protocols that include both emergency situation and common conditions in pediatrics, and a professional book in the area of telemedicine [16]. Pediatricians on the service are able to access the patient’s computerized medical file including laboratory and imaging data as well previous emergency visit and hospitalizations.

The emphasis was placed on triaging patients who need urgent

care in the ED and those who can wait to be seen by their family physicians when the clinics open. Moreover, providing medical advice on treatment to be taken, including the sending of a digital prescription where needed. The service is given free of charge to those insured in Clalit Health Services. Communication takes place via telephone, computer or mobile application.

During the first seven years of operation over 595,000 consultation calls were provided. The average time from referral to obtaining medical advice was 6.6 minutes. The duration of consultation was 4.6 minutes on average. Most of the calls were related to young children under 4 years (74%), dealing with common pediatric problems - fever (23%), respiratory complaints (18%), and gastrointestinal problems (14%).

The use of video-calls has been increasing, and reached an average of 45% of the total calls during 2015. Satisfaction with the service was very high according to surveys, scoring 9.8 out of ten. Eighty-two percent of patients sampled reported a medical improvement in the next day.

It came to our attention that telemedicine changes the traditional face-to-face relationship between patient and physician. In order to evaluate this issue, we conducted a study comparing the stress levels of parents presenting for emergency care to our emergency department (face-to-face interaction) to the stress levels of seeking help via telemedicine either by telephone or video chat. Stress levels were measured before and after the calls. Interestingly enough, we found that stress reduction was similar in the three groups studied [17]. The causes for this decrease differ between face-to-face, video consultation and phone consultation. In the phone group, the decrease in distress is connected to the sense of receiving attention and being understood. In the camera group, this decrease is connected to the sense that the physician is aware of their presence, and in the face-to-face group the decrease is connected to a sense of mutual, emotional connection with the physician.

In summary, the pediatrician on-line service of Clalit Health Services is available, effective, convenient and safe, and provides a medical solution to the plight of parents from all around the country when clinics are closed. The service maintains high standards both on the medical and the level of service, to the satisfaction of the applicants.

It is expected that the use of telemedicine will continue to expand to other areas of medicine, while creating new ways to diagnosis and treatment, and new relationships between caregivers and patients. Proper use while recognizing the capabilities and limitations contributes to both patients and the entire health care system. To do this, we need to continue to perform controlled studies examining the efficacy and safety of different measures in different situations and also study the patient-physician relationship from this perspective.

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