

Chapter 34

LiveCity: The Impact of Video Communication on Emergency Medicine

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ABSTRACT

The goal of emergency medicine is to treat time-critical diseases and conditions to reduce morbidity and mortality. The improvement of emergency medicine is an important topic for governments worldwide. A common problem is the inevitable lack of support by emergency doctors, when paramedics need their assistance at the emergency site but are without an emergency doctor. Video-communication in real time from the emergency site to an emergency doctor, offers an opportunity to enhance the quality of emergency medicine. The core piece of this study is a video camera system called “LiveCity camera”, enabling real-time high quality video connection of paramedics and emergency doctors. The impact of video communication on emergency medicine is clearly appreciated among providers, based upon the extent of agreement that has been stated in this study’s questionnaire by doctors and paramedics. This study is part of the FP7-European Union funded research project “LiveCity” (Grant Agreement No. 297291).

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INTRODUCTION

Emergency medicine is a crucial part of all health care systems worldwide. The goal of emergency medicine is to treat time-critical diseases or conditions and thus reduce preventable disabilities and deaths. Citizens often judge their government by the quality of critical infrastructure regarding for instance security and emergency medicine (Hsia, Razzak, Tsai, & Hirshon, 2010; Razzak & Kellermann, 2002). One approach to further improve emergency medicine is to balance existing healthcare disparities by using telemedicine. Telemedicine are ICTs (information and communication technologies) in medicine enabling diagnostics and treatment of diseases over geographical distances (Kazley, McLeod, & Wager, 2012; WHO, 2011). Telemedicine is an important future topic as described in the “Global Observatory for eHealth” by the World Health Organization, and the implementation of telemedicine is one of the goals of the European Union (Economic and Social Committee, 2008; WHO, 2011). Telemedicine devices, using a high-definition video communication in real time, offer the highest amount of information-transfer currently available.

This study is an integral part of the FP7- European Union funded research project LiveCity (Grant Agreement No. 297291). The LiveCity Project studies how high-definition video communication in real time can positively contribute to the quality of life of citizens or communities within the European Union in many different areas (Chochliouros, Stephanakis, Spiliopoulou, Sfakianakis, & Ladid, 2012; Weerakkody, El-Haddadeh, Chochliouros, & Morris, 2012). A special video camera, called “LiveCity camera” was developed to connect the different providers of emergency medicine in the European Union - the paramedics at the emergency site and a (remote) emergency doctor.

This study aims to analyze the impact of video communication on emergency medicine. First the medical emergency systems worldwide and in Germany in particular are introduced, followed by a paragraph on the use of telemedicine in emergency medicine and the concept of a tele emergency doctor. In the next section the methodology of the study is described with information regarding the “LiveCity camera”. A selection of results is presented and afterwards discussed. Finally conclusions are drawn concerning the impact of video communication on emergency medicine.

BACKGROUND OF STUDY

Medical Emergency System Worldwide

Medical emergency systems are different constitutively or to some extent in every country worldwide. Sometimes even within one country there are different emergency systems, for example China had seven different emergency systems in 2007 (Huiyi, 2007). In some countries the urban areas can provide a higher developed system than rural areas (Vaitkaitis, 2008).

To categorize the variety of systems four different types might be differentiated: (1) no organized structure, (2) basic life support, (3) advanced life support with paramedics and (4) advanced life support with physicians (Roudsari et al., 2007):

1. Many developing countries in Sub-Saharan Africa or parts of Asia have no organized prehospital emergency system (Ali, Miyoshi, & Ushijima, 2006). However in line with population growth, urbanization and industrialization there is an ongoing shift from infectious diseases towards medical conditions like cardiovascular diseases and vehicle accidents. Due to

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