

## Chapter 2

# Live Video Communication in Prehospital Emergency Medicine

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### **ABSTRACT**

*Prehospital emergency medicine treats time-critical diseases and conditions and aims to reduce morbidity and mortality. The progression of emergency medicine is an important topic for governments worldwide. A problem occurs when paramedics need assistance at the emergency site by emergency doctors, who cannot be present. 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 was part of the FP7-European Union funded research project “LiveCity” (Grant Agreement No. 297291).*

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## **INTRODUCTION**

Prehospital 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 (Brokmann et al. 2015). 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 realtime, offer the highest amount of information-transfer currently available (Metelmann & Metelmann, 2016).

This chapter is based on findings of the FP7- European Union funded research project LiveCity (Grant Agreement No. 297291). The LiveCity Project studied 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 chapter focuses on the impact of video communication on prehospital emergency medicine. In the first part 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. The discussion reflects on the results and how governments worldwide could benefit from implementing telemedicine in prehospital emergency medicine. Finally conclusions are drawn concerning the impact of video communication on emergency medicine.

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