A Low-Cost Concept for Telemedicine in EMS in Giessen

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Speaker Seán O'Sullivan

Researcher, Faculty of Health Sciences, TH Mittelhessen (THM) University of Applied Sciences



Co-Speakers Samuel Weirich B.Sc. & Prof. Dr. Henning Schneider



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Meet Our Speakers



Seán O'Sullivan

Researcher & Paramedic Faculty of Health Sciences



Samuel Weirich

Researcher & medical informaticist Faculty of Health Sciences



Henning Schneider

Dean, Professor, MD Faculty of Health Sciences



Conflict of Interest

Seán O'Sullivan

Samuel Weirich

Henning Schneider, Prof. Dr. med.

Has no real or apparent conflicts of interest to report.



Agenda

- Structures in Emergency Medicine worldwide and locally
- Tele-Emergency physician
- Current evidence
- Telemedical concept Giessen
- Outlook



Learning Objectives

- Demonstrate how a holistic system can be created by assembling single solutions into one solution
- Discuss existing telemedical systems in EMS and create a different and holistic solution
- Show difficulties in patient data transfer from EMS to the emergency room and illustrate several low-cost alternative solutions
- Develop a debate on how pre-clinical treatment of patients will change with the use of holistic telemedical solutions in EMS
- Explain law-makers, healthcare organizers and practitioners on how telemedical solutions will adapt in a changing and more integrated global society



Emergency Medicine World Wide

Different structures in pre-clinical treatment



Anglo-Saxon

Paramedic based system



Continental Emergency physician based



How is an emergency handled ?





How is an emergency handled ?

- Paramedic based systems -



How is an emergency handled? - Emergency Physician based systems -



Why Emergency Physician and Paramedics?



German Emergency Physician based system theoretical advantages...but practical problems

Advantages on scene....

More specialized treatment

More available staff

More resources

....Current structural challenges....

General increase in calls and emergencies

Specially in non-urgent emergencies

Growing urban and decreasing rural population

Landscape depending structural differences

Specialization in hospital landscape

Less hospitals of Maximum-care, but more specialized smaller hospitals



German Emergency Physician based systems theoretical advantages...but practical problems

...Current compensation....

Rely on a general growth in size of staff and structural resources

....Current problem....

Not enough available Emergency Physicians

....Possible solution....

Use of technology such as a Tele-Emergency Physician system



Tele-Emergency Physician system



Currently available solutions

ETHAN Houston (USA)

- Increase in ambulance availability
- Less transports
- High satisfaction
- No increase in mortality

Paramedic system



Application of Telemedicine in an Emergency Medical setting



Teleconsultation of a remote Emergency Physician (=Tele-Emergency Physician)

By on scene Paramedics

Germany



Telenotarzt Aachen (Germany)

- Increase in treatment quality
- High satisfaction
- No increase in mortality
- Cost-neutral

Emergency Physican system



Tele-Emergency Physician



....Current solutions....

Tele-Emergency Physician





onsite

Tele-Emergency Physician





Tele-Emergency Physician

2 Continental Emergency Physician based

Emergency Talk Network

#HIMSS21

Emergency Talk Network

Telemedical Concept Giessen - EMS

✓ Fixed system ✓ Mobile system ✓ T-EP workplace

Telemedical Concept Giessen

- Fixed system -

(1) Communication Elements

- Network Camera
- Microphone
- Speakers
- Router + SIM Card

(2) Vital Data Elements

EKG including Telemedical Software

- Blood pressure (invasive & non-invasive
- EKG incl heartrate and 12-lead
- Oxygen saturation
- Carbon dioxide saturation
- Carbon monoxide saturation (if needed

✓ Fixed system
 ✓ Mobile system
 ✓ T-EP workplace

Telemedical Concept Giessen - Mobile system -

(1) Communication Elements

- Durable Handheld/Tablet
- Videoconference Software (UC)

(2) Vital Data Elements

EKG including Telemedical Software

- Blood pressure (invasive & non-invasive)
- EKG incl heartrate and 12-lead
- Oxygen saturation
- Carbon dioxide saturation
- Carbon monoxide saturation (if needec

✓ Fixed system
✓ Mobile system
✓ T-EP workplace

Telemedical Concept Giessen

- Tele-Emergency Physician workplace -

(1) Communication Elements

Fixed solution

• Weblink

Mobile solution

• Videoconference Software (UC)

(2) Vital Data Elements

EKG including Telemedical Software

- Web application
- World wide reachability

✓ Fixed system
✓ Mobile system
✓ T-EP workplace

creen

Telemedical Concept Giessen

- Tele-Emergency Physician workplace -

-EKM-1006(181.6)

Screen

✓ Fixed system ✓ Mobile system ✓ T-EP workplace

One holistic System

26

Telemedical Concept Giessen

Innovation: Next mobile system

Hospital -Emergency Department

Alarmscreen for Physicians

Loud Acoustic Alarm Placed in Emergency Departments To allow quick response by Physicians

		UKO
	🌲 New alarm	
Current calls(last 30 min)		
		◄ Disable alarm
C THM Gießen 1/83-1		
🛞 Decline	📓 Accept, join later	Accept, join now
V Gießen - ZNA Innere 1106.2114:27		
	🧕 Join call	
♥ THM Gießen 1/83-1 11.06.21 14:27		
Accepted		🧕 Join call

Multiple functions and possibilties for providers

Use Case Emergency Medical Service Emergency Talk Application

Mobile & cross-plattform Low costs of introduction

HIMSS²¹

Safe videocommunication Shared decision making

Integration of medical sectors continuous treatment scheme

Simulation Study Emergency Talk App

From Innovation to Intervention

Standardized test series using realistic scenarios

Study Design

- Simulated standardised Emergencies (n=100)
- > 100 Participants: Advanced Paramedics and Emergency Physicians
- Different levels of expertise
- Usability Trial
- Medical evaluation of ETA use
- Questionnaires on use of telemedicine in EMS

Impressions

Participant Feedback

HIMSS 21

Outlook From proof of concept to randomized tests

Summary !

Globally different structures in pre-clincal treatment

Tele-Emergency Physician solutions increase efficency

Changes in society will influence medical landscape

More holistic telemedical solutions are needed

Single telemedical solutions already existant

Possibility to increase the efficency of healthcare systems

Thank you very much !

Emergency Talk Network Project of the Faculty of Health Sciences <u>Website</u>: emergency-talk.com

Technologies in Emergency Medicine Faculty of Health Sciences TH Mittelhessen (THM) University of Applied Sciences Website: go.thm.de/technologies-in-EM

Link that will take you directly to the evaluation form k>

Thank you very much !

Seán O'Sullivan

sean.o.sullivan@ges.thm.de

samuel.weirich@ges.thm.de

Samuel Weirich

Henning Schneider

henning.schneider@ges.thm.de

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