

App-based ECG – Lufthansa's approach to introduce mHealth for more safety on board

Sven-Karsten Peters MD

Lufthansa

Andre Gomola

IT Consultant, Lufthansa Industry Solutions





App based ECG mHealth for more safety on board

13.06.2019, IATA COSC - Istanbul

Dr. Sven-Karsten Peters & André Gomola

Agenda

01 Statistics of medical emergencies at commercial airlines

02 The approach to use telemedicine for more safety on board

03 Piloting a mobile ECG solution

04 First results & learnings

Statistics of medical emergencies at commercial airlines

4.1 bil.

Passengers
in 2017



10%
Cardiac
emergencies

**Increasing
number of
elderly
passengers**

**Up to 64% with
pre-existing
conditions**

**1/14.000
to
1/ 50.000**

passengers
with chance of
medical
emergencies



Agenda

01 Statistics of medical emergencies at commercial airlines

02 The approach to use telemedicine for more safety on board

03 Piloting a mobile ECG solution

04 First results & learnings



The approach to use telemedicine for more safety on board

History of telemedicine at Lufthansa

2001 - Cooperation with Berlin Charité

2009 - Project revive with new FlyNet

2016 - New opportunities with Cabin Crew device



Systems compared

- iPad app based 12-lead ECG cable with only four electrodes
- Remote controllable telemedical device with seven electrodes, blood pressure cuff and pulse oximeter



www.cardiosecur.com



Evaluation phase

- Two possible solutions
- Mock-up tests with cabin crews
- Connectivity tests
- Live inflight tests

Agenda

01 Statistics of medical emergencies at commercial airlines

02 The approach to use telemedicine for more safety on board

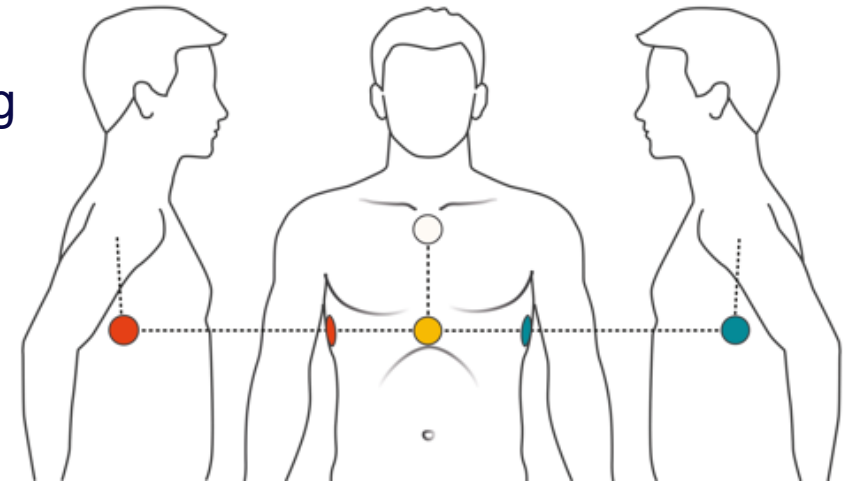
03 Piloting a mobile ECG solution

04 First results & learnings

Piloting a mobile ECG solution



- Implementation on long haul flights only
- A380 trial phase for 12 months
- Loaded via catering
- Cabin Crew Device (iPad) as central unit
- No changes to medical emergency SOP needed
- Easy to use after short introduction (video)
- Cooperation with MedAire for evaluation of real ECG reading



www.cardiosecur.com

Agenda

01 Statistics of medical emergencies at commercial airlines

02 The approach to use telemedicine for more safety on board

03 Piloting a mobile ECG solution

04 First results & learnings



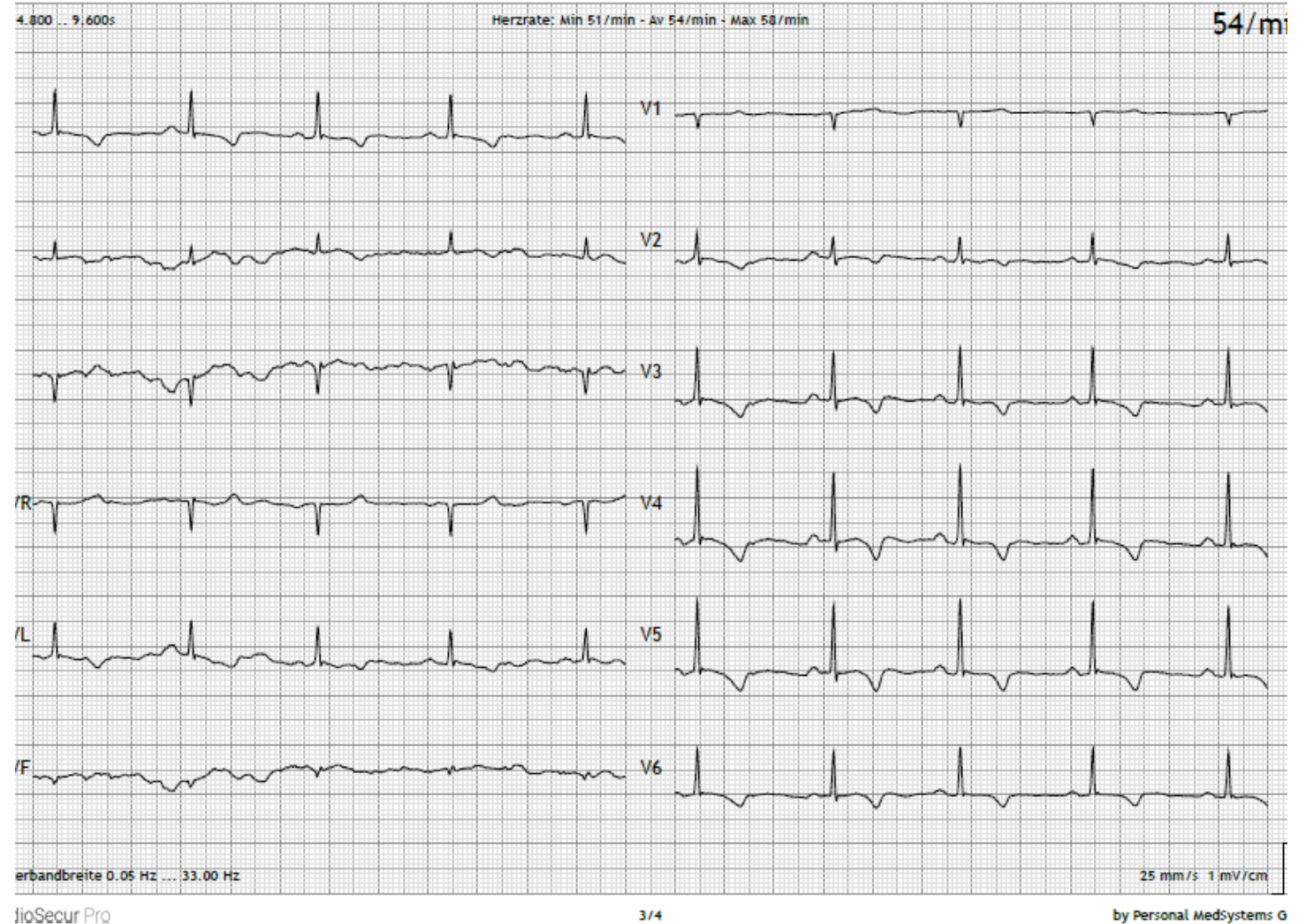
First results & learnings

- 25 passengers were examined until April 2019
- About 4 ECGs per passenger were sent to “International SOS” Hotline (MedAire)
- Medical personnel was available on board in most cases
- Major cardiovascular diseases could be excluded in 50% of all cases
- During 10 flights the ECG was used to continuously monitor the heart condition
- About 8 unnecessary diversions have been prevented
- 2 diversions due to immediate emergency with diagnosis of myocardial infarction



First results & learnings

- Second diversion on Dec. 16th 2018
- Flight LH 441 from Miami to Frankfurt / Main
- 51 year old female passenger
- Cardiovascular risk factors : Hypertension, adipositas
- Symptoms: Short term loss of consciousness and chest pain
- First aid by a physician and close downlink of the ECG to the hotline



First results & learnings

- ECG completes diagnosis gap on board
- Excellent quality of ECG results during flight
- Possible prevention of unnecessary diversion
- Medical personnel can make use of ECG with or without internet
- Advantages:
 - digital documentation
 - easy to implement
 - requires minimal staff-training
 - supports medical diagnosis on board and on the ground



Thank you
for your attention

