# Resuscitation Academy, Denmark III

Copenhagen University, the Maersk Tower
October, 29 – 30, 2018

# Welcome

## The Resuscitation Academy in Denmark

Copenhagen University, 'The Maersk Tower', Blegdamsvej 3B, 2200 Copenhagen N,
Lecture room 7.15.92, 15th floor

**DAY ONE – Monday October 29th 2018**

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| **8:30 - 9:00** | Registration, croissant and coffee |
| **9:00 - 9:10** | **Welcome** – Freddy Lippert, EMS Copenhagen |
| **9:10 – 10:10** | **Hot topics in the Science of Resuscitation**– Peter Kudenchuk and Jonathan Larsen, Resuscitation Academy Foundation, Seattle, USA |
| **10:10 – 10:45** | **Group Discussion:** Linking the hot topics to implementation in Denmark |
| **10:45 – 11:00** | **COFFEE BREAK** |
| **11:00 – 11:45** | **Case: Fire Chiefs in New York State as First Responders –** By Jonathan Larsen, Resuscitation Academy Foundation, Seattle, USA |
| **11:45 – 12:15** | **Experiences and Learnings from Mutual Dispatch at Fire Departments**<br>Round Table Discussion – Jacob Vedsted Andersen, Rasmus Storgaard Petersen (Greater Copenhagen Fire Department, Fire Department East) |
| **12:15 – 12:30** | **Including AED's in patient-transportation vehicles**<br>– Lars Borup, Falck, Northern Denmark Region |
| **12:30 - 13:00** | **The use of app's for localisation and exchange of data**<br>Number of downloads and use of the 1-1-2-app in Denmark<br>– IT Manager Christian Falberg Goth, Greater Copenhagen Fire Department |
| **13:00 –13:30** | **LUNCH** |
| **13:30 – 14:45** | **Status on the Local RA Implementation Programs**<br>Short presentations of learnings (7 minutes pr. program):<br>1. North Denmark Region: **First responders, Feedback and early recognition of OHCA by dispatchers** (*Kenneth Lübcke and Christina Vesterbo Brønner*)<br>2. Falck: **Low Dose High Frequency training** (*Lars Bak* og *Martin Betzer*)<br>3. Central Denmark Region: **Precharging** (*Rasmus Faurby*)<br>4. Region of Southern Denmark (*Erling Nørregaard*)<br>5. Ambulance Syd: **Precharging Defibrillators** (*Daniel Wittrock*)<br>6. Region Zealand: **Quality Improvement of T-CPR** (*Ole Mazur Hendriksen*)<br>7. Capital Reg. of Denmark: **Quality CPR among EMS providers** (*Rasmus Meyer Lyngby*)<br>8. Greater CPH Fire Dept.: **Firefighters as first responders** (*Jakob Vedsted Andersen*) |



*Please note that changes may occur in the program*

**Monday October 29th 2018** (continued)

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| **14:45 – 15:00** | **Coffee Break - please join a breakout session** | | |
| **15:00-17:15** | **Breakout session** Participants are encouraged to bring current challenges, problems, ideas and questions from the local implementation programs. The chairs will comment on these and provide coaching, feedback and advice on the local implementation programs in relation to the key word for the break out session. | | |
| | **Session 1** (room 7.15.10): Key words for the session: "*Literature and Science*"<br><br>Peter Kudenchuk and Ann Doll | **Session 2** (room 7.15.17): Key words for the session: "*Data and New Publications*"<br>Fredrik Folke and Freddy Lippert | **Session 3** (room 7.15.122): Key words for the session: "*Implementation and Evaluation*"<br>Anne Lippert and Jonathan Larsen |
| **15:00 – 16:00** | **Group A**<br>1. North Denmark Region: **First responders, Feedback and Monitoring**<br>2. Falck: **Low Dose High Frequency training** | **Group B**<br>3. Central Denmark Region: **Precharging**<br>4. -Region of Southern Denmark<br>5. Ambulance Syd: **Precharging Defibrillators**<br>6. Region Zealand: **Quality Improvement of T-CPR** | **Group C**<br>7. Capital Reg. of Denmark: **Quality CPR among EMS providers**<br>8. Greater CPH Fire Dept.: **Firefighters as first responders** |
| **16:15 – 17:15** | **Group C**<br>7. Capital Reg. of Denmark: **Quality CPR among EMS providers**<br>8. Greater CPH Fire Dept.: **Firefighters as first responders** | **Group A**<br>1. North Denmark Region: **First responders, Feedback and Monitoring**<br>2. Falck: **Low Dose High Frequency training** | **Group B**<br>3. Central Denmark Region: **Precharging**<br>4. -Region of Southern Denmark<br>5. Ambulance Syd: **Precharging Defibrillators**<br>6. Region Zealand: **Quality Improvements of T-CPR** |
| **17:15 – 17.45**<br><br>**17:45 – 18:15** | **Wrap up of break-out sessions**<br><br>**Global Resuscitation Alliance – Implementation Snapshots from Germany, Canada, and Taipei –** Ann Doll, Resuscitation Academy Foundation, Seattle | | |
| **19:00** | Please join us for the **Resuscitation Academy Networking Dinner** at **Brdr. Price, Rosenborggade 15, 1130 København K.** Transportation will be provided from Maersk Tower to the restaurant or you can enjoy the walk of 15-20 minutes if the weather allows. | | |

*Please note that changes may occur in the program*

## DAY TWO – Tuesday October 30th 2018

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| **08:45 – 09:00** | Croissant and coffee |
| **09:00 – 09:10** | **Reflections from the program Monday, debriefing & questions** |
| **09:10 – 09:30** | **Meeting Bendt who survived OHCA this summer with three excellent bystanders** |
| **09:30 - 09:45** | **Using artificial intelligence to assist dispatchers identifying cardiac arrest** - by Fredrik Folke, EMS Copenhagen |
| **09:45 – 10:15** | **Interactive Workshop:** Recognition of OHCA by Dispatcher – Martin Collin Fjordholt, EMS Copenhagen |
| **10:15 – 10:45** | **Group Discussion:** Early recognition by Dispatchers- by Ann Doll, Jonathan Larsen, Resuscitation Academy Foundation, Seattle, USA and Martin Collin Fjordholt, EMS CPH |
| **10:45 – 11:00** | **BREAK** |
| **11:00 – 11:30** | **Dansk Hjertestopregister**<br>Opfølgning på diskussionen fra RA, DK II: Validering af data fra Dansk Hjertestopregister og nyt format for årsrapporten.<br>- Fredrik Folke, Akutberedskabet i Region Hovedstaden, Christian Torp-Pedersen, Aalborg Universitet og Lisbet Schønau, Dansk Råd for Genoplivning |
| **11:30 - 12:10** | **Den globale Hjertestarterdag** som redskab til at øge opmærksomheden i befolkningen – Røskva Winthereig, Dansk Råd for Genoplivning, Grethe Thomas og Reinholdt Schultz, TrygFonden |
| **12:10 – 12:40** | **LUNCH** |
| **12:40 - 13:00** | "**Hack to Save Lives**" – Nicolai Frost Jacobsen, vinder af 'Hackaton 2019' |
| **13:00 – 13:25** | **Hjerteløberne** i Region Midtjylland – Elin Høymark, Den præhospitale virksomhed i Region Midtjylland og Grethe Thomas, TrygFonden |
| **13:25 – 13:45** | **Diskussion:** Involvering af borgere som førstehjælpere ved hjertestop |
| **13:45 – 14:00** | **BREAK** |
| **14:00 – 14:30** | **GoodSAM and the integration of video** – Mark Wilson, GoodSAM, UK |
| **14:30 – 14:50** | **Including video option in 1-1-2 calls in Copenhagen** - Gitte Linderoth, EMS Copenhagen |
| **14:50 – 15:10** | **Group Discussion:** The potential of including video option in 1-1-2 calls |
| **15:10 – 15:20** | **Ideas and thoughts for Resuscitation Academy IV**, spring 2019 |
| **15:20 - 15:30** | **Conclusions and good bye** – Freddy Lippert, EMS Copenhagen |

*Please note that changes may occur in the program*

**Parking facilities**
Parking is limited. Drivers can park on Blegdamsvej, Nørre Allé or any of the neighbouring roads according to the rules applying. You might also try the underground parking at Nørre Allé (https://www.kk.dk/kommunale-parkeringsanlaeg). Cyclists can use one of the many bicycle stands on campus or the basement bicycle parking below the Maersk Tower.

**Public Transportation**
Bus no. 3A stops on Blegdamsvej (stops: Skt. Hans Torv or Rigshospitalet Syd) and bus no. 6A stops on Tagensvej (stop: Rigshospitalet Syd).

# Preparations for the Resuscitation Academy III

### GRA Call to Action Updated

Please visit the updated document from the Global Resuscitation Alliance on the challenge of how to increase community cardiac arrest survival and how to achieve implementation of best practices and worthwhile programs. The document includes 27 case reports highlighting the global ferment in improving survival from cardiac arrest.
https://www.globalresuscitationalliance.org/resources

### Materials from The Resuscitation Academy Foundation

Other materials, downloads and free toolkits are available at
http://www.resuscitationacademy.org/

# Local Implementation Program Descriptions

Short descriptions are provided below

### Local Implementation Program in North Denmark Region: First responders, Feedback and Monitoring

1. How to involve patient transportation vehicles as first responders?
The vehicles are equipped with an AED and activated by cardiac arrest when closest to a cardiac arrest

2. Feedback to staff in ambulances
Staff in ambulances are briefed after a cardiac arrest based on data from defibrillators to improve the quality of CPR
Presentation by Kenneth Lübcke

3. Monitoring 1-1-2 emergency calls

A total of approx. 30 conversations from April to June are audited to identify whether there is a difference in the service receiving the call in daytime, evening time and night. When does the call taker identify the cardiac arrest? How long does it take before CPR is started?
Christina Vesterbo Brønner will present the results of the project.
The character of the three activities described is quality control rather than research.

## Local Implementation Program in Falck: Low Dose High Frequency training

Introduction:

Cardiopulmonary resuscitation (CPR) is a practical procedure; in recent years it has been acknowledged that to perform this procedure with high quality, the provider must further possess advanced cognitive skills. Available literature confirms that to maintain high quality practical and cognitive skills within CPR, regular training and simulation is paramount.

Purpose:

The aim of our local implementation project is to evaluate whether low-dose high-frequency (LDHF) CPR training has a significant impact on CPR performance. Additionally, our project will investigate whether LDHF CPR training is implementable in a busy, operative ambulance service.

Methods:

In our national ambulance service, we selected 20 large ambulance bases across Denmark with a total of around 700 employees. Using advanced CPR simulation mannequins, recurrently once a month each employee in teams of two will perform a 15-minute predefined CPR cycle, measuring variables as compression depth and frequency, amount of recoil and hands-off time. Afterwards, the results will be collected to our database and regular feedback on performance will be provided individually. Post-data collection, results will be imported to statistical software for analysis and inferential statistics will be performed.

Preliminary results:

Currently, the implementation and pilot phases of our project are completed. The implementation phase consisted of purchase and distribution of mannequins, selection of ambulance bases to participate and education of local project coordinators and employees. The pilot phase was completed testing different approaches to LDHF CPR training. During the pilot, several issues of data collection, training procedures and technical challenges were identified and adjusted accordingly.

Next steps:

Currently, we have initiated phase three, which is a launch of the project and data collection. The data collection was started on October 1st, 2018 and is planned to continue for six months, with an option to extend for 12 months. At the Resuscitation Academy III our very preliminary results will be presented.
Copenhagen, September 2018.

## Local Implementation Program in Central Denmark Region: Precharging

Introduction

Interruptions in chest compressions during cardiopulmonary resuscitation (CPR) is well known to correlate with poor outcome among patients suffering from cardiac arrest. In Denmark around 4000 persons suffers from out-of-hospital cardiac arrest (OHCA)) per year. The American Heart Association and the European Resuscitation Council has made great efforts to improve treatment of cardiac arrest

In 2015 manual chest compressions during defibrilator-charging-time was introduced in shockable cardiac arrests to further minimise hands-off time. Preparing (charging) the cardiac defibrillator before analyzing the cardiac rhythm so that rhythm-chech and DC-shock can be done in the same sequence is the next logical step to minimise hands-off.

Purpose

The aim of the study is to test whether a new algorithm (charging the defibrillator during chest compression (Pre-Charge)) can minimize hands of time during resuscitation in Out of Hospital Cardiac Arrest (OHCA) patients

Methods

The study is a prospective before and after study where we will compare defibrillation time before and after the implementation of the Pre-Charge procedure. The current procedure is based on the 2015 algorithm. It is standard for the EMS personnel from the Central Denmark Region to transfer data to "dansk hjertestop database" when CPR is given to a patient. Implementation of precharge was started systematically from July 2018 in the Central Danmark Region. Video and written material explaining the procedure in detail was available to the EMS provider.

Preliminary Results:

We do not have results yet. The data collection period starts from October 2018. Looking at OHCA in September we found that collection and analyzing it is feasible and may support our hypotheses. Until now we registered no adverse events and the change of procedure seems safe.

Next steps:

Complete the protocol
Start collection and analyzing data
Reassuring that EMS is following the Precharge procedure

## Local Implementation Program in Region of Southern Denmark

Will be presented at Resuscitation Academy III

## Local Implementation Program in Ambulance Syd: Precharging Defibrillators

Introduction

Encouraged by Dr. Kudenchuk's presentation at the first RA in Copenhagen, we started a very short discussion in our organization regarding implementation of precharge during cardiac arrest. We analyzed our current flowchart and CPR/defibrillation protocols and remodeled them, so precharge was described for both adult and pediatric life support (BLS-algorithm).

Purpose

To minimize pauses during CPR and optimize early defibrillation during basic and advanced life support.

Method

We changed our protocols, so they now address precharge for all cardiac arrest situations. This was followed by ½ day of Q-CPR training in teams of two-four providers supervised by ambulance instructors, where all participants (students, assistents, EMTs and paramedics) was acting as team leader and at least as part of the resuscitation team in three cases. Providers are during self-paced training in BLS including precharge procedures at least every three months.

Preliminary Results

Due to technical issues regarding our server-database we aren't able to due clinical follow-up for quality reassurance. We have randomly tested some providers after the initial education and e-learning to assure the procedure and protocol compliance in a simulation/ educational environment. We are able to keep pauses < 5 secs and mostly <3 secs. The method is not validated and is not the evaluation method we hoped for. When our database is up and running, we will do quality assessments of a representative amount of OHCA.

Next steps

Work on the database and getting the right access to real-life OHCA cases. Furthermore, we will continue to train Q-CPR with the AmbuMan Advanced manikin, so providers get at least yearly feedback from an instructor, and self-paced training at least every 3 months.

## Local Implementation Program in Region Zealand: Quality Improvement of T-CPR

Will be presented at Resuscitation Academy III

**Local Implementation Program in** Capital Reg. of Denmark: **Quality CPR among EMS providers**

Introduction

Each year, approximately 700,000 – 800,000 people suffer from an out-of-hospital cardiac arrest (OHCA) in the United States and Europe and only 10-12% survives. In Denmark, the prevalence for OHCA is 4000, but an increased focus during the last decade have tripled the national survival rate. The chance of OHCA survival is highly dependent on optimal performance in the "chain of survival", in which especially early and high-quality cardio-pulmonary-resuscitation (Q-CPR) and defibrillation increases the chances of survival. Despite the importance of Q-CPR, previous studies have not fully shown how this can be achieved by EMS during real OHCA incidents. Evidence points towards a variation of effect in both Q-CPR and patient outcome when using various feedback technologies and procedures.

Purpose

The overall purpose of this study is to investigate the quality of CPR delivered by EMS professionals and investigate if this can be improved by implementing audio-visual live feedback during the event, and oral post-event feedback procedure conducted by the team leader based on data recorded during the actual event

Method

Using a prospective study design data is retrieved from the standard defibrillator (ZOLL X-series) through ZOLL RescueNet® CaseReview. The study is conducted in three phases. Phase one is six months and consists of data without any guidance. Phase two is six months and consists of data with audio/visual guidance. Phase three is 12 months and adds a post-event structured oral feedback to the audio/visual guidance. The data collection commences in October 2018. Data from CaseReview is exported to statistical software and analyzed for statistical significant changes in quality.

Preliminary Results

Implementation of Zoll x-series is complete and a one-month adaption phase is completed by September 31st. Software solutions for handling the initial dataflow is tested and functional.

Next steps

Collection of baseline data commences on October 1st. The integration of data from CaseReview, CAD (call-handling and dispatch software) and PPJ (Electronic prehospital report form) is in progress and continue for the next months.

DENMARK

**Local Implementation Program in** Greater CPH Fire Dept.: **Firefighters as first responders**

Introduction

Many firefighters in Greater Copenhagen Fire Dept. are still active EMT's or Paramedics because they shift between doing shifts on a firetruck or an ambulance and this resource has not been used routinely in the EMS-setting

As of June 2018, fire dept. vehicles has been sent to possible cardiac arrest, when it is estimated, that they can be there before the EMS service.

Purpose

To deliver quality CPR, AED and oxygen to the patient as soon as possible.

Method

When a call I s being made about a possible cardiac arrest, it is calculated by a computer if the Fire Dept. is estimated to be the before EMS. If so, a request is being made to the Fire Dispatch to send their closest vehicle.

Preliminary Results

Greater Copenhagen Fire Dept., Beredskab Øst and Tårnby Fire Dept. Has been asked 44 times go attend to possible cardiac arrest in the period June 7th to September 27th. It was possible to attend in 16 cases. 12 of those where Greater Copenhagen Fire Dept. and out of those 12 it was possible to arrive before the ambulance in 5 cases and simultaneously in 3 cases.

In 7 out of the 12 cases cardiac arrest was not the issue, but something else.

In the cases of cardiac arrest, there are no outcome data as these are patient data and not available to Greater Copenhagen Fire Dept.

In the cases of cardiac arrest, the assistance given has been CPR, use of AED, basic airway management, ventilations, oxygen administration, help carrying the patient, help making room and pathways in apartments.

In the cases of non-cardiac arrest the firefighters has helped with e.g. calming patient or family.

Next steps:

Continuing to monitor the effects.

Perhaps sending a fire vehicle to all possible cardiac arrests to assist EMS.