In-Ambulance TeleStroke

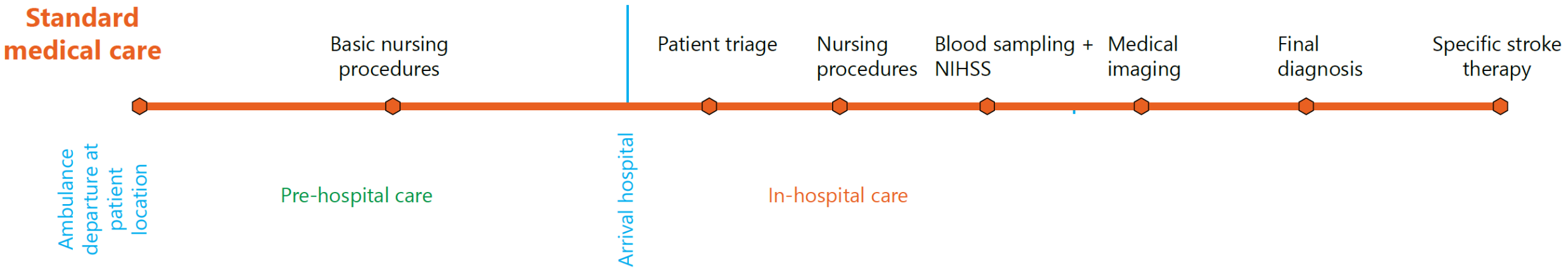
AP19 Mobile Health – IATS

Final evaluation 09-02-2018

In-Ambulance Telestroke

Time = Brain

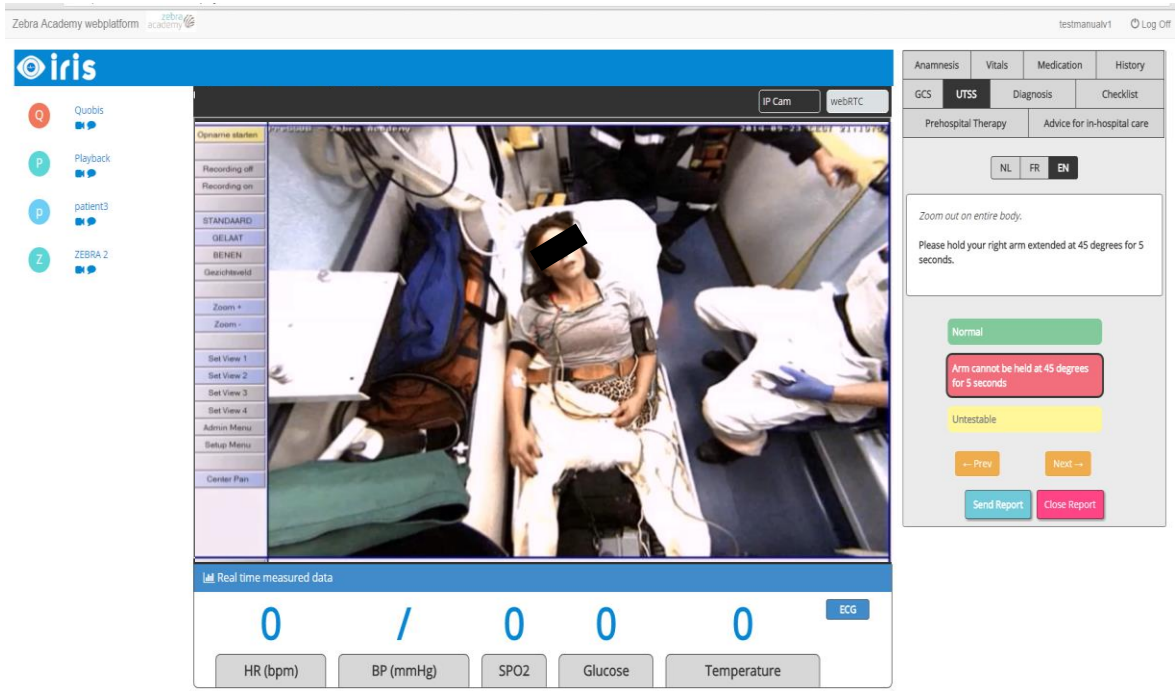
Competence = Brain



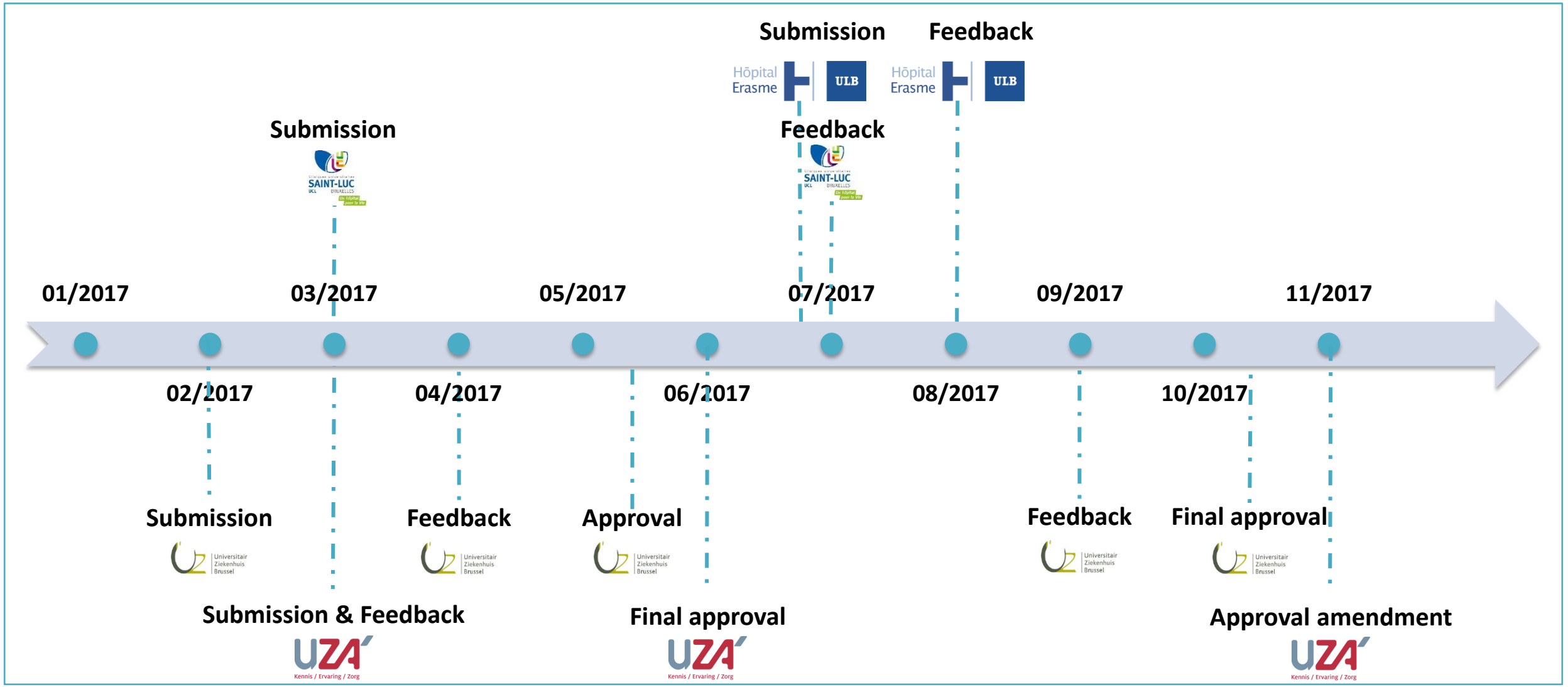
In-Ambulance Telestroke

In-Ambulance Hardware

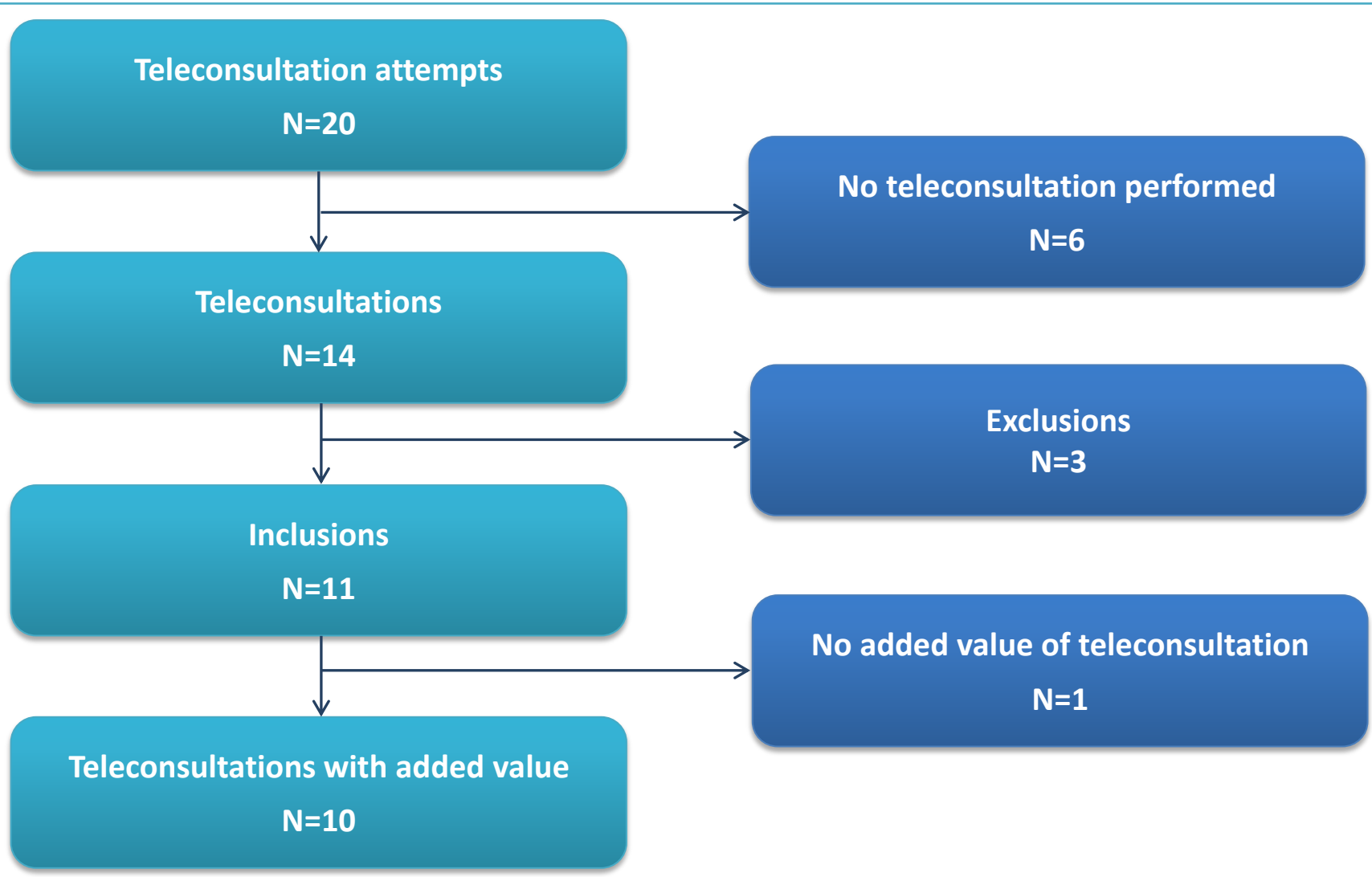
Web-Platform



Implementation: Ethical Committee



Results: Teleconsultations



Reasons:
- Device under technical revision, N=1
- Software update device, N=1
- Connectivity issues, N=2
- No suspicion of stroke by EMD on scene, N=2

Reasons:
- Transportation to other hospital, N=3

Reasons:
- Technical problem with headphone, N=1

Results: Technical data

Teleconsultant permanence, mobility and connectivity

- **0 missed calls** during 7 week inclusion period
- **50%** calls **outside office hours**
- Location during call: 45% hospital, 50% home, 5% other
- Connection used (4G/WIFI) dependent of location teleconsultant

Added value of teleconsultation, as percieved by teleconsultants

- Identification of possible TIA/stroke/ICH/stroke mimic
- Hospital prenotification
- History taking with primary care physician

Results: Technical data

Teleconsultation questionnaire

- Audio quality (n=14): median = good
- Video quality (n=14): median = good
- User friendliness (n=14): median = good
- Quality of the report (n=14): median = good

No adverse events during study

Results: Patient data

Parameters obtained during teleconsultation (n=13)	
Blood pressure	85%
Heart rate	85%
GCS	92%
UTSS (partial or complete)	77%
Glycemia	69%
Oxygen saturation	69%

Clinical information obtained during teleconsultation (n=13)	
Medical history	77%
Medication	85%
Premorbid condition	46%
Time of onset / LSW	85%
Anamnesis	92%
Stroke suspicion	92%
Possible IVT / EVT candidate	38%

Diagnosis and treatment

- 2 patients: ischemic stroke within treatment window, treated with IV trombolysis
- 2 patients: lethal intracerebral hemorrhage

Implementation: Ethical Committee Learnings

Dealing with multiple Ethical Committees = challenging

- **Project considered as « clinical trial »** while expected to be considered as « pilot project »
- **Informed consent** (template RIZIV/INAMI not accepted – adaptations required)
- **Concerns about data privacy** (declaration to **Privacy commission** & **data management plan** required)

Learnings for future projects

- **Identify upfront** and as fast as possible which **efforts** will be **needed** with regards to ethical committees
- **Simplify** the study and sequence of start in different hospitals from the beginning **where possible**

Implementation: Technical Learnings

Installation & adaptation devices

- Planning of device **installation** to be **foreseen long time on beforehand**
- **Positioning of device adapted** based on feedback from ambulance personnel
- Suggestions for **improvement user friendliness** of device by ambulance personnel

Software

- Development of **automated call** required for ambulances owned by Fire Departments
- Required **adaptations to report and platform** identified & implemented

Connectivity

- **Testing connectivity** from hospital network and outside of hospital network is crucial (WIFI vs. 4G)
- **Adaptations in collaboration with local IT departments** to access audio/video stream

Implementation: Organisational learnings (1)

Organisation of a teleconsultant pool:

- Required amount for **24/7 permanence : 5-6 teleconsultants**
- Coverage of **2 languages** preferred
- **Insurance** of teleconsultants not part of a participating center

Further developments to ensure best user experience:

- **Online** teleconsultant **availability** registration
- **Automated call divert** system from central telestroke number
- **Teleconsultant back-up** system in case of 2 simultaneous calls
- **Embed telemedicine in operations at individual** hospital level **then** develop a teleconsultation solution for a **network** (e.g. Antwerp, Brussels)

Implementation: Organisational learnings (2)

Training of teleconsultants

- **Training on usage of platform** by teleconsultants more time consuming then expected
- **Continuous support** through project required

Training om ambulance personnel

- **Testing days** very important to test in a real-life setup and get a feeling on usage with patients
- Working in **different settings**: ambulance personnel, fire department, PIT

General conclusion: lessons learned

Privacy & Legal

- Privacy concerns by ethics committees
- Patient exclusion due to legislation on patient transportation to nearest hospital

Teleconsultations

- 24/7 IATS permanence by stroke specialists = feasible
- Teleconsultants not necessarily part of in-hospital stroke team
- Inclusion rate of 1.4 patients / center / week inline with forecast

Technical

- Continuous support is crucial
- Teleconsultations evaluated as good overall

Organisational

- IATS is **as feasible** in regular **ambulance as in PIT**
- **Simplifying implementation sequence** is key to success

Future perspectives

- **Involved hospitals expressed interest** to optimize stroke teleconsultations
- **Further funding** currently on hospital budget or european subsidies
- **New hospitals will start** implementation in near future
- **Re-imbursement of teleconsultation?**