

Safer stroke



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Time is brain

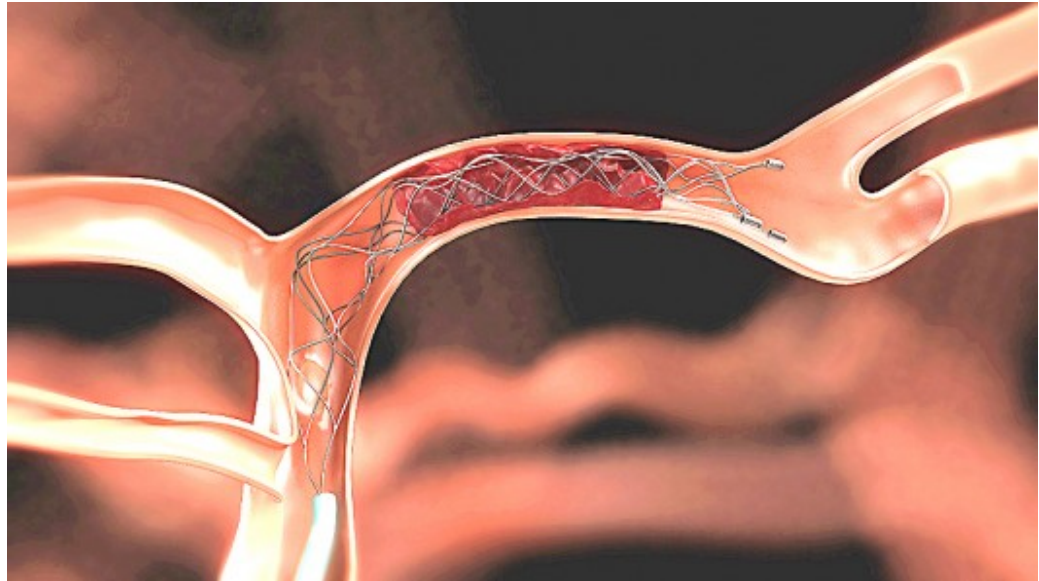


Acute stroke treatment

IVT (plumbo):



EVT:



SAFER - stroke

SAFER: Unik kompetanse I simulering og opplæring



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SAFER - stroke

Get a platform for stroke projects:

- Give best possible stroke-treatment and care through teaching, simulation and implementation in clinical praxis
- Utilize synergies between SUS – UiS – Lærdal (and other industry)
- Develop Stavanger as stroke center/simulation center and develop SAFER Healthcare
- Medical education at UiS

SAFER stroke – project 1

Simulation based team training - IVT



Simulation based team training



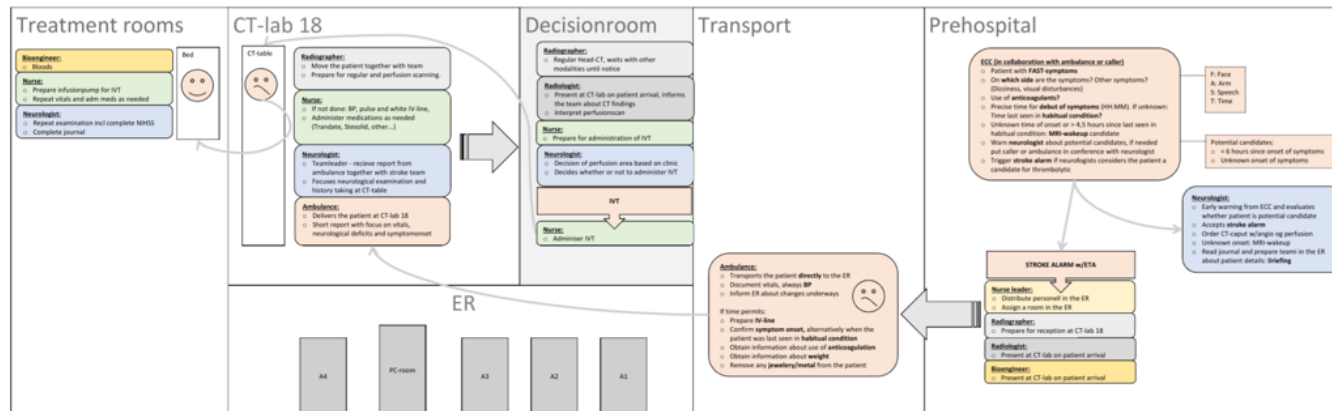
Pre notification with new alarm



Team briefing



Short ambulance report



New treatment protocol



Immediate transfer to CT-lab

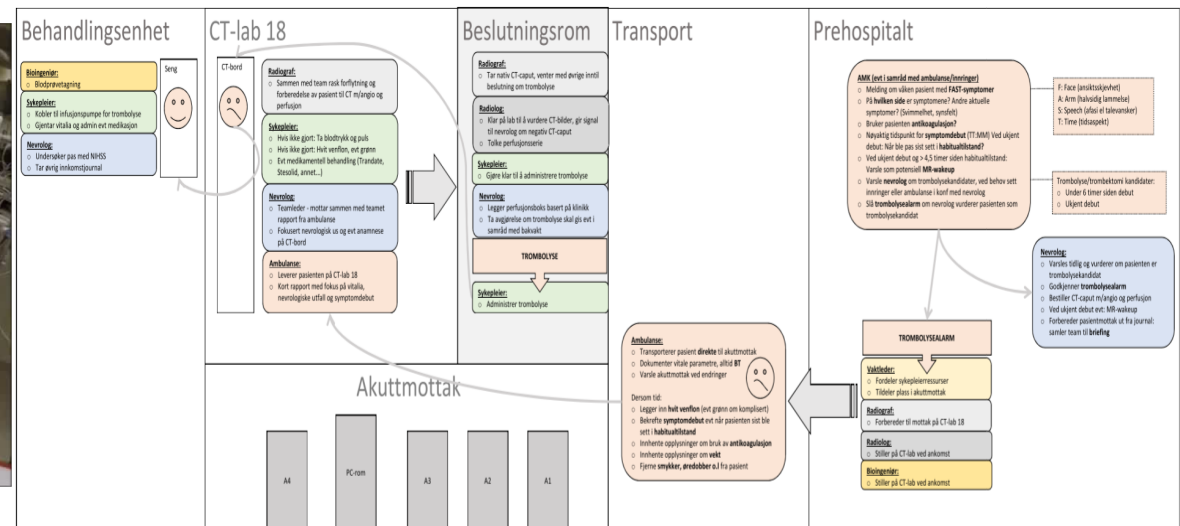
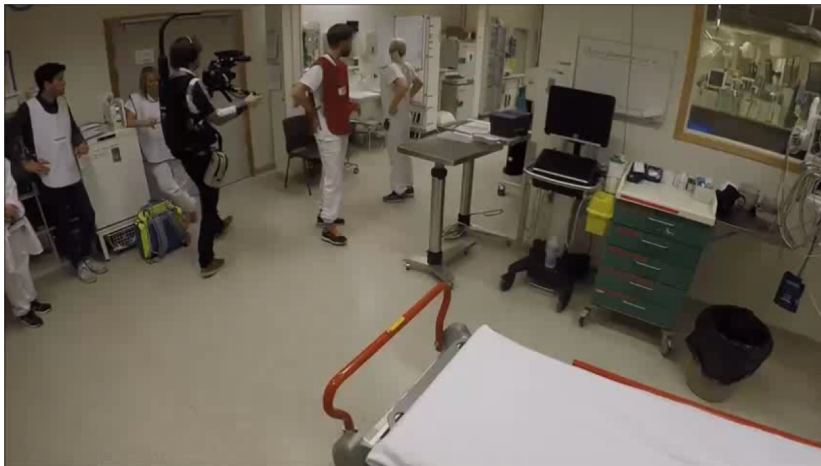


Examination on CT-table



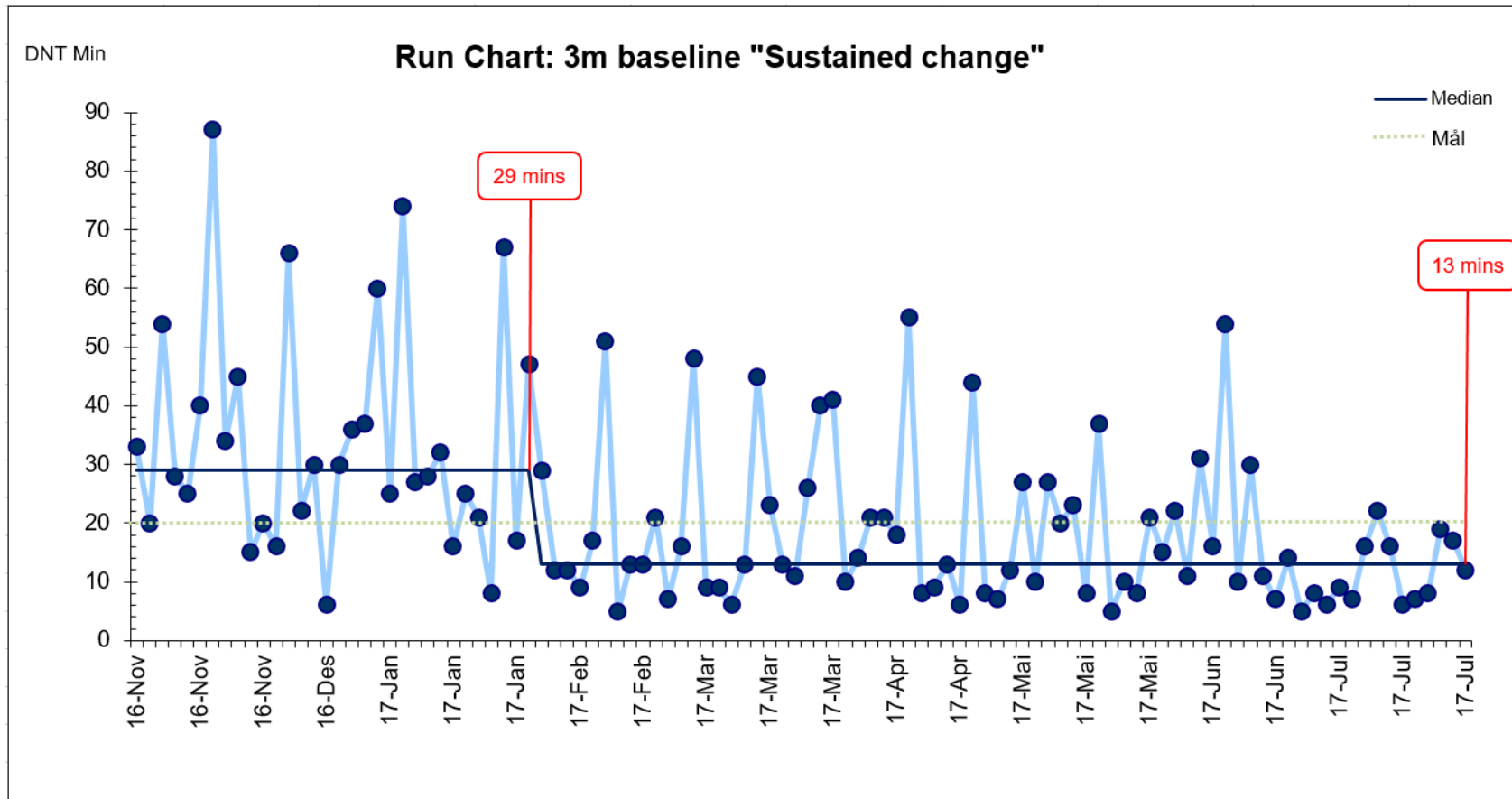
Interpretation and decision in lab

Simulation based team training – once weekly



Measurments - time

IVT-simulation training at SUS from feb. 2017:



Measurements - time

Table 2: Primary outcome measures			
	Before QI	After QI	P value
Number of patients	399	190	
Median DNT, min (IQR)	27 (19-41)	13 (9-23)	<0.001
Median OTT, min (IQR)	110 (77 - 168)	96 (68-146)	0.011
IVT within 60 mins (%)	51 (13.4)	39 (20.7)	0.023
Abbreviations: QI, Quality Improvement; IQE, Interquartile range; DNT, Door to needle time; OTT, Onset to needle time; IVT, Intravenous thrombolysis			

Results – patient outcome

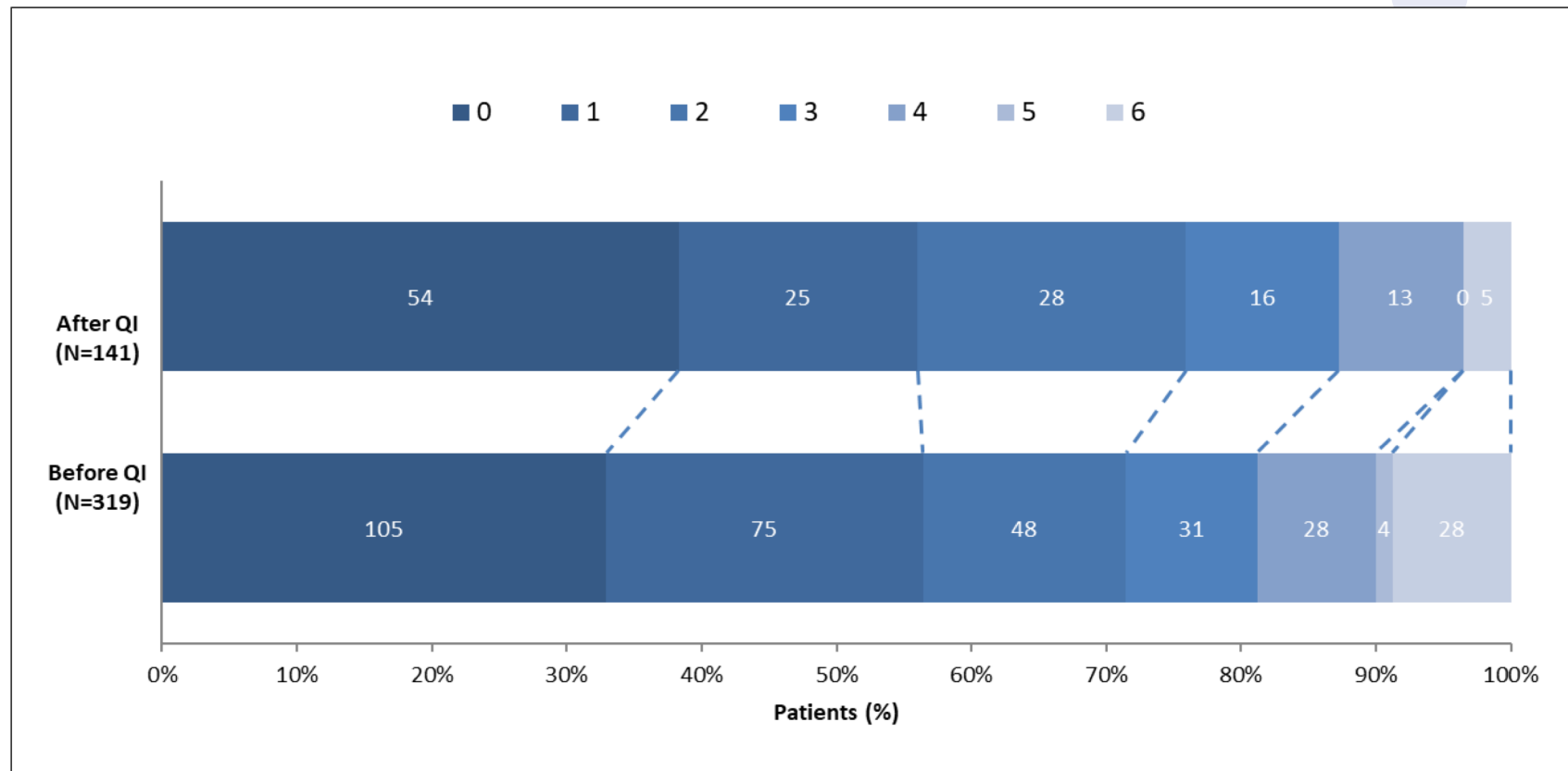


Figure 2: Distribution of Modified Rankin Scale Scores* at 90 days before and after QI

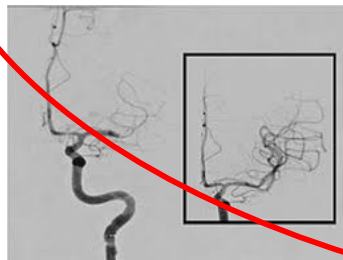
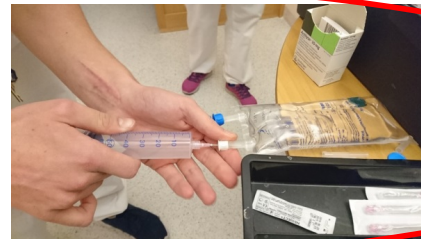
Results – patient outcome

Table 3: Patient outcome measures					
	Before QI	After QI	Effect variable	Value (95% CI)	P value
Number of patients	319	141			
Median NIHSS at discharge (IQR)*	0 (0-2)	0 (0-1)	Mean difference	-0.58 (-1.29 to 0.13)	0.111
mRS of 0 at 90 days (%)	105 (32.9)	54 (38.3)	Odds ratio	1.27 (0.84 to 1.91)	0.263
mRS of 0-1 at 90 days (%)	180 (56.4)	79 (56.0)	Odds ratio	0.98 (0.66 to 1.47)	0.937
mRS of 0-2 at 90 days (%)	228 (71.5)	107 (75.9)	Odds ratio	1.26 (0.80 to 1.98)	0.327
All-cause mortality at 90 days (%)*	29 (9.1)	5 (3.5)	Odds ratio	3.09 (1.00 to 9.51)	0.049
Median mRS score at 90 days (IQR)*	1 (0-3)	1 (0-2)	Mean difference	-0.12 (-0.38 to 0.15)	0.381
Abbreviations: QI, Quality Improvement; NIHSS, National Institutes of Health Stroke Scale; IQR, Interquartile range; mRS, modified Rankin Scale					
*Adjusted for age, NIHSS at admission and baseline mRS					

Helse Vest - quality price 2018



Only IVT simulation training?



Prehospital

Thrombolysis

Thrombectomies

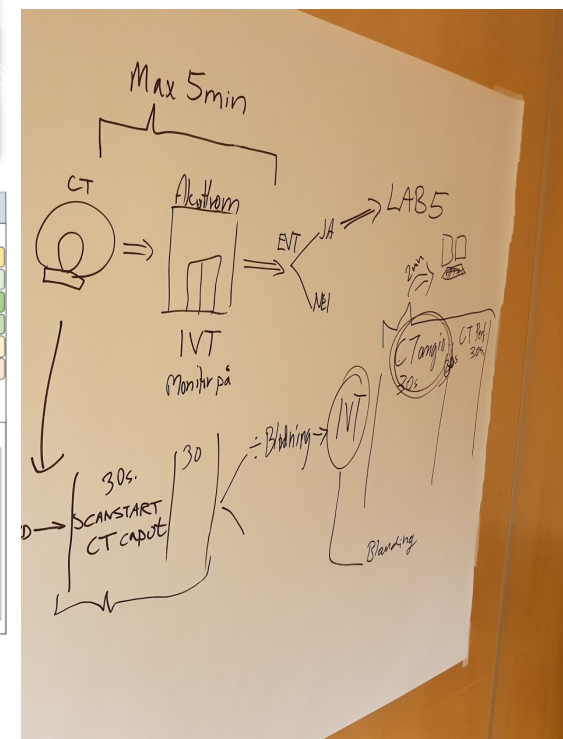
SimMan vasc - prototype



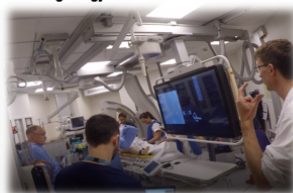
- Full functionality of the Sim-man family of Lærdal
 - can talk, move, shake... and much more
- Monitor function – heart rhythm blood pressure, etc....
- EVT simulator – Mentice collaboration



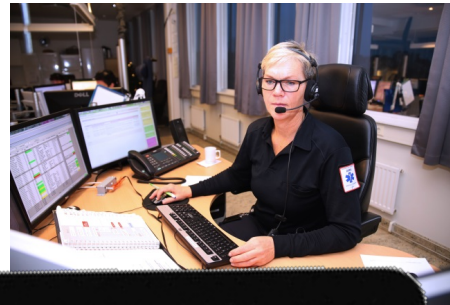
Behandling og tolkning på lab



Endelig avgjørelse om trombektomi

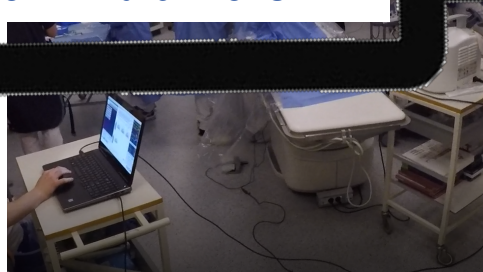


Change 2: Simulation-based training



Dose: Once weekly for 14 weeks

Timeline: Nov – March 2018



NON-TECHNICAL
SKILLS

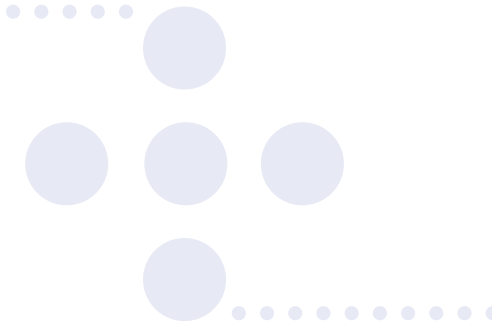


Laerdal
helping save lives

 **mentice**

TECHNICAL
SKILLS

Preliminary results



	Pre-sim (n=36)	Post-sim (n=24)	P-value
CT – groin puncture	61.5 (28 – 161)	41 (18 -65)	< 0.0001
CT - angiography	77 (44 – 183)	58 (30 – 104)	< 0.0001
CT - reperfusion	150.5 (85 – 271)	93 (50 – 140)	< 0.0001
Groin p. -reperfusion	75 (6 – 151)	54.5 (19 – 98)	0.03



National project

- All EVT hospitals in Norway are joining the project
- REK application
- Cooperation with “Saving lives together” strategy – Norwegian Directorate of Health (Bjørn Jamtli/Conrad Bjørshol)
- Add on projects (e-learning, train the patient...)

National – international?

- Mayank Goyal (Canada)
- Anthony Gallagher (England/Sweden)
- SAFER
- Lærdal
- Mentice
- Medtronic
- Boehringer I.



ESMINT - EXMINT

- Tommy Andersson (Karolinska)



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Examination Committee



Chair: Prof Tommy Andersson

Tommy Andersson is Professor of Neurointervention at the AZ Groeninge and Senior Consultant in Neurointervention at the Department of Neuroradiology, Karolinska University Hospital.

[More](#)



Member: Matthias Gawlitza, MD

Dr. Gawlitza is currently working as a staff neuroradiologist at the Hôpital Maison-Blanche, University of Reims/France.

[More](#)

SAFER stroke – project 2

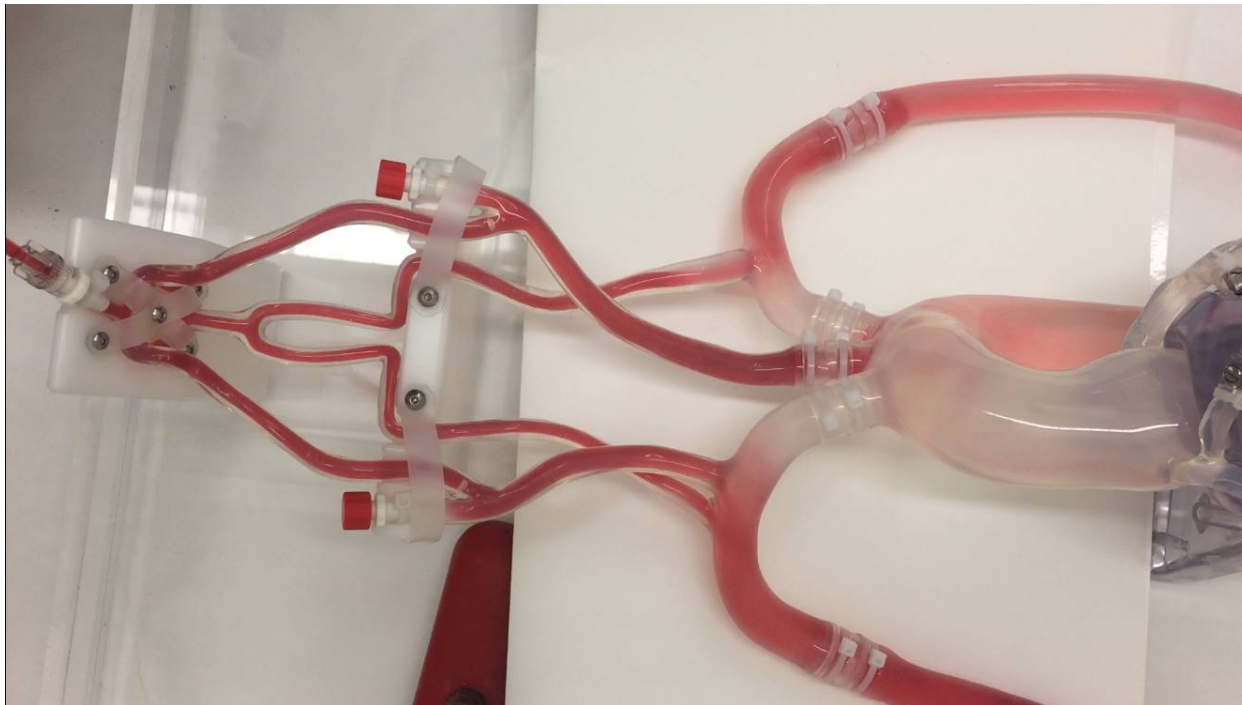
Impact of simulation-training on technical reperfusion rate
Benchmarking



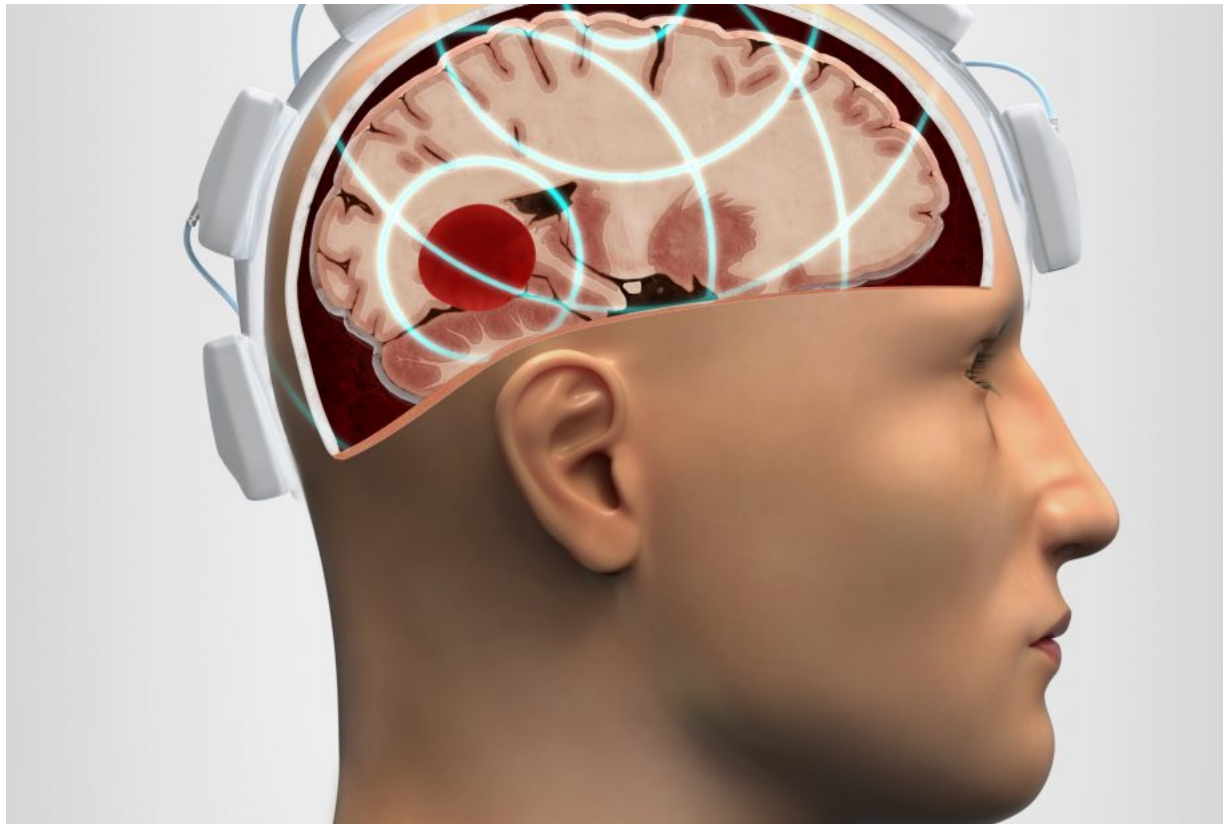
Samarbeid UiS - IRIS

Ingunn W. Jolma

“Ullrik” – simulering av arteriell blodstrøm



SAFER stroke – project 3





Thanks for your attention