

# Building Capacity for EVT: Lessons learned in starting an EVT program (almost) from scratch



AY Jin<sup>1,2,3</sup>, A Menard<sup>1,3</sup>, C Martin<sup>1,2</sup>, B Mussari<sup>1,3</sup>, R Appireddy<sup>1,3</sup>, G Boyd<sup>1,3</sup>, D Walker<sup>1,3</sup>, B van Adel<sup>4</sup>, D Bowman<sup>1</sup>, C Murphy<sup>1,2</sup>, K Dowker<sup>1</sup>, B Beattie<sup>1</sup>, K Bodie<sup>1</sup>, O Islam<sup>1,3</sup>, K Pearson<sup>1</sup>, B Delaney<sup>1</sup>, L Thom<sup>1</sup>, R Gill<sup>1</sup>, R Jewitt<sup>1</sup>, N Valade<sup>1</sup>, A Vincent<sup>1</sup>, R Albrough<sup>1</sup>, J Donaldson<sup>1</sup>

1. Kingston Health Sciences Centre, Kingston Ontario. 2. Stroke Network of Southeastern Ontario. 3. Queen's University, Kingston Ontario. 4. Hamilton Health Sciences Centre, Hamilton Ontario.

**Background:** Endovascular therapy (EVT) has become the standard of care for selected ischemic stroke patients but access remains limited due to lack of neurointerventionalists. We explored the feasibility of starting an EVT program for acute ischemic stroke in a tertiary academic centre without on-site neurointerventional radiologists.

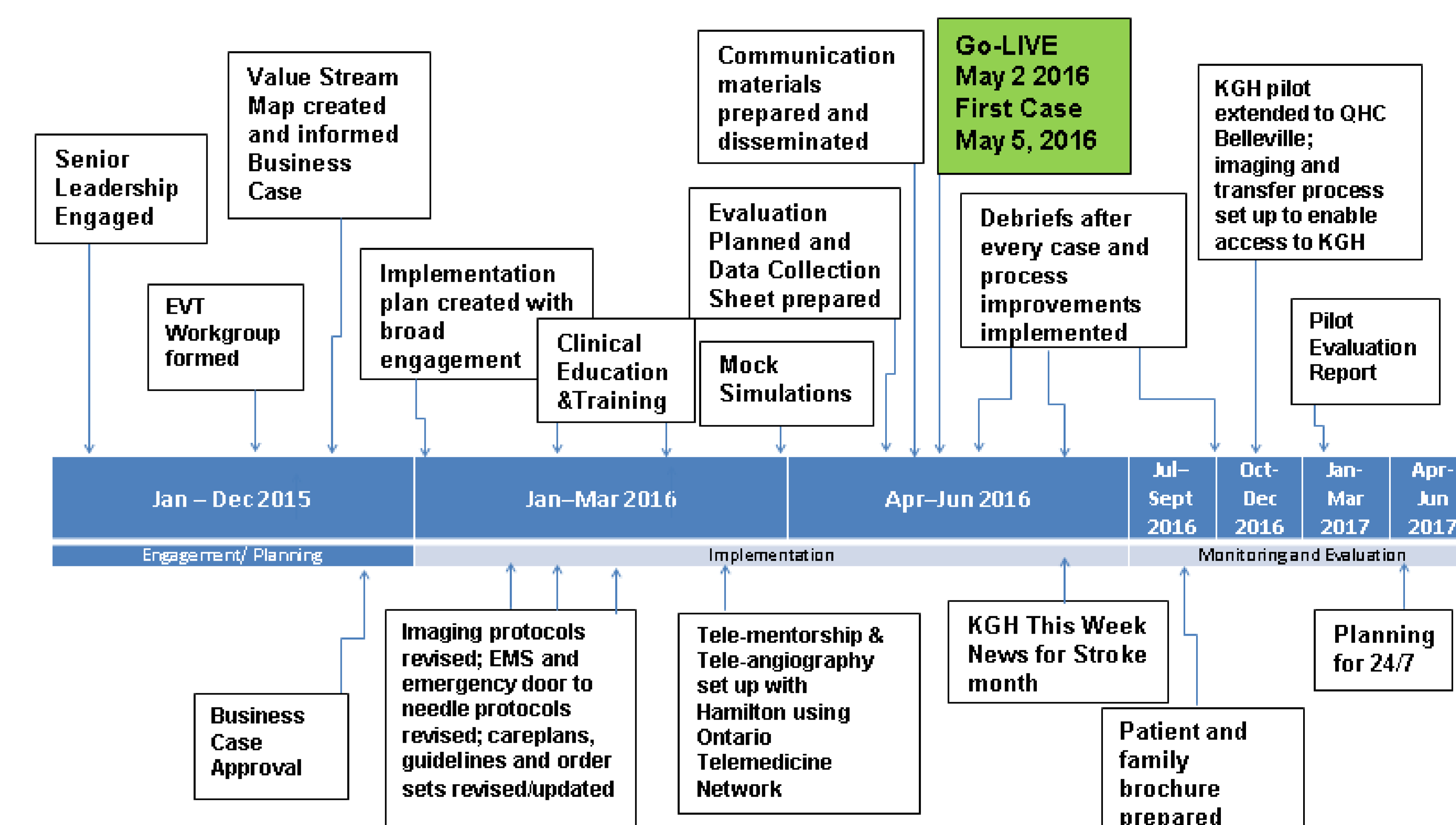
**Methods:** A weekday EVT pilot study was started on May 2, 2016, preceded by 12 months of planning.

- 3 general interventional radiologists with combined experience of 354 supra-aortic procedures over past 10 years
- Real-time mentorship from an academic centre-based neurointerventionalist using telefluoroscopy.
- Stroke team (neurologist, resident) prenotified for Code Stroke

## Project Plan

Project Plan Overview	Apr - June 2015	July - Sept 2015	Oct - Dec 2015	Jan - Mar 2016	Apr - June 2016	July - Sept 2016	Oct - Dec 2016	Jan - Mar 2017	Apr - June 2017
Engagement, Business Case Approval	█	█	█						
Communication Plan			█	█	█	█	█	█	█
Evaluation Plan				█	█	█	█	█	█
Resource Planning - Staff, Space and Equipment		█	█	█	█	█	█	█	█
Clinical Pathway Implementation and Related Education/Training				█	█	█	█	█	█
Process Review and Improvement					█	█	█	█	█
Regional Planning to create Belleville telestroke access							█	█	█
Pilot Report and Planning for 24/7								█	█

## Project Implementation



**Results:** 6/10 cases (60%) 90 day mRS ≤ 2. TIC1 2b-3 recanalization rate 90%. Mean CT to reperfusion time 57 minutes.

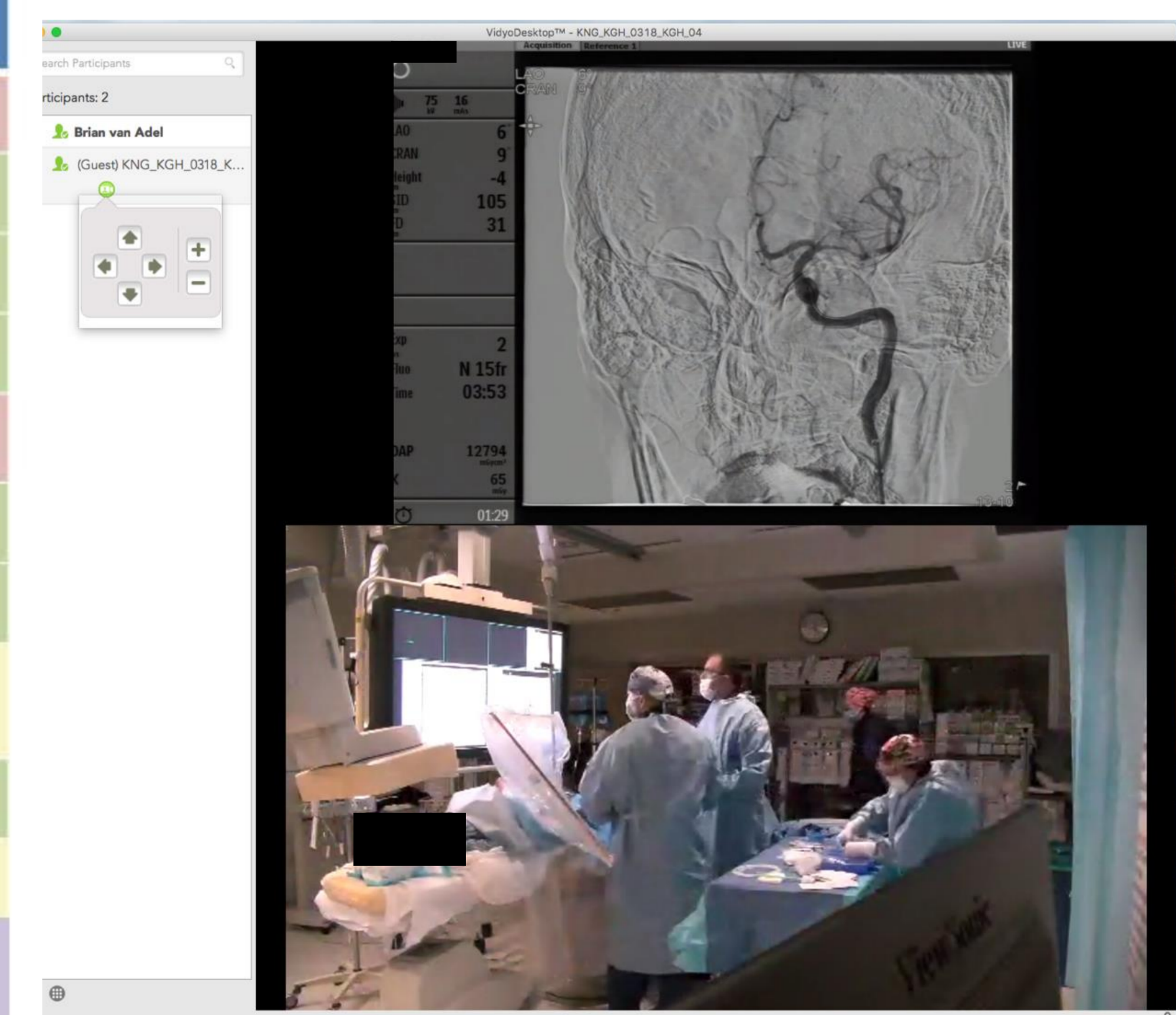
## KGH Pilot Results: Outcomes

Positive outcomes indicated by reperfusion scores of TIC1 2b or 3 AND 90 day Modified Rankin Scale (MRS) score of ≤ 2 indicating minimal to no disability.

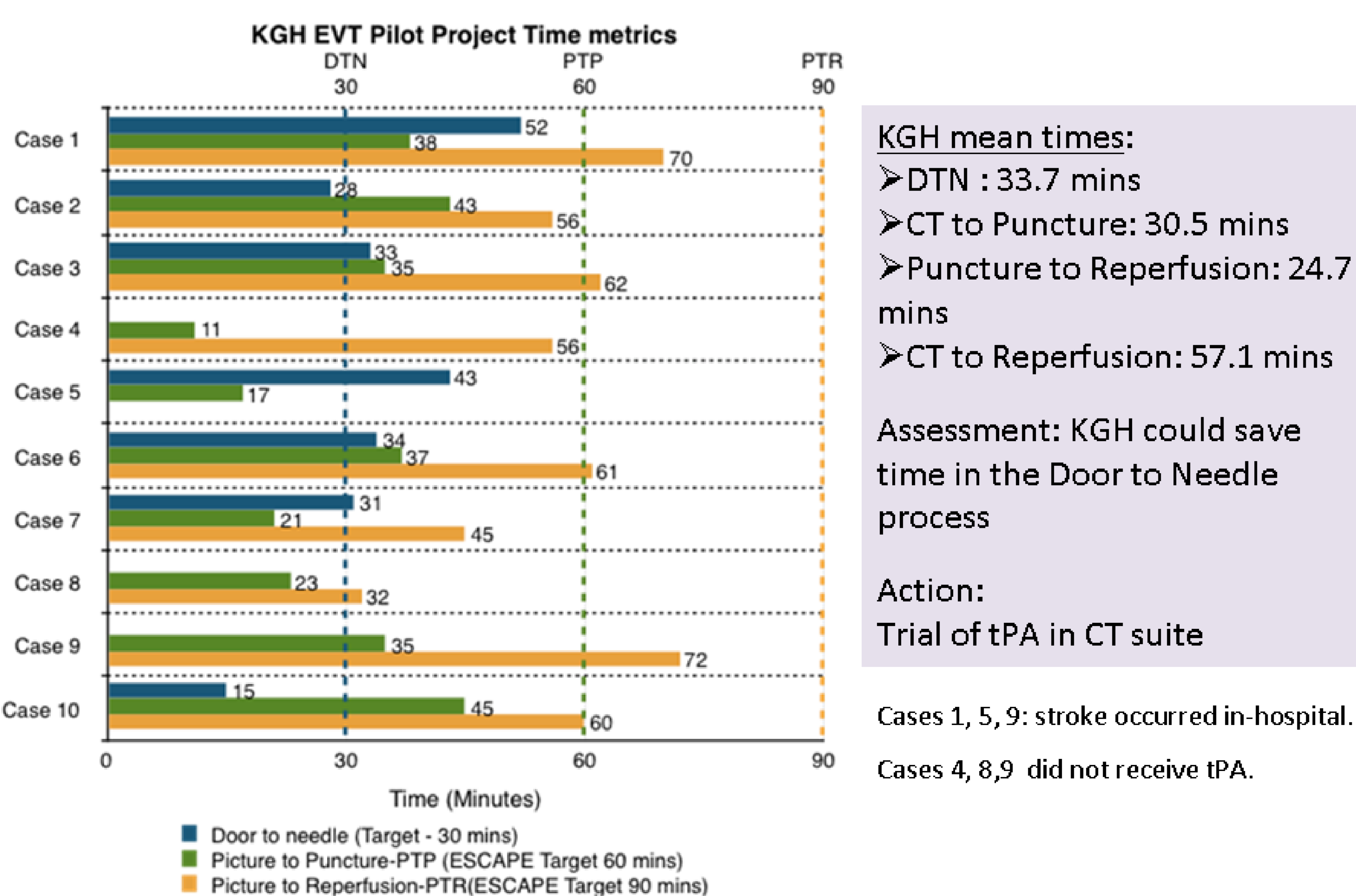
Case #	NIHSS Stroke Scale arrival	TPA given day 1	CT APECTS on arrival	Collateral score/Clot on arrival	Reperfusion Score	LOS + DC	MRS at 90 days
1	7	8	Y	8	4 L M1 - FMD	TICI 2b, 5, death	6
2	23	0	Y	10	4 LMCA	TICI 3, 4, home	0
3	23	13	Y + IA	9	4 LM2	TICI 2b, 19, Rehab in NS, Home	2
4	20	0	N	8	4 RMCA	TICI 3, 4, home	0
5	20	N/A	Y	9	1 RMCA & M1	aborted, 1, death	6
6	22*	4	Y	9	4 R MCA	TICI 2b, 2, BrGH 3 days, home	0
7	16	4	Y	9	3 RMCA & M1	TICI 2b, 6, BrGH home	0
8	16	9	N	7	3-4 RMCA & M1	TICI 3, 14, rehab: died of complications	3* (*best score at acute discharge)
9	15	0	N	7	5 LMCA, M1	TICI 3, 6 From CVA	0
10	12	8	Y	10	4 R MCA, M1	TICI 3, 18, Slow stream rehab	4

POST PILOT: June to Oct 2017 : 7 further people with anterior circulation stroke – 2/3 left no deficits  
Three people with posterior circulation stroke

## Telefluoroscopy



## KGH Process Times (vs ESCAPE Trial)



**Conclusions:** EVT was feasible when performed by an experienced stroke team including three experienced general interventionalists in a tertiary academic centre. Strict inclusion criteria and a strong collaboration with stroke neurologists was essential.