Telestroke Integration for Fast DIDO and in-Hospital Stroke

Alberta Stroke Day

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Disclosures

- Honoraria Bayer for two advisory board meetings unrelated to this presentation

Objectives

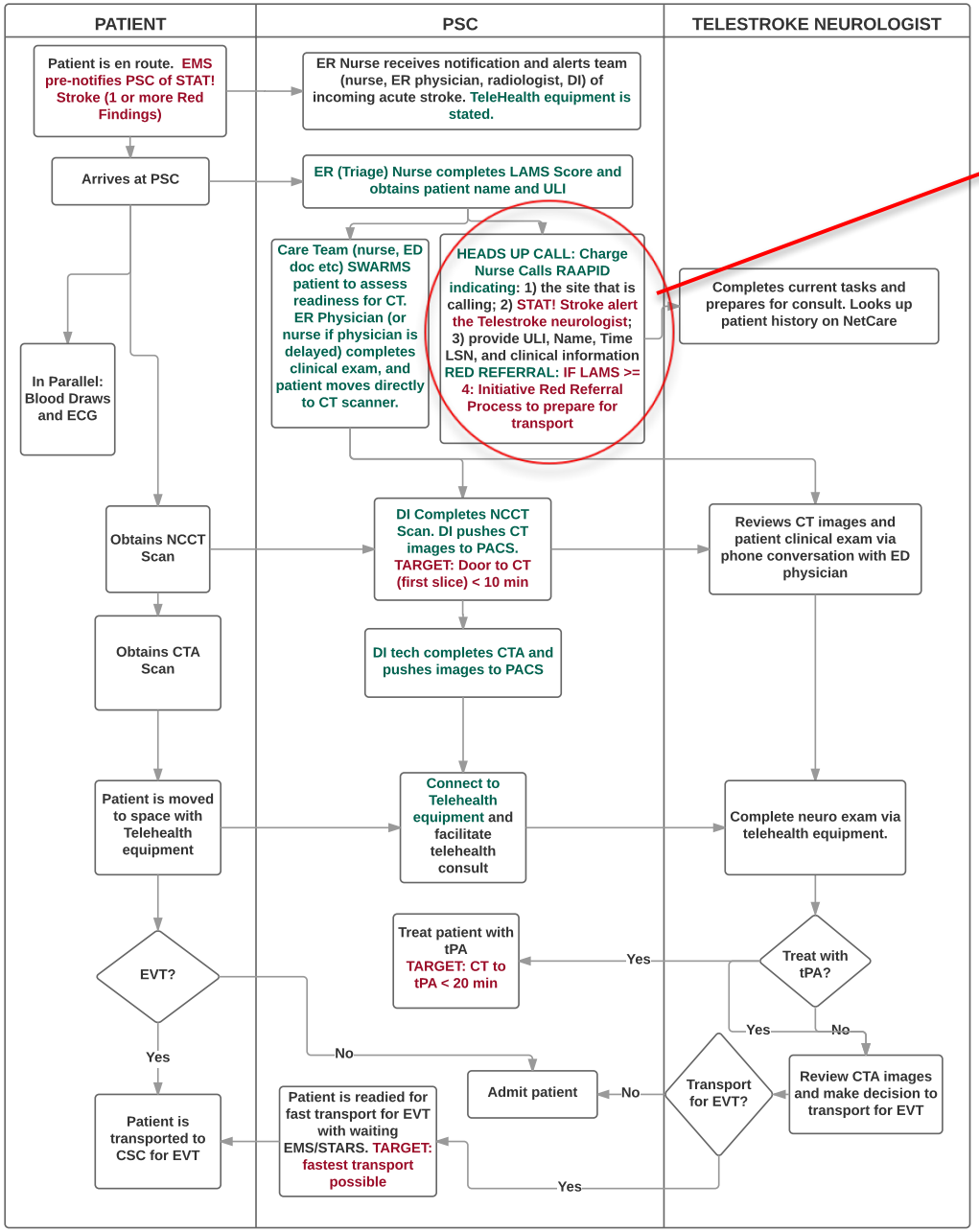
- To review increasing complexity in the telestroke system
- To describe where the telestroke system can speed patient transfer for endovascular care
- To review opportunities when patients present to a primary stroke centre, non-primary stroke centre (walk-in or inpatient), or EMS crew calling in

Background

- Both IV tPA for stroke and endovascular therapy for stroke are highly effective treatments backed by randomized trial data
- Alberta has organized northern and southern telestroke systems geared towards fast delivery of tPA
- The telestroke systems can be used to speed movement of patients for endovascular care as well
- DIDO = Door-in-door-out

Three scenarios

- The patient presents to a Primary Stroke Centre (PSC)
- The patient presents to a non-PSC (walk-in or inpatient)
- The patient is with an EMS crew (ERA Project)



Red Referral planned at Heads Up call:
for LAMS>= 4;
RAAPID:
CCC
Prov Flight
STARS
Telestroke

EVT Decision at the PSC (Planned)

- The "Red Referral" process, will occur at the "heads up on arrival" to a PSC for patients with LAMS>=4; (planned)
- STARS, Prov Flight, CCC will be conferenced in and placed on alert – allowing weather checks etc; they will be waiting for an update
- The telestroke encounter will then occur

EVT Decision at the PSC

- First decision is to treat with tPA
  - TARGET = DNT < 30 minutes
- Once this is done CTA imaging can be reviewed to assess the patient for rapid transfer to CSC for EVT
- At this point relink through RAAPID with STARS, Prov Flight, CCC (EMS Dispatch)
  - If transportation to CSC for EVT, then the TARGET door-in-door-out (DIDO) time < 45 minutes

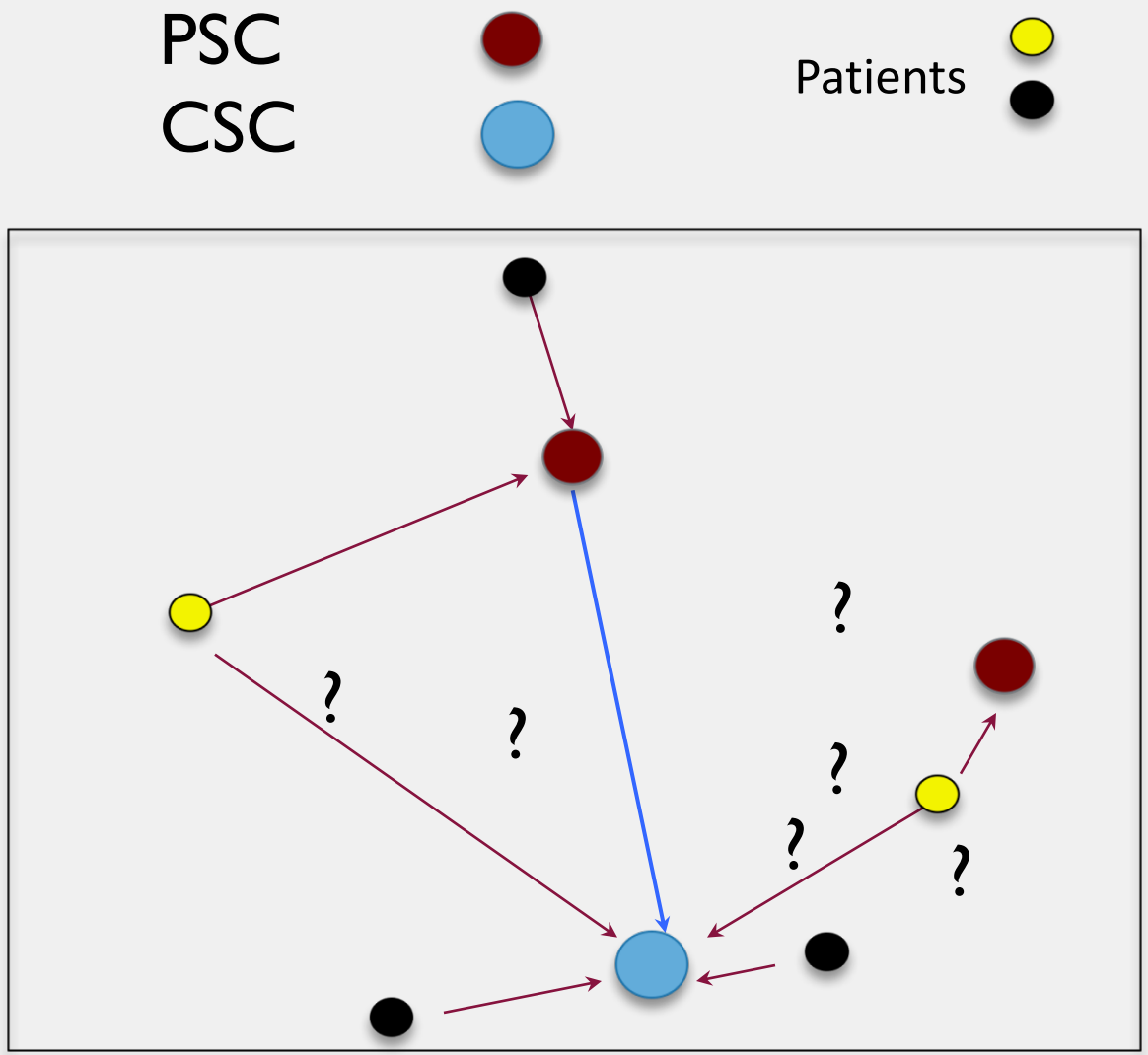
EVT Decision at the PSC – Northern Telestroke System Changes

- Move to IMPAX 6.6 – image retrieval problems as the system is being implemented
- Stroke Ambulance launched Feb 7th - ; affects patients being seen by non-PSCs and EMS crews within 250km of Edmonton from 8AM-4PM;
- Northern Telestroke Physicians – will not be accepting 'heads up on arrival' after 6PM unless LAMS >=4 (date and specifics to be messaged by memo) high false positive rate/workload
  - The ED physician will need to see 1st (like all other telestroke systems we are aware of)
  - Monitor DTN effects

Access to endovascular therapy

What factors determine the destination of primary or comp stroke centre?

- Geography/proximity
- Time (transport and door to treatment)



Patient presents to non-PSC – walk-in

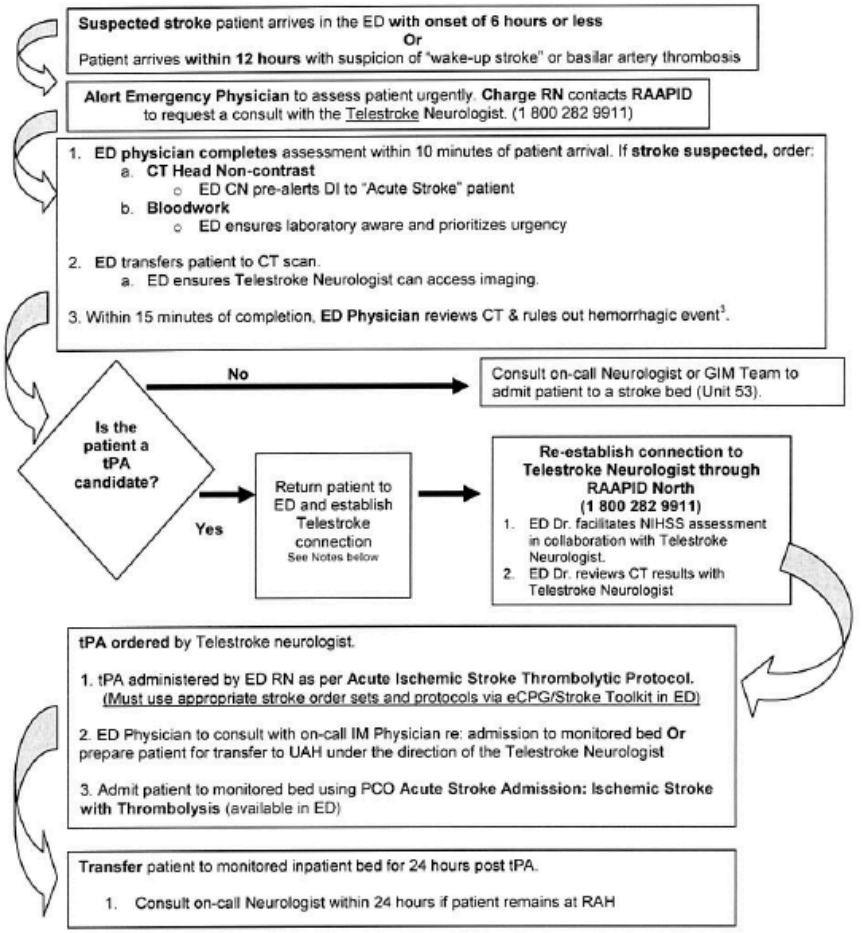
- Fast physician assessment (within 10-15 min – like an MI); Call RAAPID immediately
- Determine the LAMS score (RAAPID will be able to assist)
- If LAMS >= 4 then conference in the telestroke physician, STARS, Provincial Flight, CCC (EMS Dispatch)
- A decision may be made for diversion from local PSC to Comprehensive Stroke Centre (CSC) instead for faster EVT
- Sometimes the non-PSC can do rapid CT and thrombolysis on site (ie SCH, MCH, Strathcona Centre) before transport arrives

Non-PSC North– Stroke Ambulance

- If within a 250 km range around Edmonton and during the weekday hours of 8-4 call RAAPID with any acute stroke regardless of LAMS
- The patient may be a candidate for a Stroke Ambulance dispatch which might allow the fastest thrombolysis as well as transport to Edmonton for EVT
  - We will be moving to phase 2 – (response to in-Zone Edmonton Hospitals) shortly to be messaged by memo

RAH Emergency Department Stroke Algorithm

NOTE: Benchmark Times: Onset of ED presentation to CT = **25 minutes** Onset of ED presentation to drug = **60 minutes**



****NOTES****

1. RAAPID North Phone # **1 800 282 9911**

2. **Telestroke Connection**: Both RAH and the Telestroke Neurologist will establish Video Conference link via the virtual room:
   i) Using arrow buttons on remote, select "Acute Stroke Room" on TV monitor
   (Connection can also be established by dialing 2226787653* (222NSTROKE)
   ii) Press green button or "OK" on remote.
   iii) Stay on line until joined.

***No spaces or hyphens in dial string**

3. CT scan can be read by: **ED Physician, Radiologist, Telestroke Neurologist or RAH Acute Stroke Physician** to rule out hemorrhage.

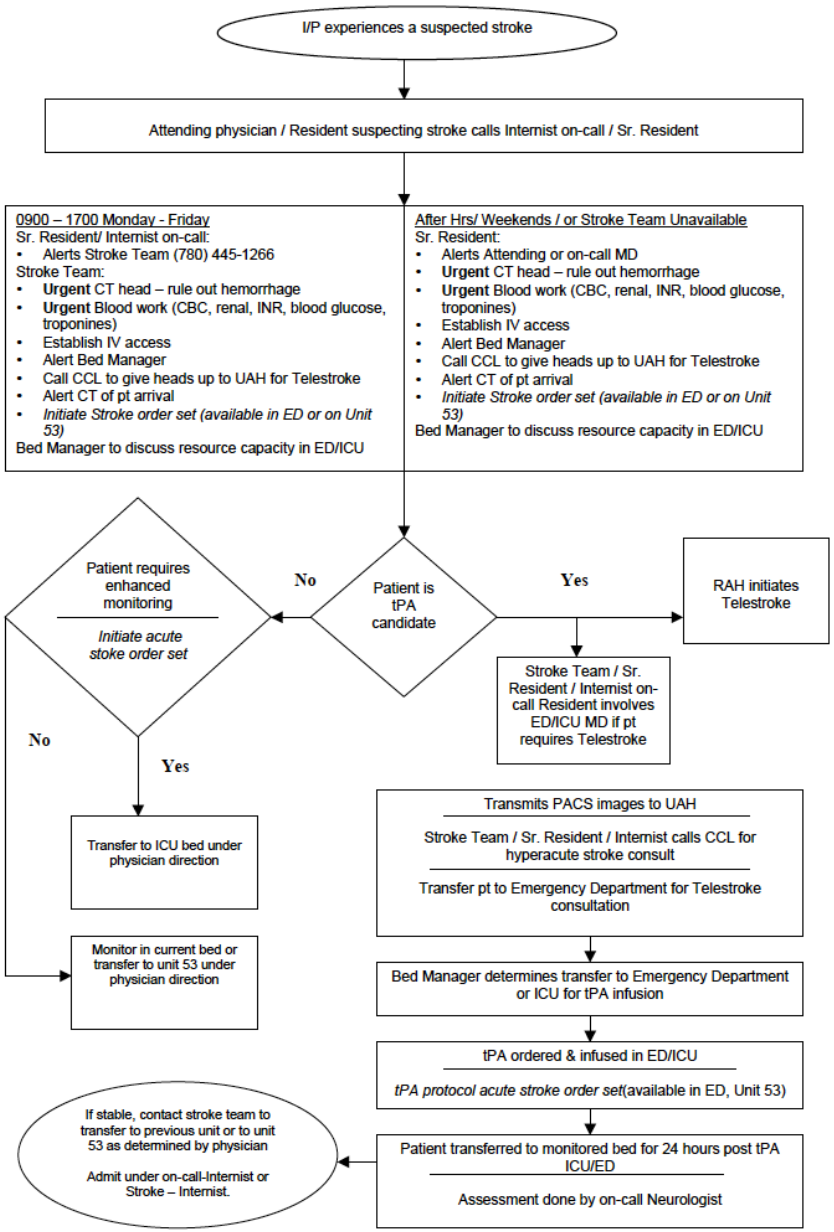
Patient presents from non-PSC – inpatient

- Identify Stroke Symptoms, LSN time, fast physician assessment (10-15 min – like an MI);
- Call RAAPID immediately – ideally a physician – don't wait for CT, bloodwork etc; connect with telestroke early;
- Determine the LAMS score (RAAPID will be able to assist)
- If LAMS >= 4 then may need to conference in STARS, Provincial Flight, CCC (EMS Dispatch) in addition to telestroke
- A decision may be made for diversion from local PSC to Comprehensive Stroke Centre (CSC) instead for faster EVT

Patient presents from non-PSC – inpatient

- An in-hospital thrombolysis for inpatient stroke is possible at a non-PSC with CT scanner (ie Leduc, SCH, RAH)
- Often not fast; often requires moving the patient to the hospital ED where fast response is sometimes possible;
- A priority RED transport to a local PSC or CSC is often faster if activated early
- The Stroke Ambulance will soon be an option in Edmonton Zone

RAH Stroke Algorithm – Inpatient Stroke



NOTE: The window for tPA administration has been shown to be effective up to **4.5 hours** of stroke symptom onset, according to national guidelines. Evidence shows diminishing returns over time, thus earlier treatment is most effective.

Lexar:UAH_stroke_program_and_clinic:rah_algorithm:RAH Stroke Algorithm - Inpatient Stroke Revised 31 March '09alternate Version 1A.doc


Dido
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Tips on Door in Door Out (DIDO)

- The Red Referral Process when launched could speed DIDO by mobilizing ambulance crews and putting flight vehicles on alert
- Keep the incoming EMS crew on site if possible to avoid delays in transfer of care
- In return, have a fast turnaround
- The expectation of physician assessment within 10-15 minutes (like an MI)
- PSCs - Speed up your CTA process to <5-10 min so that you can do the CTA after the plain CT

Patient with EMS crew - ERA

- If rural EMS crews encounter a patient who screens positive for stroke and has a LAMS >= 4 and if they are not close to a PSC or CSC this activates the ERA (Endovascular Recanalization Alberta) process
- The crews call RAAPID and the telestroke physician and often the STARS physician determine whether diversion to a CSC should occur for more rapid endovascular therapy
- In the North the Stroke Ambulance may rendezvous with the crew

Summary

- Plan early for possible EVT transfer during telestroke encounters with primary stroke centres – when launched the Red Referral process will improve transport speed
- Consider diversion for endovascular therapy in every acute stroke patient encounter at non-PSCs with LAMS >=4; consider Stroke Ambulance for all LAMS during operational hours;
- Call RAAPID for inpatient stroke at non-PSCs (follow your inpatient stroke protocol at PSCs)
- EMS crews can also trigger diversions based on their location and the patient's LAMS score