HyperAcute Stroke

STAT Stroke

Red Deer Regional Hospital
Primary Stroke Centre
Jennifer Bestard MD, FRCP(C) Neurology

RDRHC

Central Zone and RDRHC

- Previously 3 neurologists - expanded to 5 in 2015
- Variable hyperacute stroke protocol
- Doubled stroke admissions in past 5 years
  - 2015 392 strokes 9 TIA
- Average 35 acute stroke admissions per month
- tPA volumes 2-3x increase since 2009

Protocol Pre QuICR (2015)

- EMS call to triage or walk-in
- Patient arrives at triage – hyperacute – overhead Trauma page, patient is registered
- Patient taken to Trauma by EMS, transferred to bed, detailed verbal report provided by EMS
- Comprehensive assessment by trauma team
- ER doctor **may** initiate stroke orders and call radiologist and Neurologist, labs drawn, ECG, IV, catheter, chest x-ray, etc
- Patient transported for CT +/- CTA
- Patient arrives back to trauma bay or critical track
- Neurology assesses +/- tPA

Improving Door to Needle Time in Red Deer

- Keeping in mind optimal door to needle time is the fastest possible time that preserves safety and appropriateness
- In Canada results from a 2011 National Stroke audit on quality of stroke care showed only 34 % of patients had a DTN time </= 60 minutes
- January – June 2015 **Red Deer DTN~72 min**

Preparation For QuICR

- Meeting in June 2015
- Key stake-holders: ER, Radiology, Neurology, EMS
- Round table discussion about streamlining current process with goal of DTN = 30 min
- New protocol also considers DIDO for endovascular therapy – New Canadian Standard of care

Key Protocol Changes

- Many changes brainstormed are outlined in a paper by Dr. Michael Hill et al.

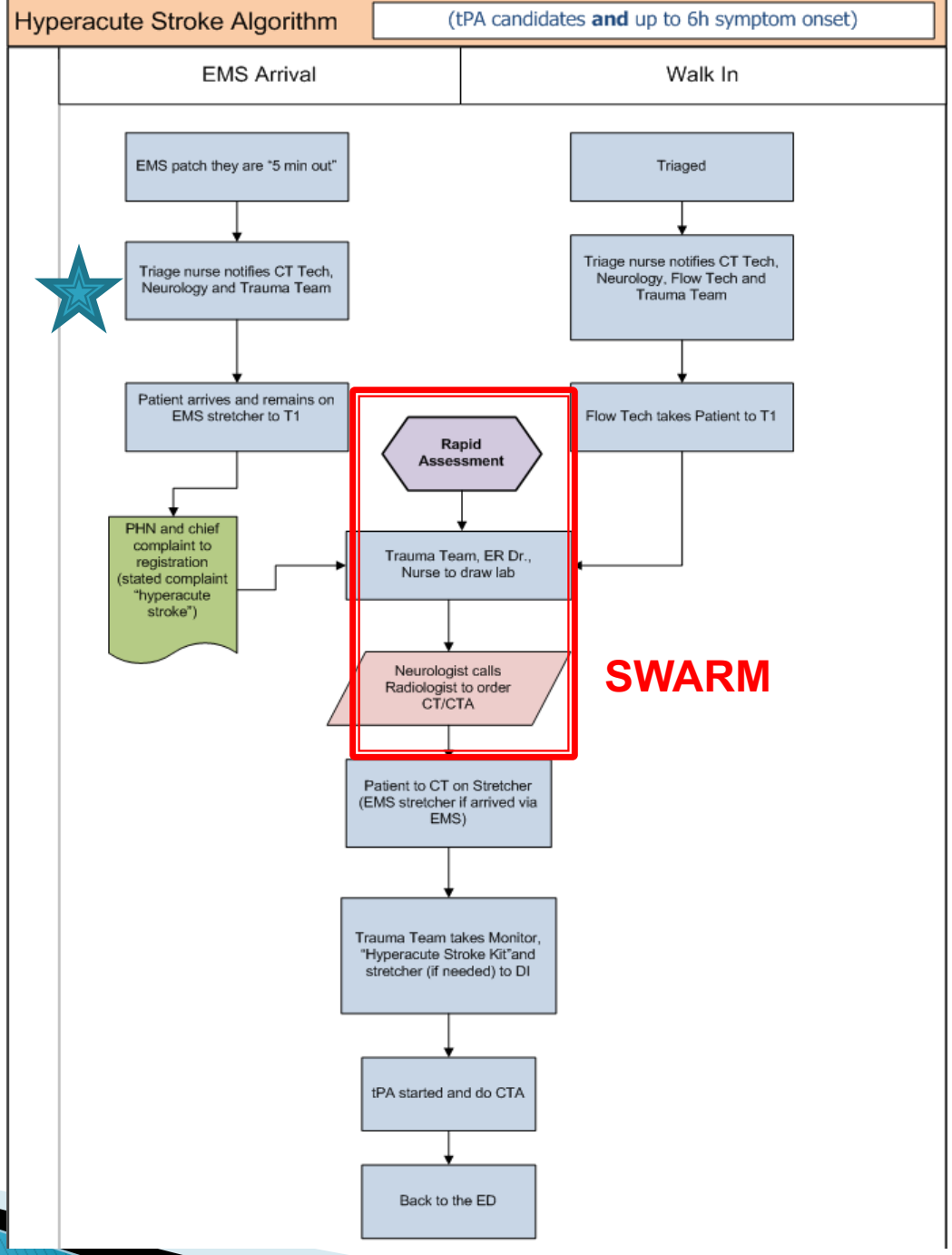
Good is not Good Enough: The Benchmark Stroke Door-to-Needle Time Should be 30 minutes

Can J Neurol Sci. 2014; 41: 694-696

4 Broad Areas of Protocol Improvement

1. Pre-notification stage
2. Patient arrival
3. Imaging/ tPA delivery
4. Post tPA/ feedback

- A key concept in fast treatment is the paradigm of parallel rather than serial diagnostic evaluation and assessment and treatment



1. Pre-notification

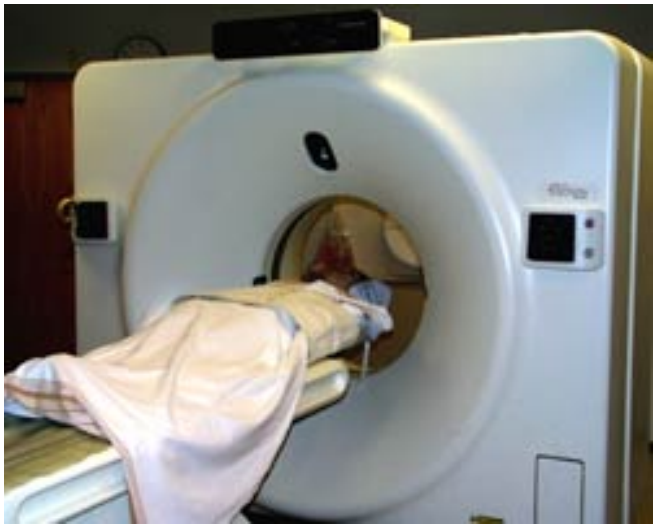
- EMS contact with Triage before arrival, pre-register if possible
- Activate ED physicians, Nurses, Neurologist and DI tech at time of pre-notification

2. Patient Arrival

- SWARM – parallel involvement of ED team, Neurologist for rapid stabilization and transfer to CT
- Consistent flow– to trauma bay
- STAT CT/lab ordered at this time – no delay
- Stay on EMS stretcher
- Use standardized tPA forms/scales
- No catheterization prior to tPA

3. Diagnostic Imaging/tPA Delivery

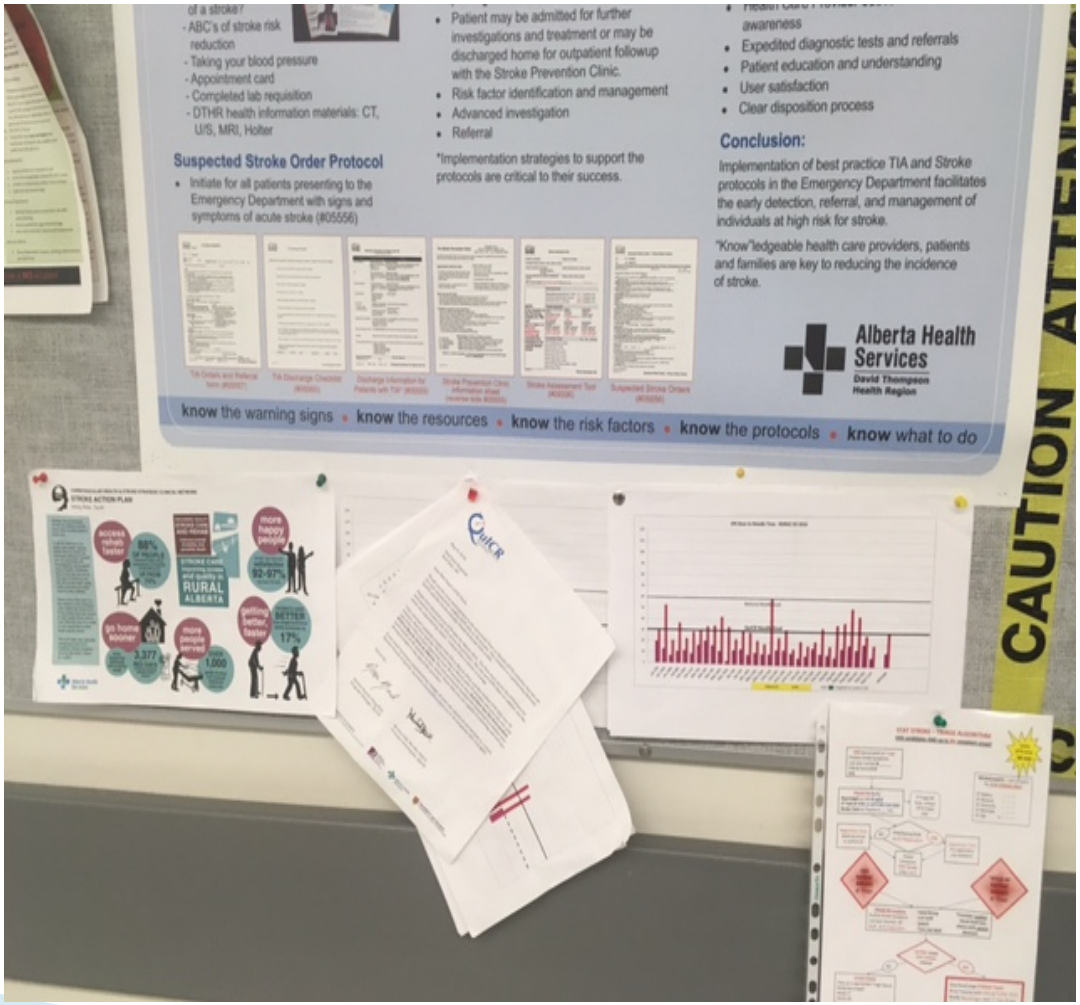
- CT/CTA completed quickly – do not wait for creatinine
- Do not wait for formal radiology report or laboratory results
- tPA bolus may be delivered in CT room immediately after imaging complete



4. Post tPA/Feedback

- Updating every member of team: ER staff, DI, Neurologist
- Regular distribution of DTN times
- Recognition for fast thrombolysis
- Physician leadership engagement
- Targeted continuing professional education
- Administration engaged

ED Stroke ("KNOW BRAINER") Communication Board



Red Deer and QuICR

- Three site visits to RDRHC
- DI staff, Neurology, ED staff, administration included
- Meeting 1: Presentation Dr. Michael Hill
- Meeting 2: New protocol unveiled to group
- Meeting 3: Feedback, celebration of success, patient testimonials

Patient Simulations

- Fall 2015 we had a simulation, new protocol was trialed from start to finish
- Again all key players involved
- Protocol implemented October 1st 2015
- Spring 2016 – ED nursing staff participated in STAT Stroke simulations as part of their annual education

Current Algorithms

Since first algorithm, five updates

Latest Iterations (June 13 2016) –
on-going development in response to stakeholder feedback

STAT STROKE – TRIAGE ALGORITHM
(tPA candidates AND up to 6hr symptom onset)

STAT STROKE – TRAUMA ALGORITHM
(tPA candidates AND up to 6 hour symptom onset)

STAT STROKE – TRIAGE ALGORITHM

(tPA candidates AND up to 6hr symptom onset)

GOAL
DTN time
30 min

NEUROLOGISTS – Cell contacts for **STAT STROKE ONLY**

Dr Bakker	--- --- ----
Dr Bestard	--- --- ----
Dr Heinrichs	--- --- ----
Dr Mortada	--- --- ----
Dr Oje	1+--- --- ----

EMS secure patch to Triage:
Positive Stroke Symptoms
Last seen normal @_____
PHN & Name/DOB
ETA

TRIAGE RN Notify:
Neurologist on Call @ **cell #**
CT Tech @ **4781 or cell # 403 318 3306**
Stroke Team to Trauma in ___ min

If Triage RN busy, contact **CN** to make calls

PHN/Name/DOB to ED Registration

NO

Registration Clerk
Await pt arrival to confirm ID

YES

Registration Clerk
Pre-registration into Meditech

Stated Complaint:
STAT Stroke
CTAS 1 or 2

EMS PATIENT ARRIVES @ Triage

"WALK IN" PATIENT ARRIVES @ Triage

TRIAGE RN Confirms:
Positive Stroke Symptoms
Last Seen Normal < 6h
Pt ID - to ED Registration

Facial Droop
Arm Drift
Speech
Time Last Well

***Consider sudden visual field loss, ataxia with severe dizziness**

PATIENT meets STAT STROKE criteria?

NO

STAND DOWN
Place pt in appropriate Triage Queue
Notify Neurologist
Notify CT
Notify CN

YES

Overhead page **STROKE Team**
Pt to Trauma with EMS or FLOW TECH
Notify Neurologist and CT Tech if not already aware
Ensure chart is being processed

June 13, 2016

STAT STROKE – TRAUMA ALGORITHM

(tPA candidates AND up to 6 hour symptom onset)

GOAL
DTN time
30 min

STAT STROKE PT - EMS
Arrives to Trauma Room with EMS
Pt stays on EMS stretcher
Ensure chart is being processed

STAT STROKE PT – WALK IN
Arrives to Trauma Room with Flow Tech
Pt onto Trauma stretcher – obtain wt
Ensure chart is being processed

EMS/Flow Tech relay quick hx
to **STROKE TEAM, ED PHYSICIAN**
&/or **NEUROLOGIST**

Neurology &/or ED DR
RAPID ASSESSMENT ONLY
Confirm Hyperacute criteria
Order Suspected Stroke Protocol
Speak to Radiologist if not already done during pre-notification
Order **CT/CTA Head & Neck**
- Sign req

Nurses – Rapid Assessment Only
Ensure VS NVS and **CBG** done
Ensure IV x 2 - at least one 18 G
- draw labs with start if able
- CTA compatible cap – no extension
Ensure STAT Lab drawn before CT **if able**
*No need to undress pt
*Avoid indwelling catheter

Unit Secretary
Call CT to confirm pt arrival
Enter Suspected Stroke
Order set into Meditech
Place Suspected Stroke and tPA protocols on chart
Fax req or send with pt
ECG & CXR after tx decision

PATIENT
confirmed STAT STROKE?

NO

STAND DOWN
Unit Secretary - **Notify CT & CN**
Stroke Team – Transfer pt to trauma stretcher and proceed with assessment and treatment

YES

PATIENT to CT with Stroke Team and EMS if present
Stroke Team brings trauma bed, CT req, tPA protocol (Neurology to complete)
EMS departs with stretcher once pt on CT table

CT/CTA COMPLETE
Neurologist – communicates tPA tx decision to Stroke Team
One RN begins tPA preparation in trauma room

tPA recipient

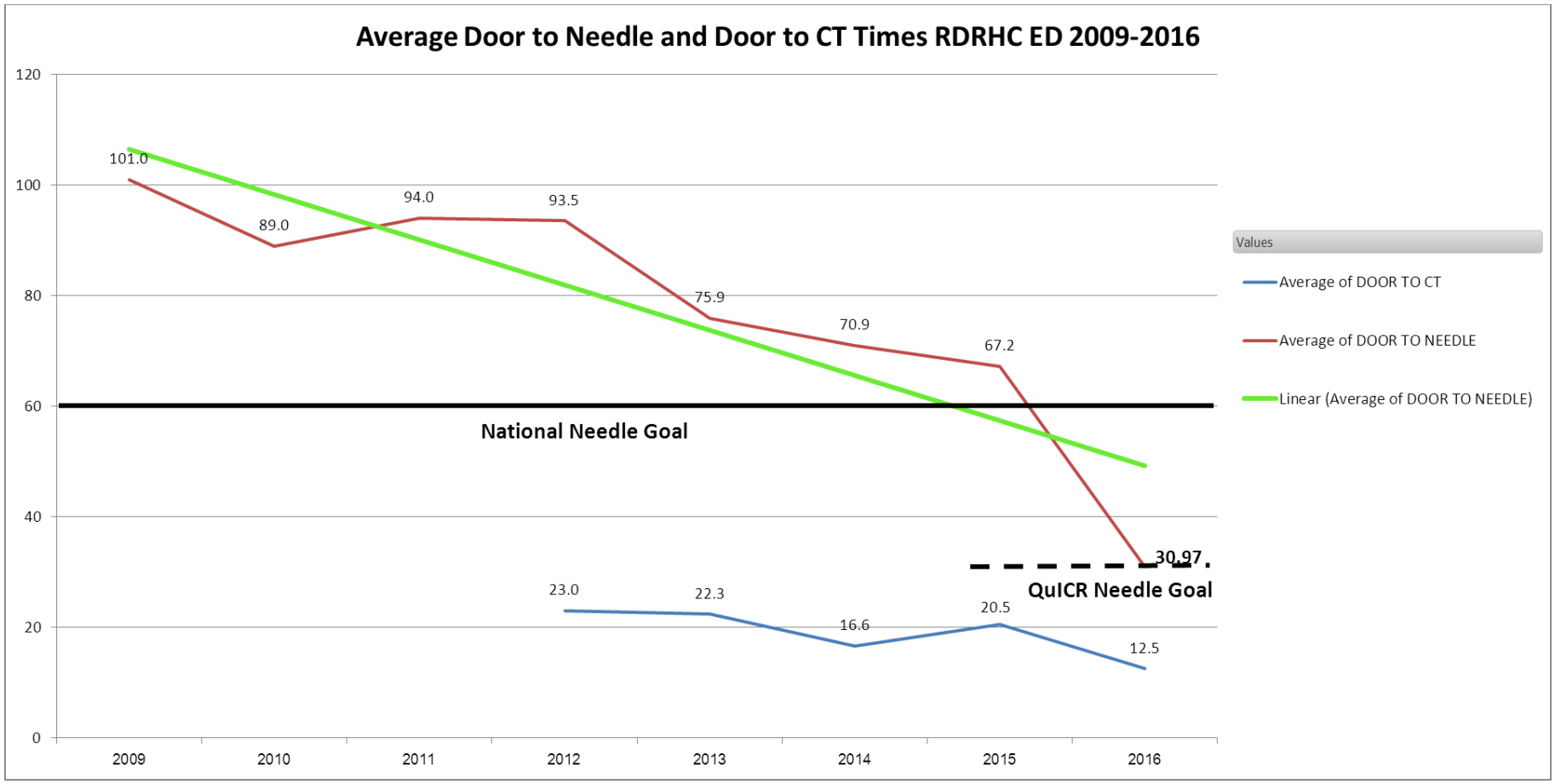
tPA ADMINISTRATION
Move pt onto trauma bed from CT
Obtain pt weight for dosing if not done
Pt returns to Trauma room for tPA administration as per protocol
Admit to ICU or transfer out for Endovascular Therapy

If pt to be transferred for endovascular therapy, CN will coordinate with neuro & RAAPID

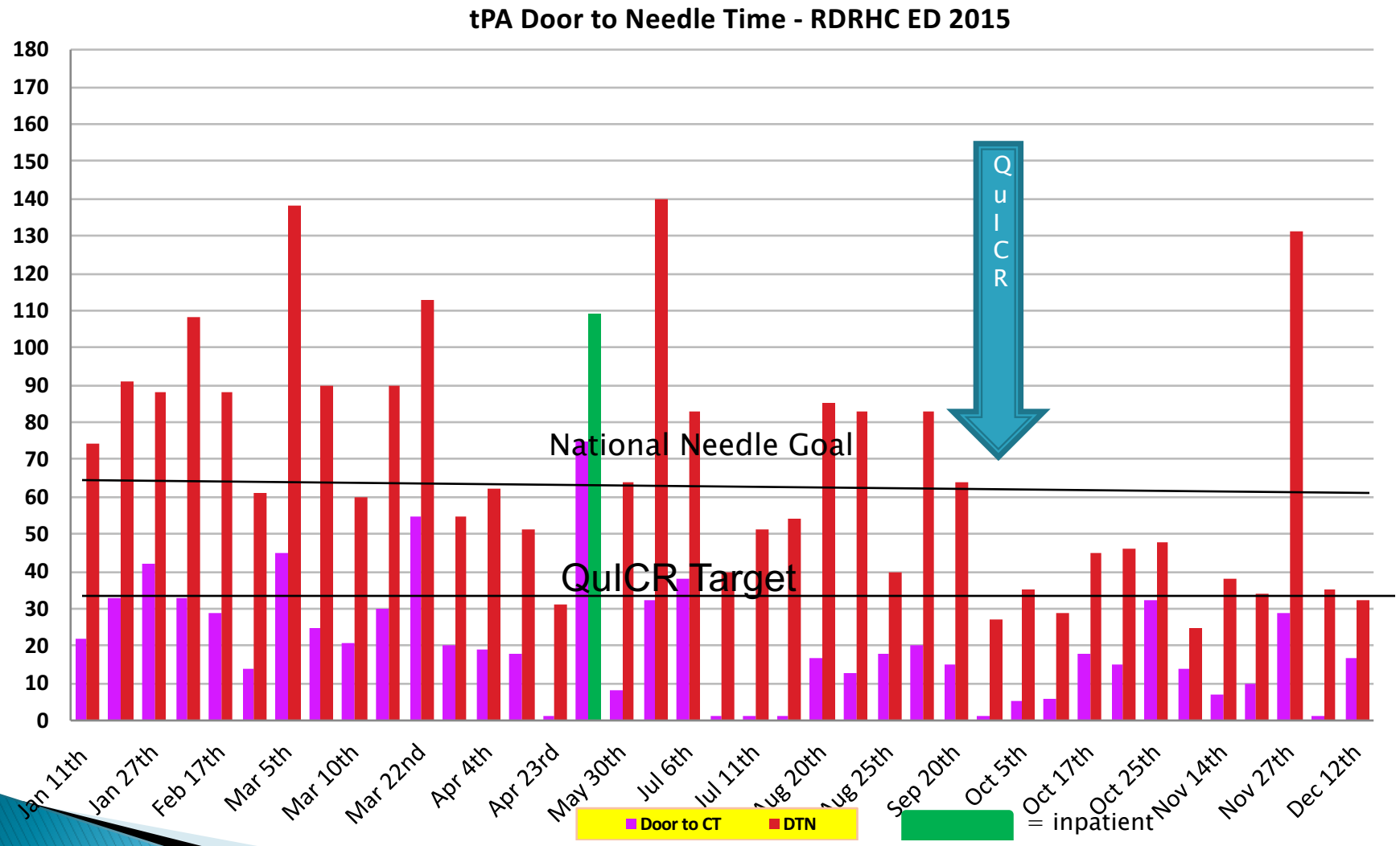
GOAL
Door In Door Out
45 min

June 13, 2016

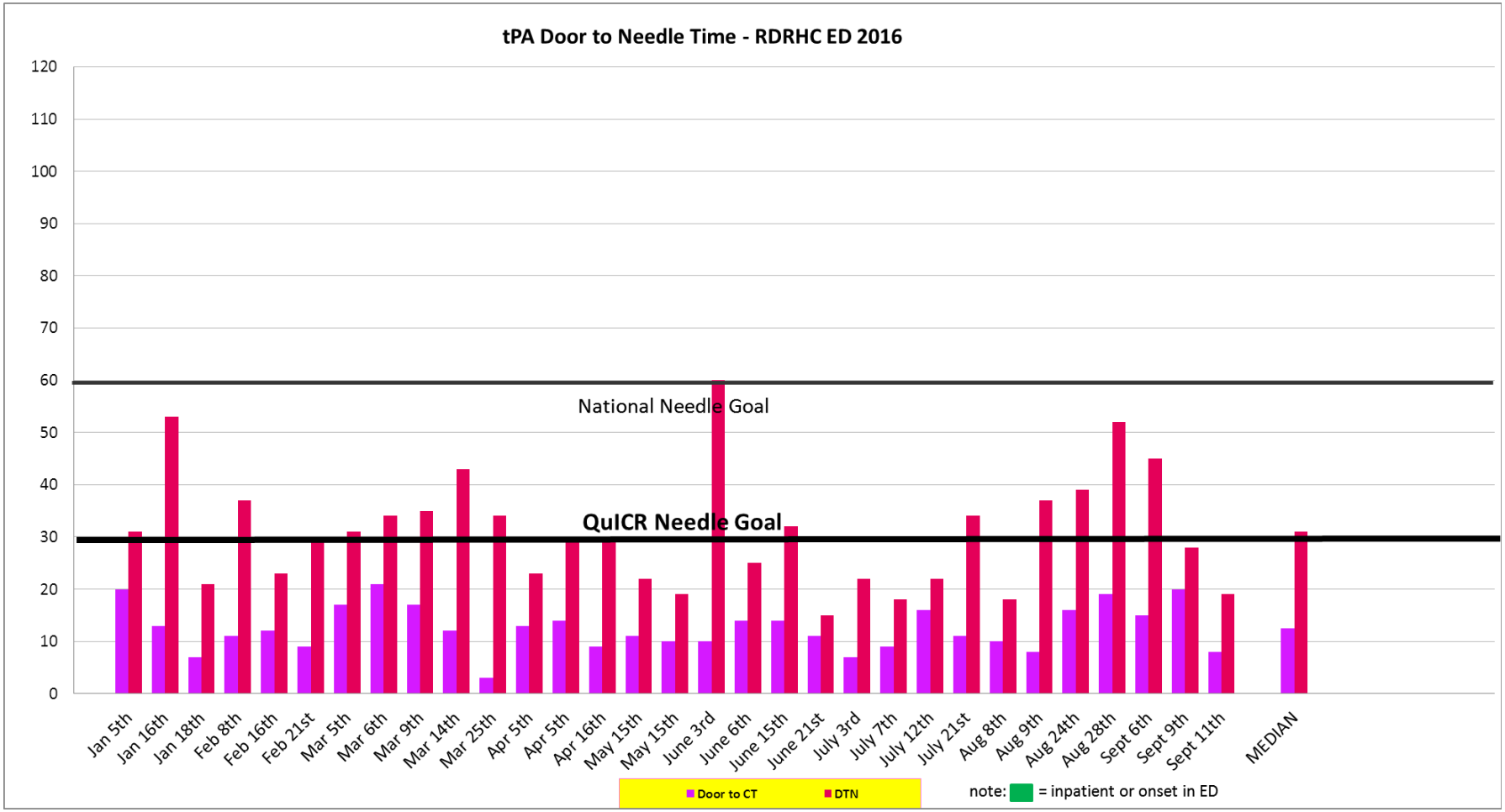
Local Progress: DTN

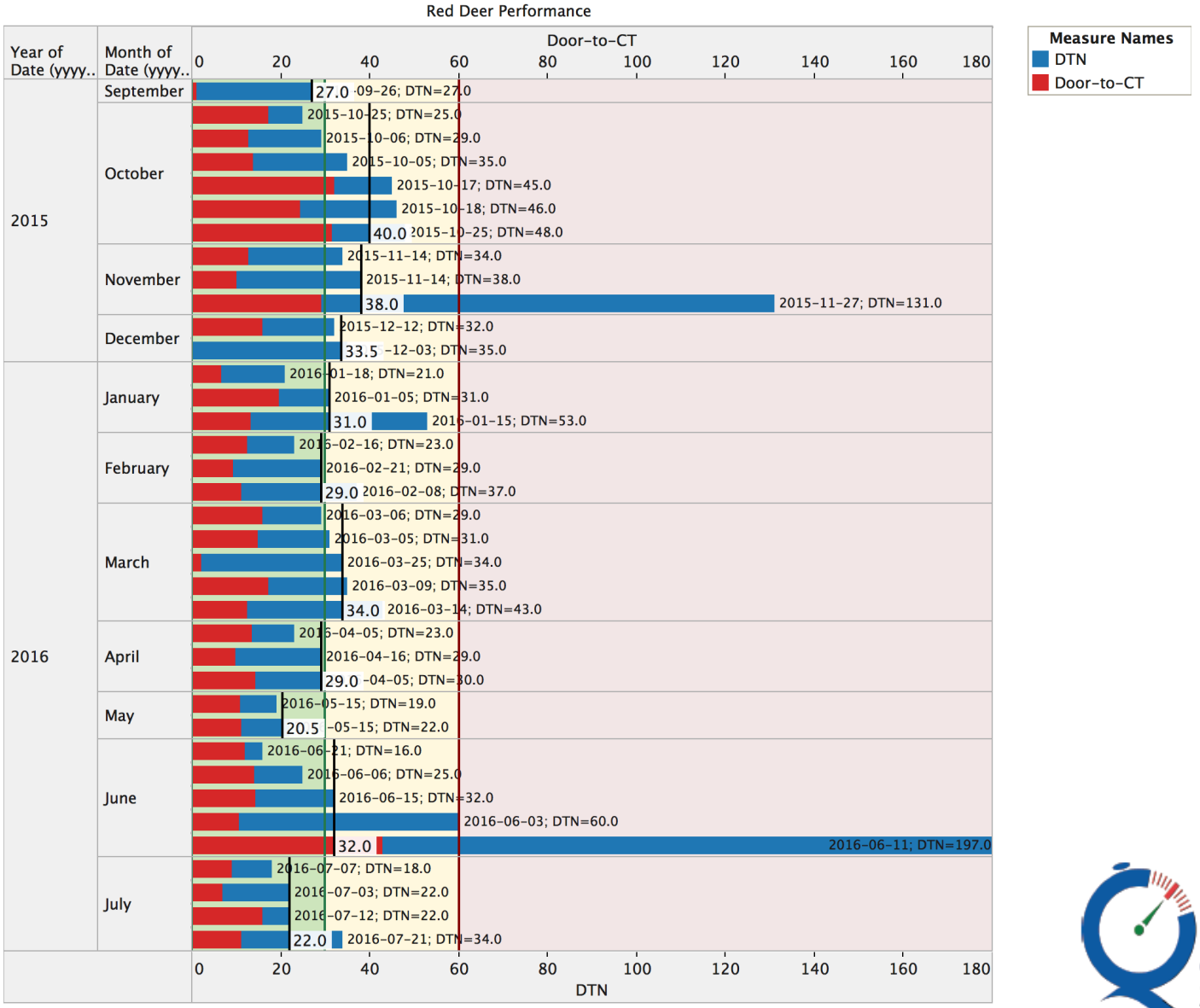


2015 DTN Data Red Deer



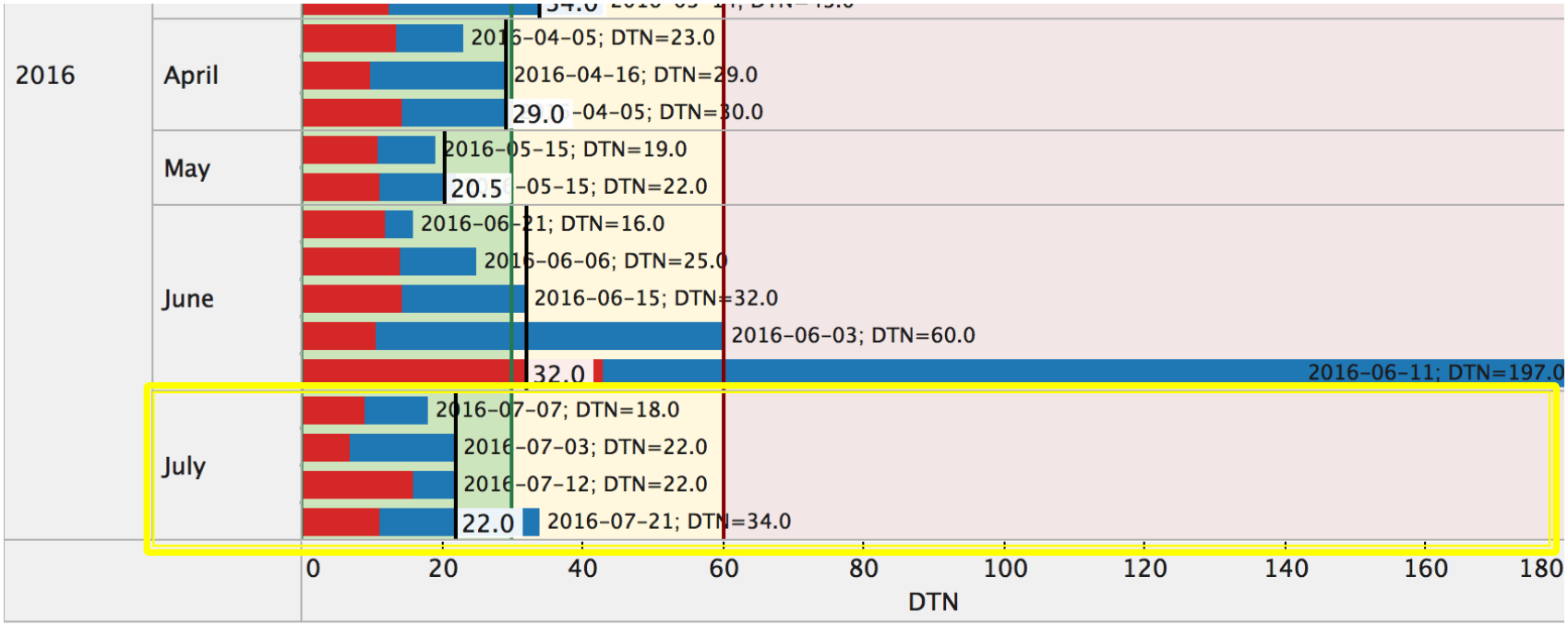
2016 DTN Data Red Deer





Door to Needle times and Door to CT times for Red Deer Regional Hospital since the start of the QuICR DTN initiative. Median is shown by verticle line for each month.

QuICR
Quality Improvement & Clinical Research
Alberta Stroke Program



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Future Directions

- DTN in-patient (plan to develop Code Stroke)
- Remote viewing
- Rural referral process – ex Direct to CT, Stat stroke (from Rural hospital not FAST)
- Neurology coverage
- DIDO for endovascular
- *Open to discussion*

Thank You

- Truly a team effort and success at all levels
- EMS, ED staff, DI staff, nursing, physicians, pharmacists, lab, admitting and others
- QuICR project, SCN and local administration