Quality Improvement Project

Dr Lee Barnicott

Post CCT Fellow EM/ PHEM, UHS/HIOWAA

Problem

- >65yrs
- ?c-spine injury

- Aim

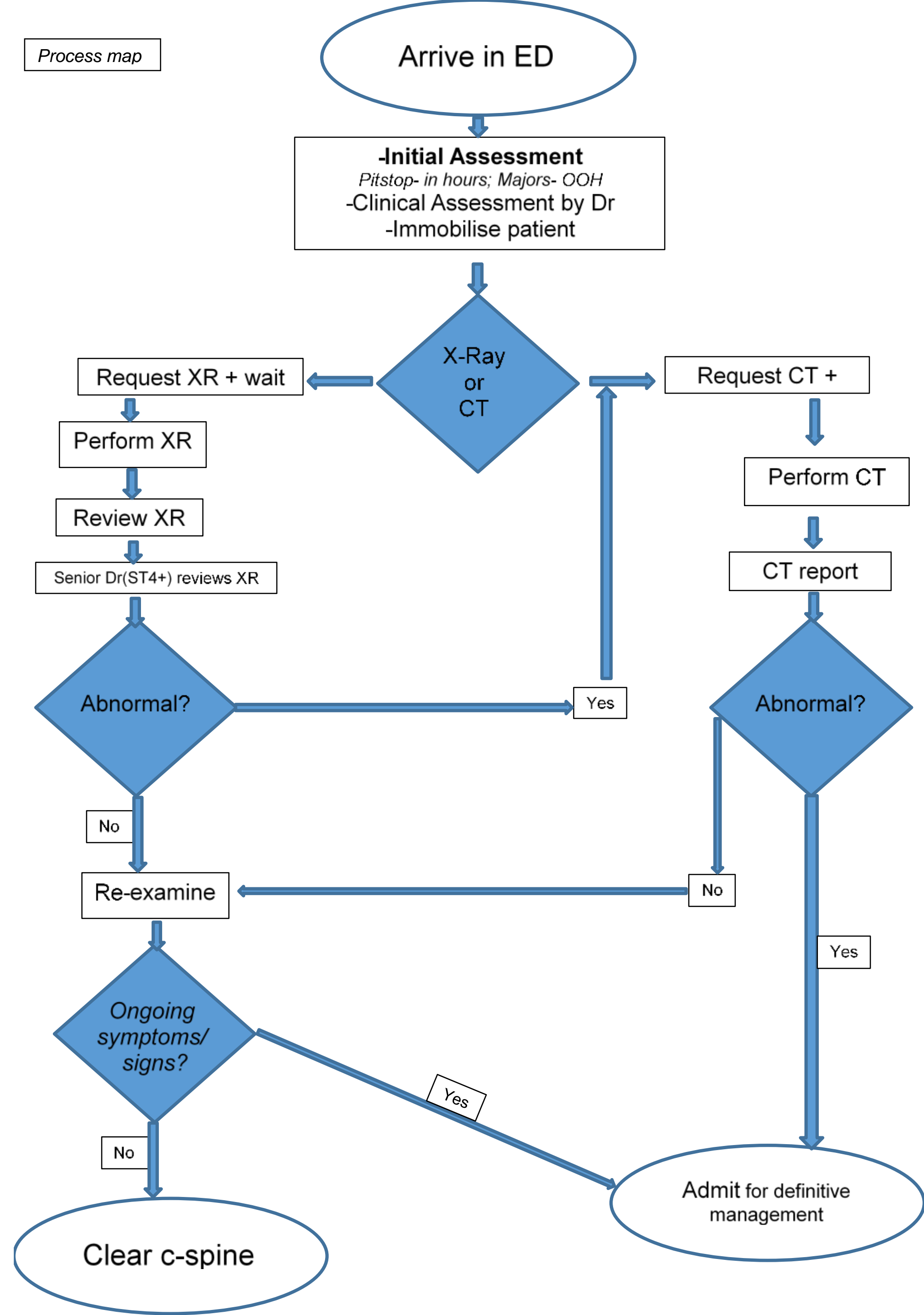
  "Reduce the risk of potential complications of c-spine immobilisation & standardise care for all patients aged >65yrs presenting with suspected c-spine injury compared to current departmental practice & national guidance."

What did we do?

- **Identified** problem
- "**Process Map**"
- Stakeholders & **team**

- **Measured** problem (quantitatively & qualitatively)

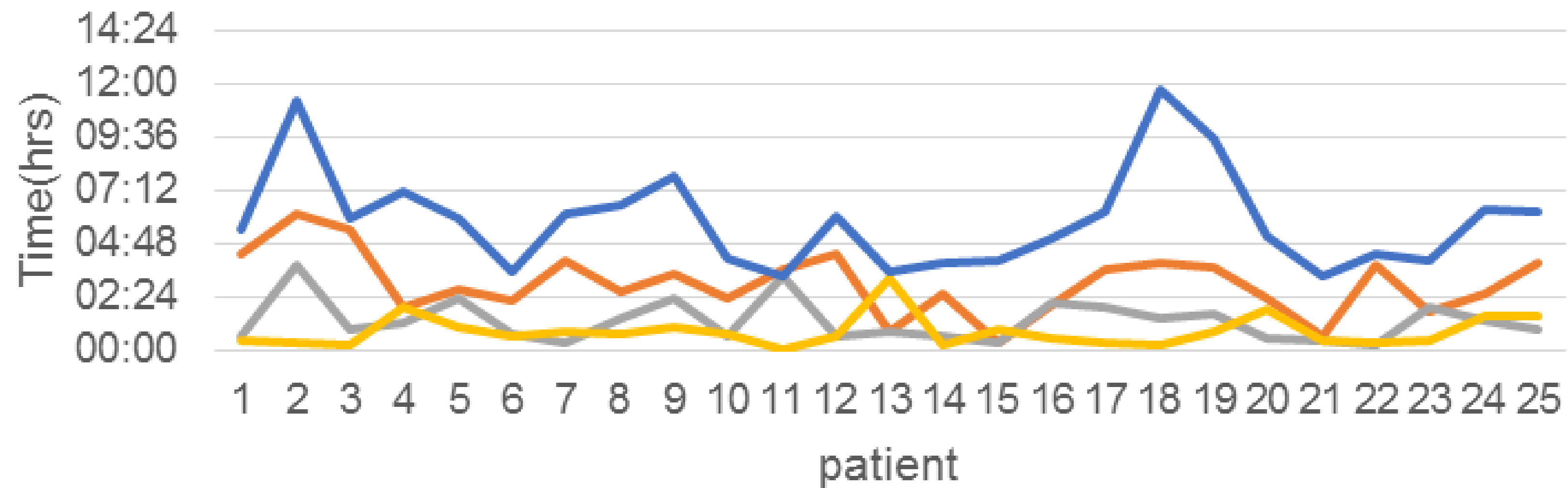
- **Interventions** selected



Process map
Arrive in ED
-Initial Assessment
Pitstop- in hours; Majors- OOH
-Clinical Assessment by Dr
-Immobilise patient
X-Ray
or
CT
Request XR + wait
Perform XR
Review XR
Senior Dr(ST4+) reviews XR
Abnormal?
Yes
No
Re-examine
Ongoing
symptoms/
signs?
No
Yes
Clear c-spine
Request CT +
Perform CT
CT report
Abnormal?
No
Yes
Admit for definitive
management

Who?	Why chosen?	Contribution	Means of engagement
EM Consultants/SpRs	Required to assess patients & request CTs	Commented on wording of pathway & consensus opinion on c-spine immobilisation	Presented at senior meeting; Email Informal discussions
Nursing staff (band 5/6/7s)	Required to provide nursing intervention and help in timely flow of patients through the pathway	Advised on issues with existing process in practice	Teaching Nursing handover Informal discussions
MAPs	Will lead initial assessment at PitStop- need to recognise patients	Feedback on proposed pathway; Perform initial assessment	Teaching Informal discussion e-mail information
Nurse Lead for Majors	To advise on issues relevant to Majors area	Fed back on issues relevant to patient stay in Majors ie. How CT reports are received and actioned; transfer requirements & impact on nursing team	Informal discussion Email exchange
MSK Radiologists	Will report CTs	Agreed to report scans during trial and of moving to CT first line system	Meetings with our team Radiologist
Radiology SpRs	Will receive CT requests	Took CT requests during trial	Meetings with our team Radiologist
CT Radiographers	Will scan patients; Needed to be aware some patients may not be collared	Performed CT scans	Correspondence with our team Radiologist
ED & Radiology Governance groups	Needed to approve new process	Fed-back on proposed pathway; Approved new pathway	Attended governance meeting (myself-ED; Radiologist-Radiology)

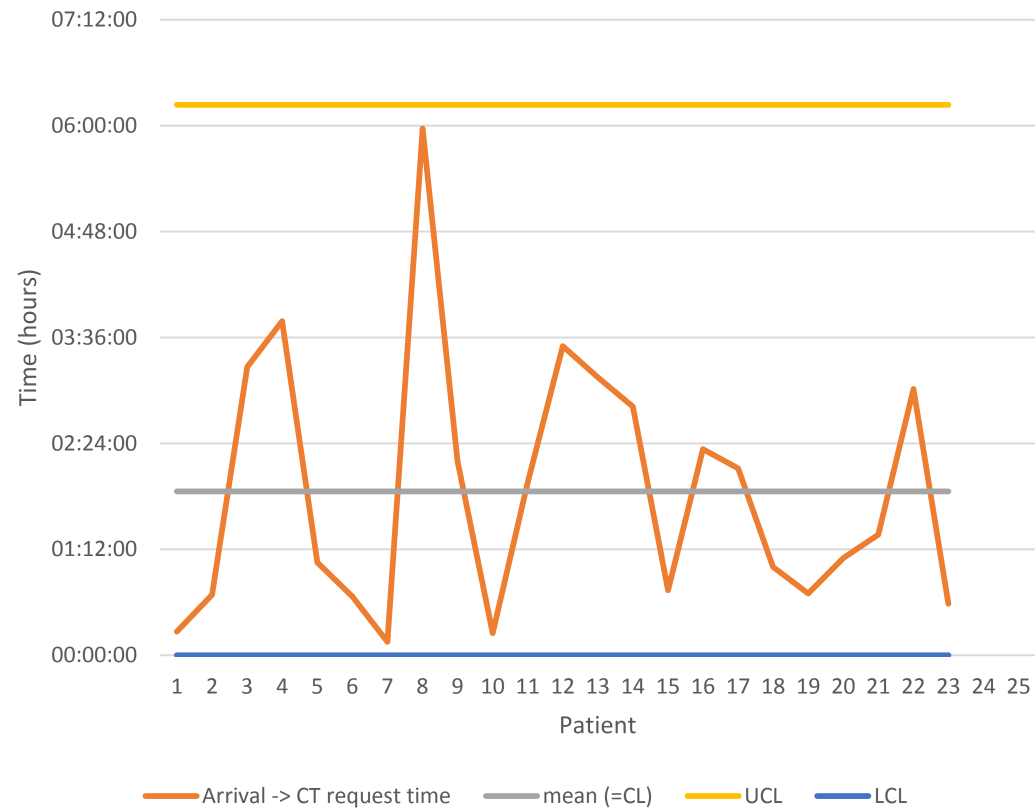
Who?	Why chosen?	Contribution	Means of engagement
EM Consultant	Mentor; Interest and previous work in the topic; Helped engagement with senior medical team; Provided credibility	Mentored me through QI process; Provided credibility to the project when engaging with external stakeholders ie. Radiology	Regular meetings Informal conversation Regular Email contact
F2 Dr	Looking to pursue career in EM; keen to learn about QI	Data collection	Weekly meetings when collecting data
Charge Nurse/MAP	Key nursing stakeholder; Keen interest in topic; Works in PitStop & will be responsible for initial assessment	Feed-back on process; Collated feedback from nursing staff; Education of nursing staff and MAPs;	Regular email contact; Informal conversation Regular meeting
Lead Nurse for PitStop	Leads on Initial Patient assessment in PitStop; Liaison with PitStop management group	Feed back on process; Input to new pathway; Dissemination to PitStop tea,	Regular email contact; Informal conversation Regular meeting
Radiologist	MSK Radiologist interested in topic; Radiology expertise; Liaison with Radiology service	Expertise on evidence Liaison with rest of Radiology	Meetings at key points Regular e-mail contact

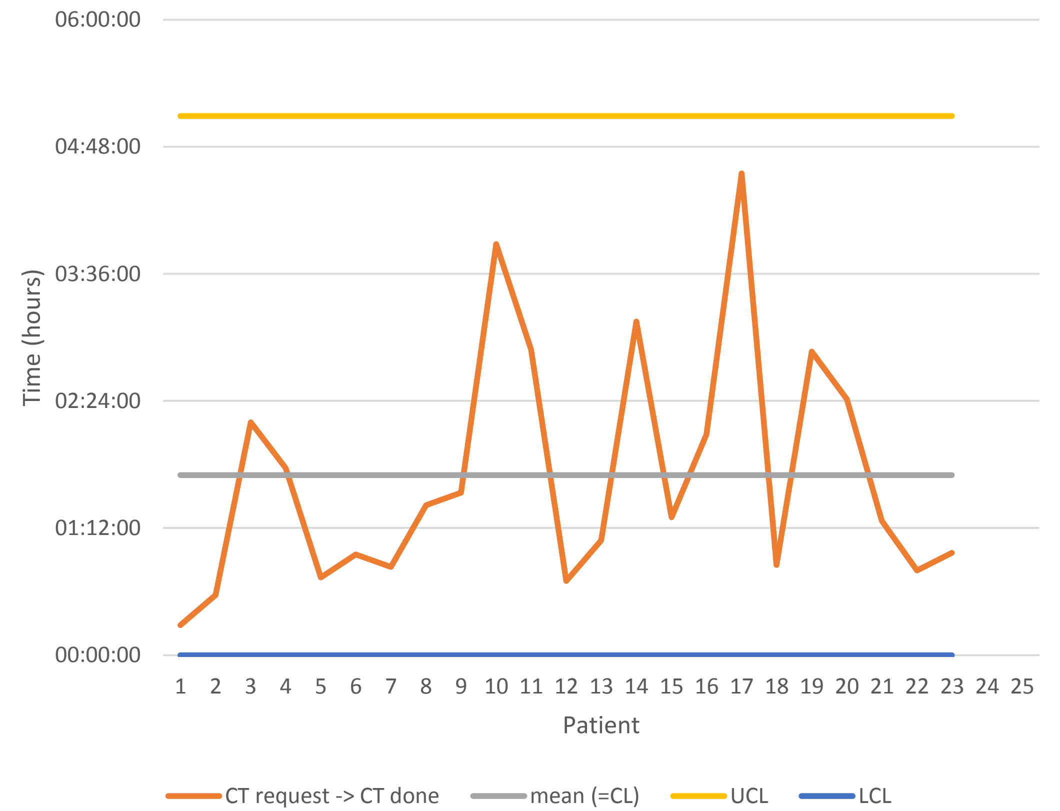

Run chart of key process measures
Time(hrs)
14:24
12:00
09:36
07:12
04:48
02:24
00:00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
patient
1. Arrival -> CT request time (mean 03:00 +/-01:24hrs)
2. CT request -> CT done (mean 01:17 +/-00:56hrs)
3. CT done-> CT report (mean 00.50 +/-00.40hrs)
4. time of arrival-> neck clearance (mean 05:52 +/-02:16hrs)

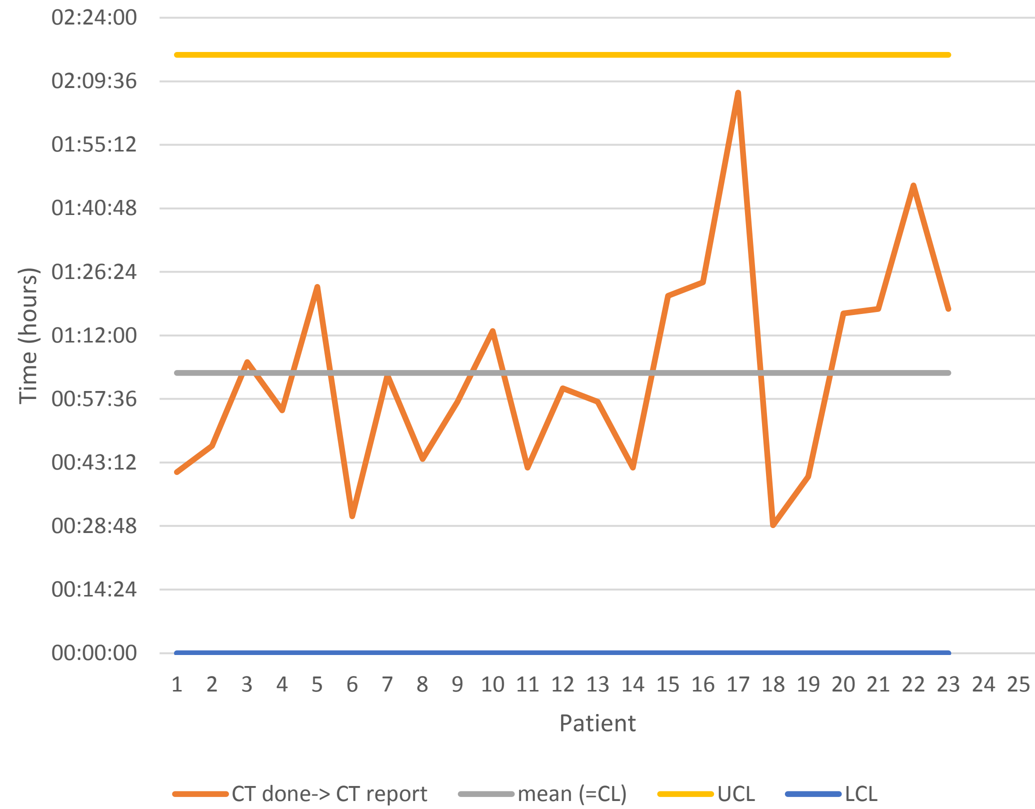
Aim 1.	Primary Drivers	Secondary drivers	Tertiary drivers
		Change dogma	re-training of all staff groups required
			agreement of ED senior medical staff
			agreement of spinal team
	1. Do not immobilise at all	Risk of neurological injury in patients with unstable spines	
		Paucity of evidence to do this in hospital practice	
		Improve access to CT as first imaging modality	MSK Radiologists in agreement & able to report scans
			CT scanner available
			Staff available to transfer pt to CT
	2. Reduce duration of immobilisation		Portable suction available to go with pt to CT
		Reduce delay to imaging being requested	Staff available to request imaging?
			enough computers?
			printers working?
			computers working?
		Reduce delay to imaging being done	phone available to phone Radiographers/Radiologist & advise imaging of c-spine needed
			someone answers phone
			Staff available to transport pt to XRay
Reduce the risk of potential complications of c-spine immobilisation & standardise care for all patients aged >65yrs presenting with suspected c-spine injury compared to current departmental practice & national guidance.”			Radiographer available
			Experienced ED Dr available to r/v X-Rays
		Reduce delay to imaging & patient being reviewed once imaging is complete	Majors staff (NIC/Majors medical driver) aware pt has had X-Ray
			Radiologist available to report images
			Radiologist able to communicate report to ED medical staff
	3. Mechanism of immobilisation	triple(collar+blocks+tape)	
		blocks+tape	
		collar only	soft
			rigid
			semi-rigid ie. Philadelphia
		Flat	
	4. Position in which immobilised	Head up	tiltable trolley
			Staff- awareness that trolley can be tilted head up/pt sat up if no concerns wit rest of spine
	5. Communication	Patient able to verbalise concerns/questions	Cognitive impairment (acute/chronic)
			can speak
			can attract attention of staff
			patient has alarm call buzzer

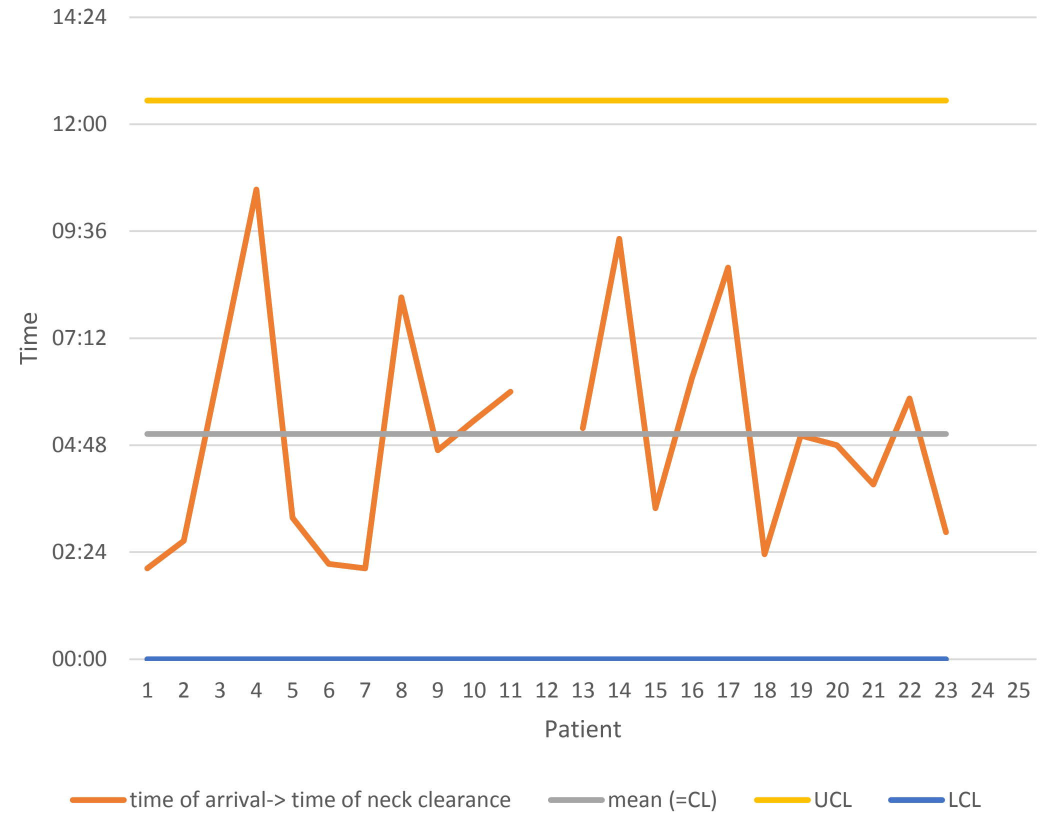
Implementation

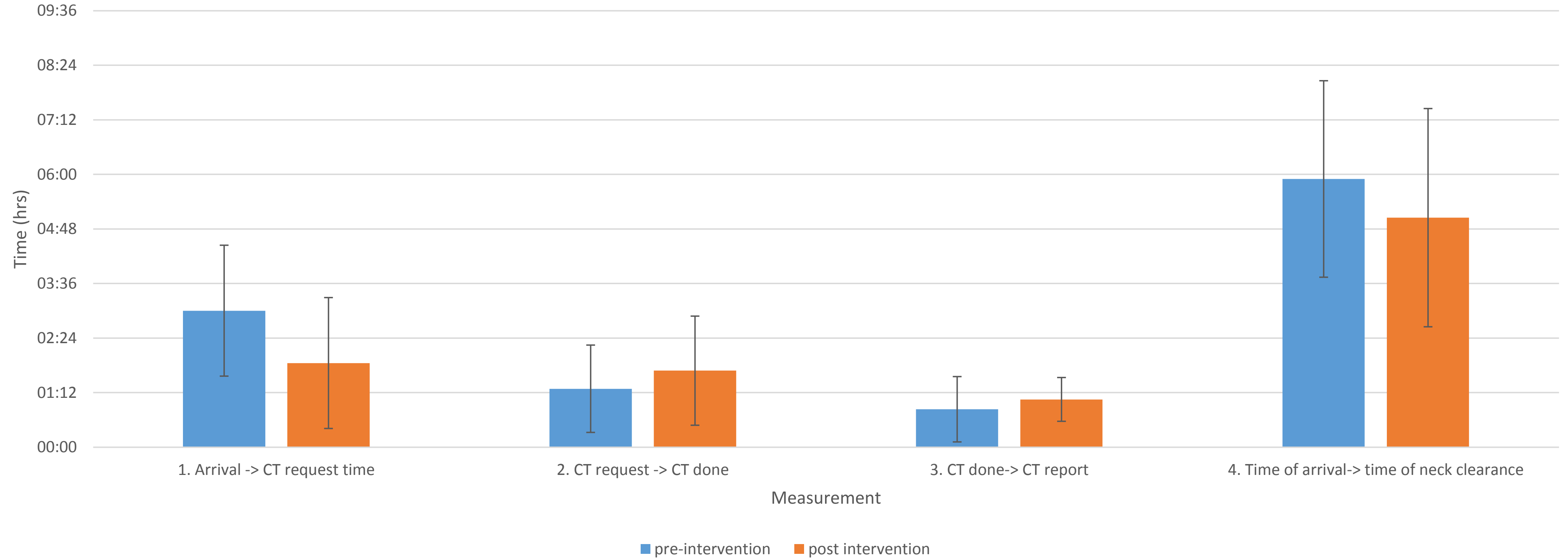
- Engagement of Radiology/ ED team
- New pathway
- Pathway trialled
- Measured
- Continued…


Post intervention (Jun-Oct 16) arrival->CT request
07:12:00
06:00:00
04:48:00
03:36:00
02:24:00
01:12:00
00:00:00
Time (hours)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Patient
Arrival -> CT request time
mean (=CL)
UCL
LCL


Post intervention (Jun-Oct 16) CT request-> CT done
06:00:00
04:48:00
03:36:00
02:24:00
01:12:00
00:00:00
Time (hours)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Patient
CT request -> CT done
mean (=CL)
UCL
LCL


Post intervention (Jun-Oct 16) CT done-> reported
Time (hours)
02:24:00
02:09:36
01:55:12
01:40:48
01:26:24
01:12:00
00:57:36
00:43:12
00:28:48
00:14:24
00:00:00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Patient
CT done-> CT report
mean (=CL)
UCL
LCL


Post intervention (Jun-Oct 16) arrival -> clearance/admission
Time
14:24
12:00
09:36
07:12
04:48
02:24
00:00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Patient
time of arrival-> time of neck clearance
mean (=CL)
UCL
LCL


Summary of measures pre+post CT introduction
(Jun-Oct 2016)
09:36
08:24
07:12
06:00
04:48
03:36
02:24
01:12
00:00
Time (hrs)
1. Arrival -> CT request time
2. CT request -> CT done
3. CT done-> CT report
4. Time of arrival-> time of neck clearance
Measurement
pre-intervention
post intervention

Challenges

- What to measure
- Time management, keeping things moving
- Stakeholders beyond the team
- Not working in the same trust!
- Sustainability

What did I learn?

- **Quality Improvement methodology and tools**
  - Process maps
  - Driver Diagrams
  - PDSA cycles
  - Measures *process v outcome*

- *Alternative approach to systemic problem solving.*

- Time & team management
- Analyst teams are available!

Questions?