Door-to-CT: Stake the Stroke

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Background:

Delayed diagnosis in patients with acute ischemic stroke in the Emergency Department (ED) still represented a blind spot in the assessment of quality health care indicators.

Aim

To evaluate a fast track program to reduce door to CT time and thrombolytic therapy in patients with suspected stroke.

Methods

We collected clinical data on all stroke patients (n=577) admitted to the ED and compared the adherence to clinical guidelines before (2015; n=309) and after (2016; n=268) the intervention program was implemented. The program comprised of five steps:

1. The ED nurse and neurologist receive an announcement of the imminent arrival of a stroke patient.

2. The staff wait for the patients in the shock room.

3. The neurologist performs a rapid assessment according to the NIHSS and simultaneously the nurse assesses the vital signs and takes a blood tests.

4. The nurse contacts the CT unit.

5. A rapid exit (less than 15') from the shock room.

Results

After implementing the intervention program, the median time to CT was 31' compared to 51' (p<.001); In 2016, patients received a neurologist evaluation within 10' (72.3%) compared to pre- intervention (56.6%) (p=0.04); and more patients stayed in the ED for less than 60' (68.2% and 41.7%, respectively, p=0.001). It clearly appears that when comparing post- to pre-intervention, less time lags (in minutes) were measured in patients whose clinical guidelines were not achieved before the program.

Clinical guidelines	Adherence to time lags (n=577)		Improvement difference	P value
	Pre intervention n=309	Post intervention n=268		
Triage within 5'	125 (40.5)	196 (73.1)	32.6	.001
Neurologist assessment within 10'	175 (56.6)	194 (72.3)	15.7	.04
CT within 15'	74 (23.9)	142 (52.9)	30	.000
Decision within 60'	129 (41.7)	183 (68.2)	26.5	.001
Hospitalization within 90'	63 (20.3)	114 (42.5)	22.2	.01

Table 1: Adherence to clinical guidelines in patients with suspect stroke (n=577) before and after the intervention program
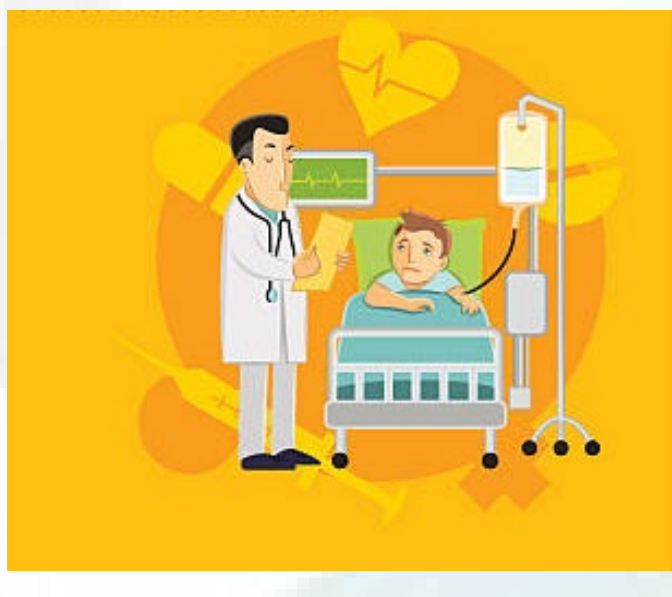
Clinical guidelines		Adherence to time lags (in minutes)		P value
		Pre intervention	Post intervention	
Triage	≤5'	7.65±3.84	3.36±4.69	<0.001
	>5'	27.35±14.34	18.81±5.6	0.01
Neurologist assessment	≤10'	7.95±2.74	5.69±2.83	0.05
	>10'	34.55±14.21	20.26±7.29	0.03
CT scan	≤15'	25.48±10.37	18.83±10.28	0.02
	>15'	70.25±30.24	52.86±13.51	0.004
Decision	≤60'	37.93±11.54	32.91±14.8	0.10
	>60'	126.18±59.63	72±9.67	<0.001
Hospitalization	≤90'	66.88±17.2	60.57±19.63	0.12
	>90'	164.61±53.89	115±32.25	0.01

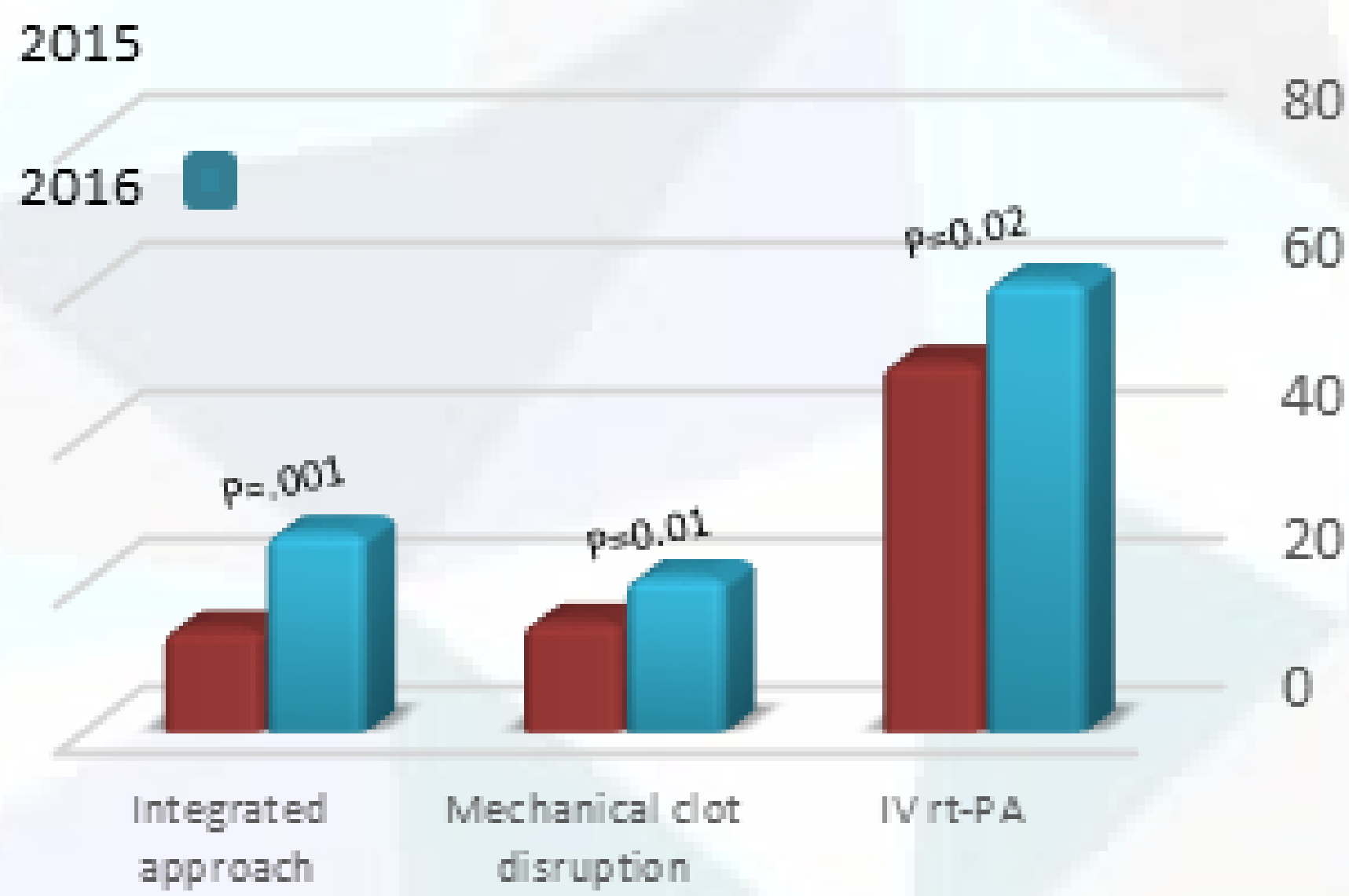Table 2: Time lags in relation to clinical guidelines before and after intervention

Figure 1: Development in the volume of activity over the study period

Conclusion

Attaching a case manager to perform a rapid assessment of patients with acute ischemic stroke reduced the time for patients to receive at CT.