

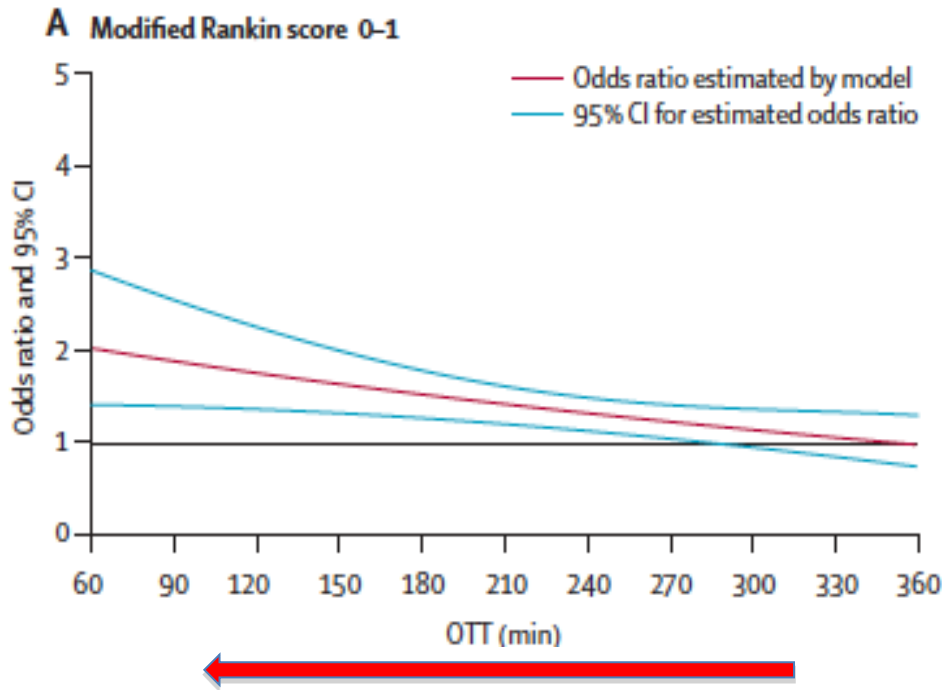
Faktory ovlivňující čas od přijetí do  
nemocnice k léčbě intravenózní  
trombolýzou.

R.Mikulík

FN u sv. Anny v Brně

# Time to treatment with intravenous alteplase and outcome in stroke: an updated pooled analysis of ECASS, ATLANTIS, NINDS, and EPITHET trials

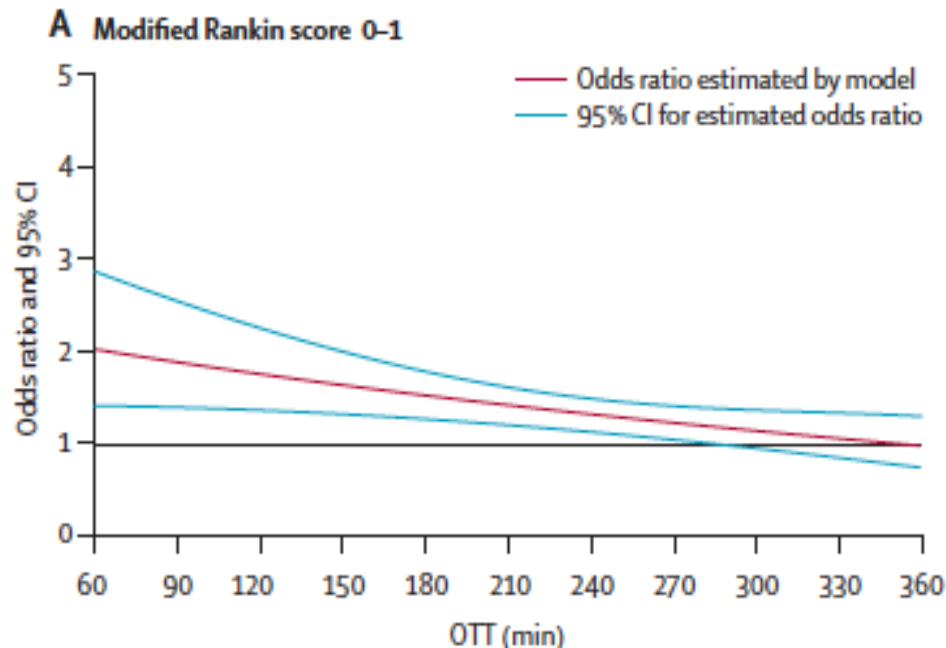
Kennedy R Lees, Erich Bluhmki, Rüdiger von Kummer, Thomas G Brott, Danilo Toni, James C Grotta, Gregory W Albers, Markku Kaste, John R Marler, Scott A Hamilton, Barbara C Tilley, Stephen M Davis, Geoffrey A Donnan, Werner Hacke, for the ECASS, ATLANTIS, NINDS, and EPITHET rt-PA Study Group Investigators\*



Čím dříve je zahájena léčba trombolýzou, tím lepší prognóza

# Time to treatment with intravenous alteplase and outcome in stroke: an updated pooled analysis of ECASS, ATLANTIS, NINDS, and EPITHET trials

Kennedy R Lees, Erich Bluhmki, Rüdiger von Kummer, Thomas G Brott, Danilo Toni, James C Grotta, Gregory W Albers, Markku Kaste, John R Marler, Scott A Hamilton, Barbara C Tilley, Stephen M Davis, Geoffrey A Donnan, Werner Hacke, for the ECASS, ATLANTIS, NINDS, and EPITHET rt-PA Study Group Investigators\*



ODT

DNT

# Hypotéza

- Existují faktory (např. charakteristiky pacientů), které predikují skutečnost, že pacient je léčen trombolýzou do 60 minut od přijetí do nemocnice.

## Cíl

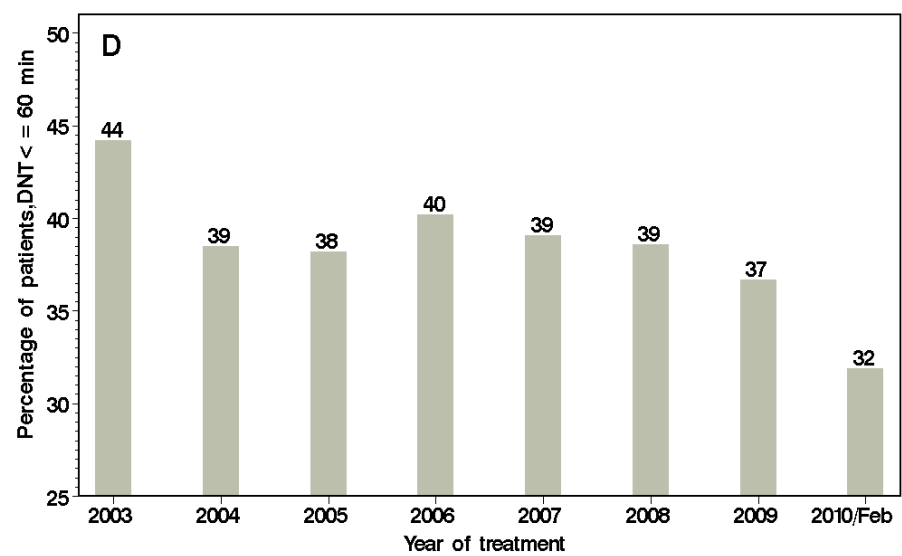
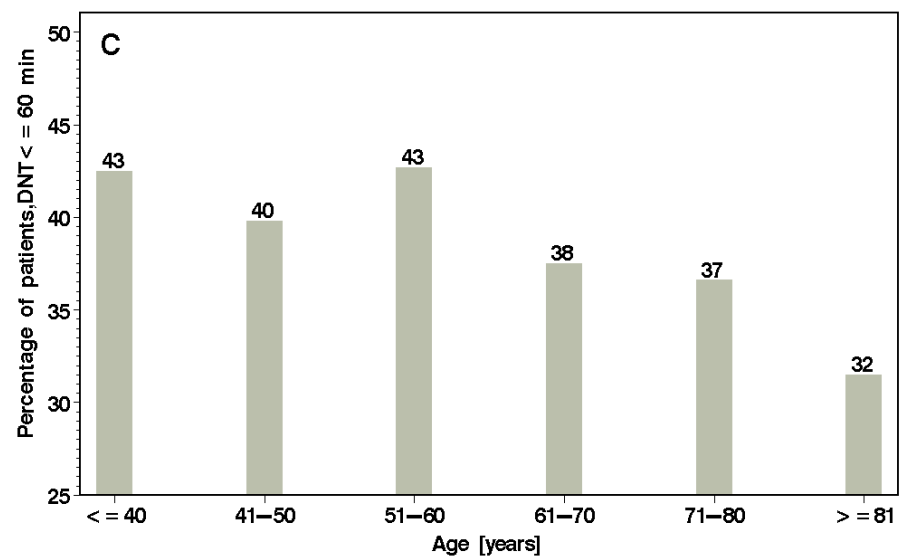
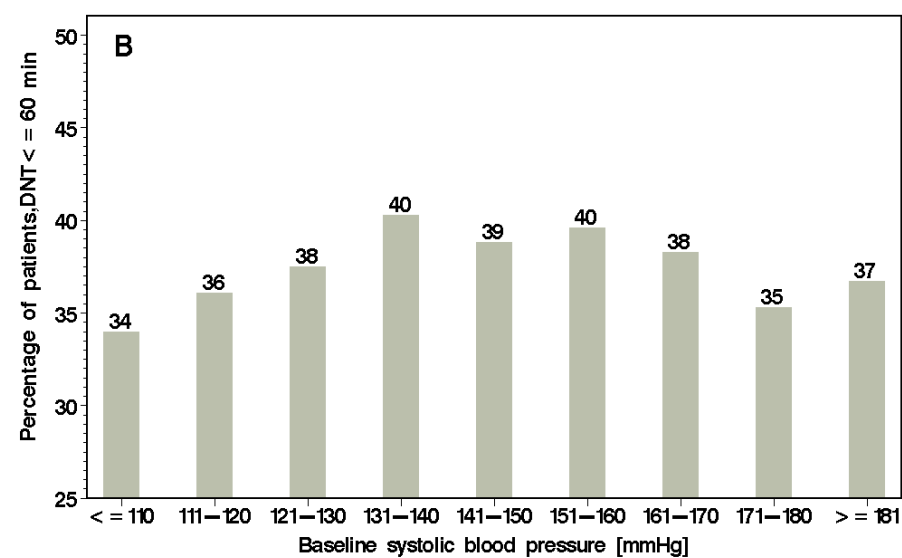
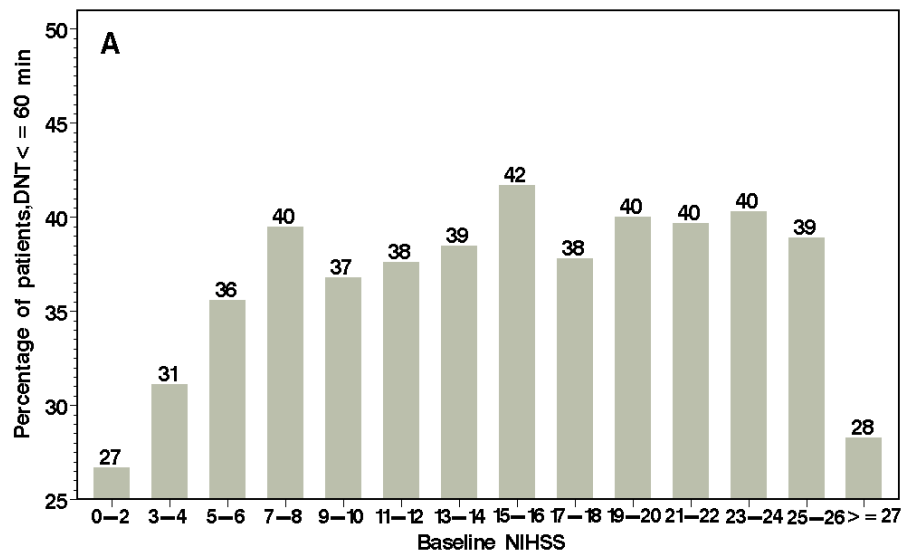
- Identifikace faktorů asociovaných s  $DNT \leq 60$  minut (door-to-needle time)

- Analýza SITS- EAST registru
- Období 2/2003 - 2/2010
- Účastní se 9 zemí: Chorvatsko, ČR, Estonsko, Maďarsko, Litva, Polsko, Slovensko, Slovinsko, Turecko.
- Celková populace 78 milionu
- Více jak polovina pacientů s ČR

# Výsledky

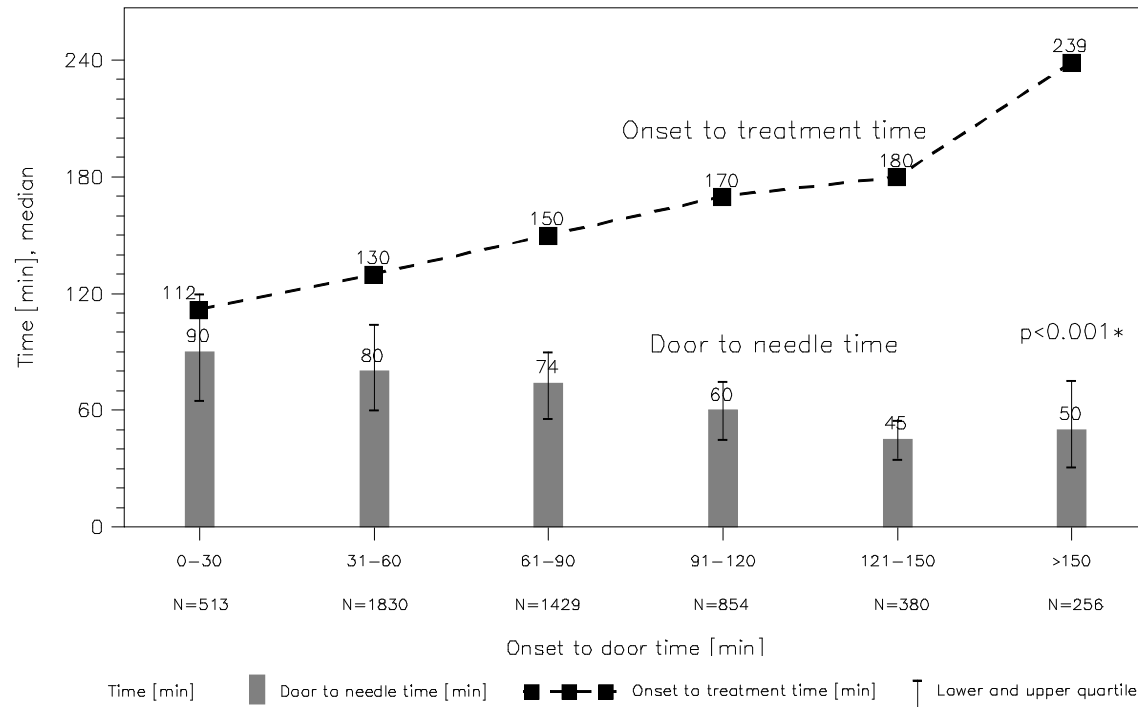
- 5563 pacientů léčených trombolýzou v okně  $\leq 4.5$  hodiny ve 124 centrech.
- Median DNT byl 71 minut (IQR 52-95).
- 2097 (38%) mělo DNT  $\leq 60$  minut.
- V jednotlivých centrech byli pacienti s DNT  $\leq 60$  minut zastoupeni 18 to 84% ( $p < 0.0001$ )
- V jednotlivých zemích byli pacienti s DNT  $\leq 60$  minut zastoupeni 19 to 60% ( $p < 0.0001$ )

<b>Characteristics</b>	<b>All</b>	<b>DNT≤60 min</b>	<b>DNT&gt;60 min</b>	<b>p</b>
	N=5563	N=2097	<b>N=3414</b>	
Sex, female, n (%)	2304 (41%)	853 (41%)	1433 (42%)	0.34
Age, year, mean (SD)	66 (12)	66(12)	67 (12)	<0.001
NIHSS, median (IQR)	12(8 - 17)	12(8 - 17)	12(8 - 17)	0.038
NIHSS 7-24, n (%)	4489 (80.7%)	1730 (82.5%)	2717 (79.6%)	0.009
Systolic BP, mmHg, mean (SD)	153(20)	153(20)	153(20)	0.89
Systolic BP, 130-170 mmHg, n (%)	3839 (69.0%)	1495 (71.3%)	2309 (67.6%)	0.005
Glucose, mmol/L, median (IQR)	6.8 (5.9 - 8.1)	6.7 (5.8 - 8.0)	6.8 (5.9 - 8.2)	0.03
Patients weight, kg, mean (SD)	81 (15)	81 (14)	81 (15)	0.46
Early ischemic changes on CT or MRI, n (%)	739 (13%)	348 (17%)	378 (11%)	<0.001
Dose of tPA, median (IQR)	70 (63-80)	70 (62-80)	70 (63-80)	0.94
Hypertension, n (%)	3995 (72%)	1490 (71%)	2474 (73%)	0.12
Diabetes mellitus, n (%)	1202 (22%)	460 (22%)	729 (21%)	0.68
Previous stroke, n (%)	679 (12%)	234 (11%)	444 (13%)	0.04
DM and previous stroke, n (%)	176 (3%)	55 (3%)	120 (4%)	0.06
Arterial fibrillation, n (%)	1510 (27%)	540 (26%)	955 (28%)	0.11
Congestive heart failure, n (%)	712 (13%)	265 (13%)	441 (13%)	0.69
Hyperlipidemia, n (%)	1786 (32%)	648 (31%)	1124 (33%)	0.37
Current smoker, n (%)	1254 (23%)	492 (24%)	750 (22%)	0.198



Variable	Univariate Analysis		Multivariate Analysis	
	OR (95% CI)	p	OR (95% CI)	p
Sex, female	0.95 (0.85 to 1.06)	0.34		
Age, increment by 10 years	0.92 (0.88 to 0.96)	<b>&lt;0.001</b>	0.92 (0.87 to 0.97)	<b>0.004</b>
Baseline NIHSS 7-24	1.21 (1.05 to 1.40)	<b>0.009</b>	1.44 (1.20 to 1.72)	<b>&lt;0.001</b>
Systolic blood pressure, 130-170 mmHg	1.19 (1.05 to 1.34)	<b>0.005</b>	1.10 (0.95 to 1.28)	0.20
Glucose, mmol/L	0.98 (0.96 to 1.004)	0.11		
Patients weight	0.99 (0.995 to 1.002)	0.47		
Early ischemic changes on CT or MR	1.60 (1.37 to 1.87)	<b>&lt;0.001</b>	0.97 (0.77 to 1.22)	0.80
Dose of tPA	1.0 (0.996 to 1.005)	0.87		
Hypertension	0.91 (0.80 to 1.02)	0.12		
Diabetes mellitus	1.03 (0.90 to 1.17)	0.68		
Previous stroke	0.84 (0.71 to 0.99)	<b>0.042</b>	1.02 (0.81 to 1.29)	0.86
Diabetes mellitus and previous stroke	0.74 (0.53 to 1.02)	0.07	0.73 (0.47 to 1.12)	0.15
Arterial fibrillation	0.90 (0.80 to 1.02)	0.11		
Congestive heart failure	0.96 (0.82 to 1.13)	0.66		
Hyperlipidemia	0.95 (0.84 to 1.07)	0.37		
Current smoker	1.09 (0.96 to 1.24)	0.20		
Antiplatelets before stroke	0.94 (0.83 to 1.06)	0.31		
Onset-to-door time, increment by 10 min	1.18 (1.16 to 1.20)	<b>&lt;0.001</b>	1.19 (1.17 to 1.22)	<b>&lt;0.001</b>
Treatment after 01/OCT/2008	0.87 (0.78 to 0.97)	<b>0.011</b>	1.05 (0.90 to 1.23)	0.53
Working hours, 8-16 hours (Mon-Fri)	1.08 (0.97 to 1.21)	0.16		
Number of patients treated in centre	1.0 (1.0 to 1.001)	0.47		
Centre	NA	<b>&lt;0.001</b>	NA	<b>&lt;0.001</b>
Country	NA	<b>&lt;0.001</b>	NA	<b>&lt;0.001</b>
SI vs CR	2.23 (1.74 to 2.84)	<b>&lt;0.001</b>	1.51 (0.84 to 2.73)	0.17
LT vs CR	0.93 (0.61 to 1.42)	0.735	0.96 (0.52 to 1.79)	0.91
PL vs CR	0.72 (0.62 to 0.84)	<b>&lt;0.001</b>	0.85 (0.49 to 1.46)	0.55
HU vs CR	0.70 (0.54 to 0.90)	<b>0.005</b>	0.56 (0.16to 1.93)	0.36
EE vs CR	0.54 (0.39 to 0.75)	<b>&lt;0.001</b>	0.064 (0.01 to 0.51)	0.009
HR vs CR	0.47 (0.32 to 0.69)	<b>&lt;0.001</b>	0.36 (0.17 to 0.79)	0.011
TR vs CR	0.44 (0.22 to 0.87)	<b>0.019</b>	0.17 (0.05 to 0.50)	0.001
SK vs CR	0.35 (0.27 to 0.45)	<b>&lt;0.001</b>	0.26 (0.17 to 0.41)	<b>&lt;0.001</b>

# Relationship between door-to-needle time, onset-to-treatment time and onset-to-door time



\*p-value of Kruskal-Wallis test for Door to needle time

# Timeliness of Tissue-Type Plasminogen Activator Therapy in Acute Ischemic Stroke

## Patient Characteristics, Hospital Factors, and Outcomes Associated With Door-to-Needle Times Within 60 Minutes

Gregg C. Fonarow, MD; Eric E. Smith, MD, MPH; Jeffrey L. Saver, MD; Mathew J. Reeves, PhD;  
Deepak L. Bhatt, MD, MPH; Maria V. Grau-Sepulveda, MD, MPH; DaiWai M. Olson, PhD, RN;  
Adrian F. Hernandez, MD, MHS; Eric D. Peterson, MD, MPH; Lee H. Schwamm, MD

**Table 3. Patient- and Hospital-Level Characteristics Associated With Door-to-Needle Time  $\leq 60$  Minutes**

Variables	Adjusted OR	Lower 95% CI	Upper 95% CI	P
<b>Demographics</b>				
Age, per 10-y increase	0.92	0.90	0.95	<0.0001
Sex, female	0.87	0.81	0.93	0.0001
Race/ethnicity (reference non-Hispanic white)				
Black	0.80	0.71	0.89	0.0001
Hispanic	0.96	0.82	1.13	0.6598
Other	0.98	0.83	1.15	0.7916
<b>Admission characteristics</b>				
Arrival mode, emergency medical services	1.10	0.97	1.23	0.1275
Arrival time, on-hours	1.27	1.18	1.37	<0.0001
Symptom-onset-to-arrival times, per 10-min increase	1.23	1.22	1.25	<0.0001
NIHSS (reference: 0–9)				
10–14	1.37	1.25	1.51	<0.0001
15–20	1.58	1.44	1.73	<0.0001
21–42	1.37	1.23	1.54	<0.0001
<b>Medical history</b>				
Atrial fibrillation	0.89	0.81	0.97	0.0077
Prosthetic heart valve	0.75	0.55	1.00	0.0539
Coronary artery disease/prior myocardial infarction	0.95	0.86	1.04	0.2313
Carotid stenosis	1.01	0.84	1.22	0.9225
Diabetes mellitus	0.89	0.83	0.97	0.0051
Peripheral vascular disease	0.89	0.73	1.08	0.2444
Hypertension	1.01	0.94	1.08	0.8625
Smoker	1.00	0.92	1.10	0.9637
Dyslipidemia	1.01	0.94	1.09	0.7223
Stroke/TIA	0.81	0.74	0.88	<0.0001

Variables	Adjusted OR	Lower 95% CI	Upper 95% CI	P
<b>Hospital characteristics</b>				
The Joint Commission primary stroke center	1.02	0.88	1.17	0.7903
No. of hospital beds, per 200-bed increase	0.96	0.91	1.01	0.1260
Academic hospital	1.01	0.89	1.15	0.8233
Hospital region (reference: Northeast)				
Midwest	1.05	0.88	1.25	0.5826
South	0.97	0.83	1.14	0.7273
West	0.89	0.74	1.07	0.2237
Ischemic stroke admissions per year (reference: $\leq 100$ )				
>100–300	0.86	0.74	1.00	0.0467
>300	0.53	0.38	0.75	0.0003
Intravenous tPA patients per year (reference: $\leq 10$ )				
>10–20	1.38	1.18	1.61	<0.0001
>20	2.03	1.51	2.74	<0.0001

# Závěr

Lékaři zpožďují trombolýzu, pokud:

- mají více času do konce terapeutického okna
- předpokládají menší účinnost léčby (např. lehký nebo těžký deficit)
- existují překážky na úrovni organizace zdravotního systému

**JE NEZBYTNÉ ZLEPŠIT ČASOVÝ MANAGEMENT  
TROMBOLÝZY A LÉČIT VĚTŠINU PACIENTŮ DO 60  
MINUT OD PŘIJETÍ DO NEMOCNICE!!!!!!!!!!!!!!!!!!!!!!**