Impact of Stroke Legislation on Developing Stroke Systems of Care and Improving Acute Therapy: The Illinois Experience

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Background

Stroke is a leading cause of death and disability. In 2009, Illinois passed stroke legislation that established a Stroke Advisory Subcommittee to advise the State EMS Advisory Council. The legislation also created 11 EMS Regional Stroke Advisory Subcommittees. Primary Stroke Centers and Emergent Stroke Ready Hospitals were formally recognized, and EMS routing protocols were updated. Comprehensive Stroke Centers were recognized in 2014, and EMS routing protocols were further updated.

Hypothesis

Implementation of the Illinois stroke legislation by EMS regions enhances stroke systems of care, improves collaboration between hospitals and EMS, and improves intervention times and outcomes.

Methods

- Data were ascertained from the Illinois Get With the Guidelines (GWTG) stroke registry from 2009-2015.
- Ninety two unique hospitals entered data from 2009-2015.
- Data points included number of patients, arrival mode, those treated or eligible for IV Alteplase, median door to needle (DTN) times, DTN times of 60 minutes or less, and discharge to home.
- Statistical analyses were performed using chi-square testing

Results

Table 1. Hospitals and Patients Enrolled in GWTG-Stroke in Illinois 2009-2015

Year	Total IL Hospitals Participating in GWTG	Total GWTG stroke patient records	Acute Ischemic Stroke (AIS) Patients Entered into GWTG	AIS patients eligible for IV Alteplase
2009	27	10530	6193	289
2010	38	13077	8094	411
2011	52	14201	9109	628
2012	60	15385	9964	598
2013	73	29288	9977	570
2014	76	19633	10719	650
2015	82	21779	12981	864

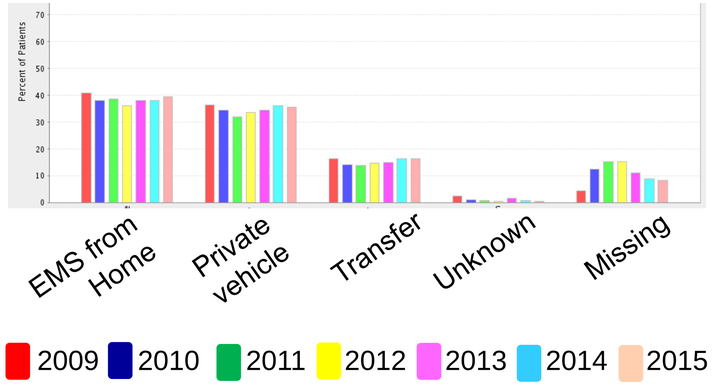
Table 2. Types of Hospitals Participating in GWTG-Stroke in Illinois

Year	Total IL Hospitals Participating in GWTG	ASRHs	PSCs	CSCs	Not Certified as Stroke Center
2009	27	0	14	0	13
2010	38	0	27	0	11
2011	52	0	35	0	17
2012	60	0	36	0	24
2013	73	0	44	0	29
2014	76	1	45	4	26
2015	82	19	46	5	12

Table 3. Performance Metrics for Hospitals Participating in GWTG-Stroke in Illinois

Year	Median Door-to-Needle Times (minutes)	% DTN times ≤ 60 min	Discharge to Home
2009	85	18%	38.0%
2010	84	18.5%	36.8%
2011	81	26.1%	32.9%
2012	73	33.9%	43.8%
2013	63	47.4%	45.4%
2014	56	60.9%	45.3%
2015	56	62.4%	44.1%

Figure 1. Arrival Mode of All Hospitals Participating in GWTG-Stroke in Illinois.



36-41% of patients arrived by EMS from home/scene
31-36% of patients arrived by private transportation

DTN times for IV Alteplase went from 85 minutes in 2009 to 56 minutes in 2015, a 34% relative decrease
P< 0.0001

Percent of patients with DTN times of 60 minutes or less increased from 18% in 2009 to 63% in 2015
P < 0.0001

Limitations

- Data are limited to GWTG facilities
- Definite causation between the stroke legislation and these results cannot be firmly established, as other changes in patient care might have accounted for some or all of these changes
- An increase in the number of certified stroke centers may have also played a role in the improved care metrics
- The definitions for discharge destinations changed during the course of the study

Conclusions

- Illinois observed a clear and significant improvement in several care metrics for patients with acute ischemic stroke
- These changes occurred after the passage of state legislation related to the identification of stroke centers and routing of stroke cases
- This experience is a good example of stakeholders working in a cooperative manner to improve stroke care on a state level

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Quintiles is the data collection coordination center for the AHA/ASA Get With The Guidelines® programs

Dr. Alberts is a speaker for Genentech, which markets Alteplase