

***Building an Effective Stroke System of Care***

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 EMS Medical Director  
 Broward, Palm Beach, & Brevard Counties  
 PEM Physician, JDCH

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**Disclosures**



Peter Antevy, MD – Founder & Chief Medical Officer

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**Background**

- Board Certified EMS Physician
- Board Certified Pediatric Emergency Medicine
- EMS Medical Director
  - Coral Springs / Parkland Fire Department
  - Davie Fire Rescue
  - Palm Beach County Fire Rescue
  - Brevard County Fire Rescue
  - MCT Express
  - Broward College EMS / Coral Springs Fire Academy



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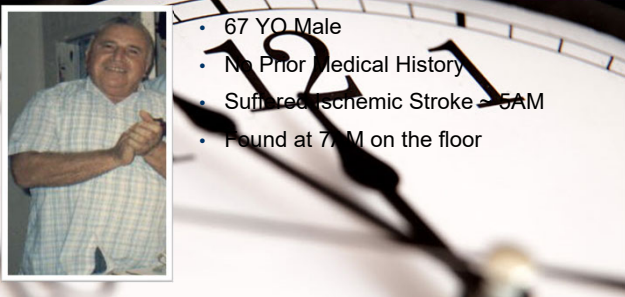
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**Why Was Big Change Needed?**



- 67 YO Male
- No Prior Medical History
- Suffered Ischemic Stroke - 5AM
- Found at 7:11M on the floor

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**LVO at PSC --- Needs to be Transferred**



- MD sees blood on her tongue.
- Admits to ICU for "Medical Care"

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## Overview

- Introduction & Objectives
- New Era for Acute Stroke Care
- South Florida Stroke Coalition
- Optimizing EMS Stroke Triage / Stroke Scales
- Data Collection and Transparency
- Florida Stroke Registry and 2 New Statutes

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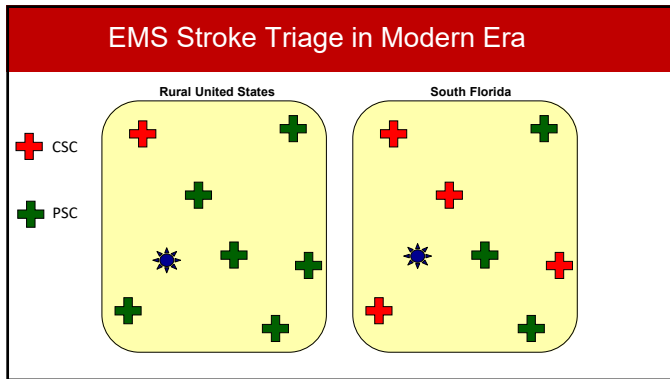
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### PSC vs CSC?.....in 2013

Unless there are compelling mitigating circumstances, when there are several acceptable hospitals (ASRH, PSC, CSC) in a well-defined geographic region, extra transportation times to reach another facility should be limited to no more than 15 to 20 minutes. When several hospital options exist, EMS should seek care at the facility capable of offering the highest level of stroke care.

This is based in part on concerns that although a patient may initially appear to be appropriate for PSC-level care, they might deteriorate and need transfer to a CSC, which would lead to further treatment delays.

a. Protocols that include prehospital EMS notification that a stroke patient is en route should be used routinely.

Higashida et al. *Stroke*, 2013;44:2961-2984.

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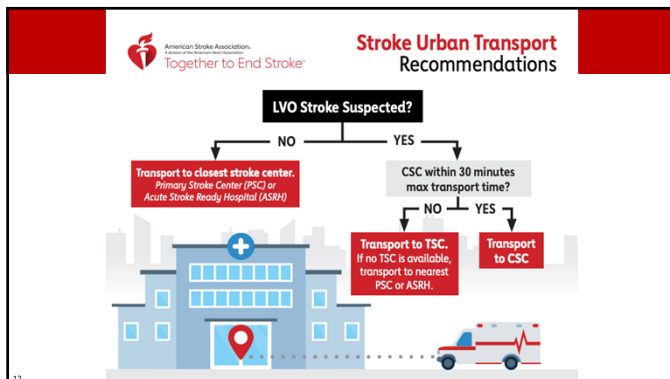
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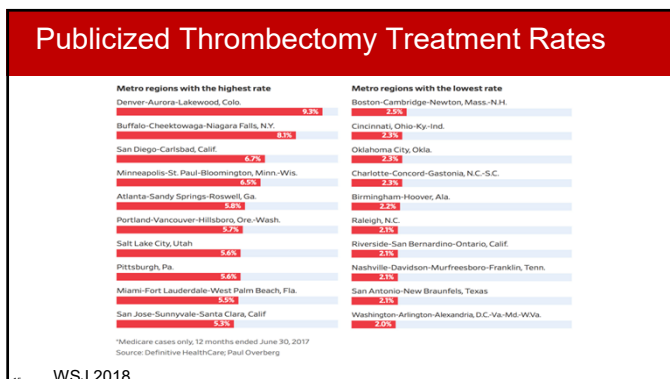
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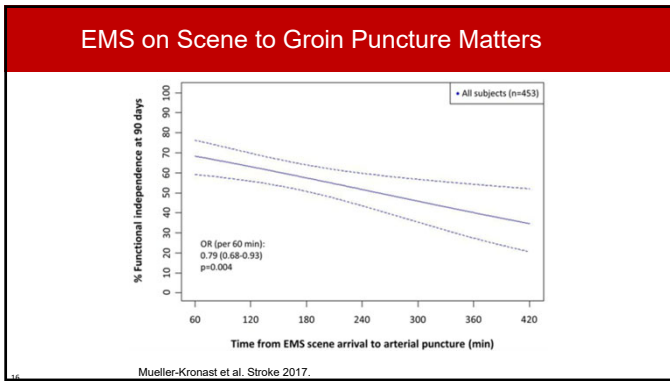
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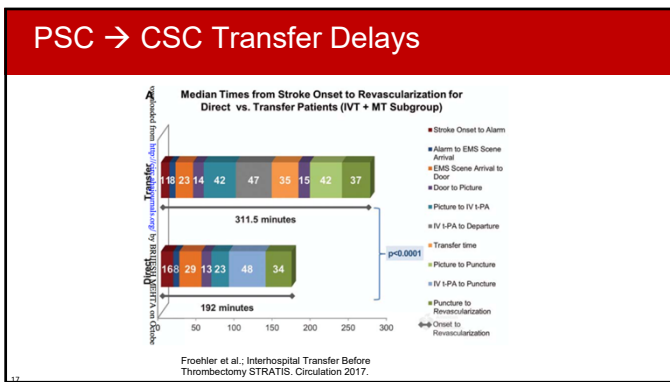
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### Rationale for Process Improvement

- It was obvious to us that change was needed
- How did we get it done?
- Describe the steps to success
- What were the obstacles?
- What were the lessons learned?

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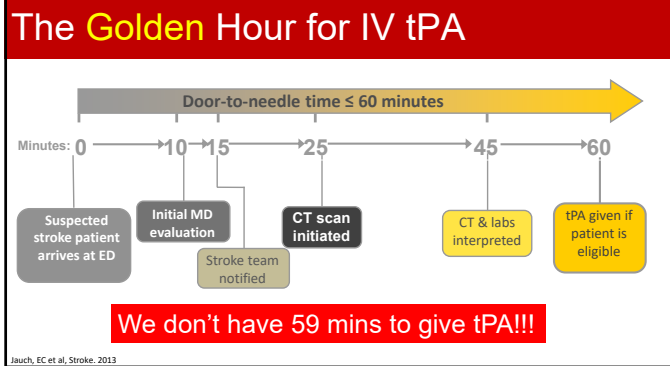
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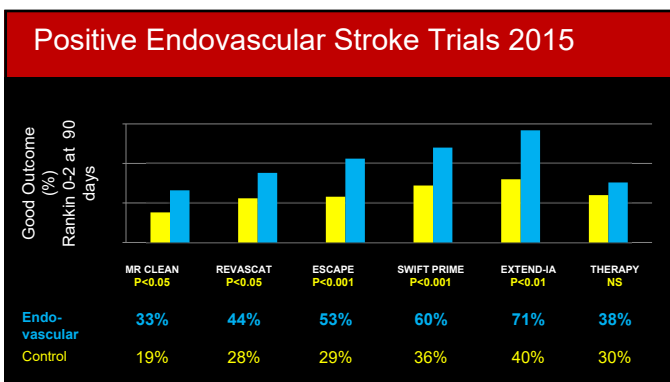
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- ### Stroke Care in Broward County
- 8 Comprehensive Stroke Centers (CSCs)
  - Absence of a quality improvement oversight committee
  - EMS triage criteria based solely on distance and not on quality of care at destination
  - No transparency among CSCs for door-to-treatment times and clinical outcomes
  - Lack of research or QI collaboration among CSCs

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**The Playbook**

Roles + Plays + Game Plan = Playbook

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**1. Start with a "Crazy Idea"**

"Let's Bypass All PSC's"

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**2. Bring in an Expert**

**Paul Banerjee, DO**  
 EMS Medical Director  
 Polk County Fire Department

"LAMS 3 or 4 = CSC"

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### 3. Initiate a Data Project



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### 4. Develop / Build a Coalition



- Development of a Stroke Coalition
  - Led by EMS MD and Neuro-interventionalists
  - Broad Stakeholder group
  - Make Yourself a Logo ©

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### 5.



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ABSTRACTS SUBMITTED TO PROFESSIONAL MEETINGS		
<b>American Academy of Neurology</b> April 25-May 1, 2020 Toronto, Canada		
Factors Associated with Oral Anticoagulant Non-use in Patients with Atrial Fibrillation-related Stroke	N. Sur et al	Submitted Pending Acceptance
<b>AHA Southeast Heart &amp; Stroke Quality Summit</b> April 23, 2020 Raleigh, NC		
The Florida Stroke Registry: From "Research Project" to "Statewide Program" for Quality Improvement of Systems of Stroke Care	C. Gutierrez	Submitted Pending Acceptance
<b>International Stroke Conference</b> Feb. 19-21, 2020 LA, CA		
Building effective stroke systems of care through a regional EMS coalition and data transparency initiative	B. Mehta et al	Submitted Pending Acceptance
The Safety and Outcomes of Endovascular Thrombectomy in Stroke Patients on Oral Anticoagulation: The Florida Stroke Registry	N. Sur et al	Submitted Pending Acceptance
Variation in Acute Ischemic Stroke Metrics for Nationally Certified Versus Self-Attested Comprehensive Stroke Centers in The Florida Stroke Registry	E. Marulanda-Londono et al.	Submitted Pending Acceptance
Race-Ethnic Disparities in Subarachnoid Hemorrhage Outcomes	A. Bustillo et al.	Submitted Pending Acceptance

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## Process Improvement - Hospital

- Uniform approach for all practitioners
- 1 phone call system, 30-minute response rule
- ED attendings take control, no cardiology consult
- No pharmacy/medication delays
- Provide real-time feedback to EMS, ED, cath lab team

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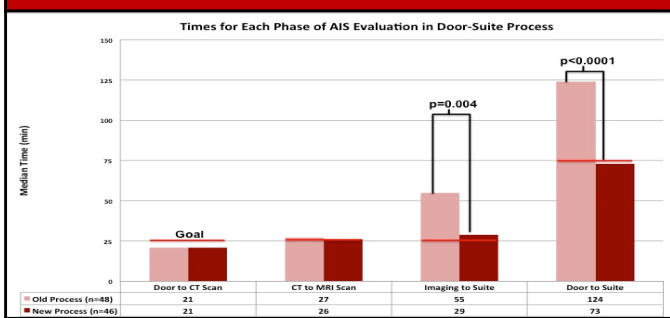
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## Impact of Process Improvement



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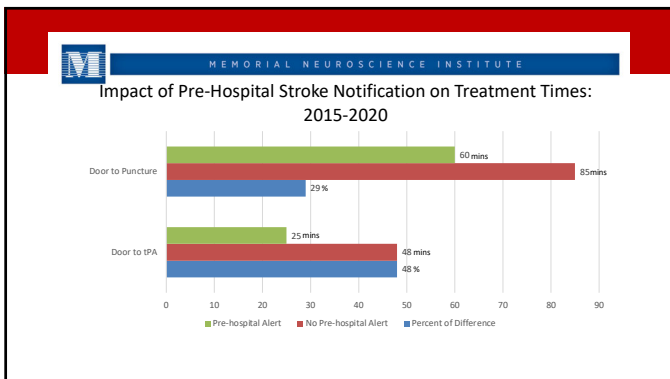
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Annual Stroke Survivors & EMS Recognition Dinner



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Focused on Hospital - EMS Collaboration

- No divert policy
- Rapid feedback after each case
- Online dashboard of case metrics, outcomes
- EMS recognition for best door-to-needle times
- Open invitation to the neurointerventional suite
- Webinars/Podcasts

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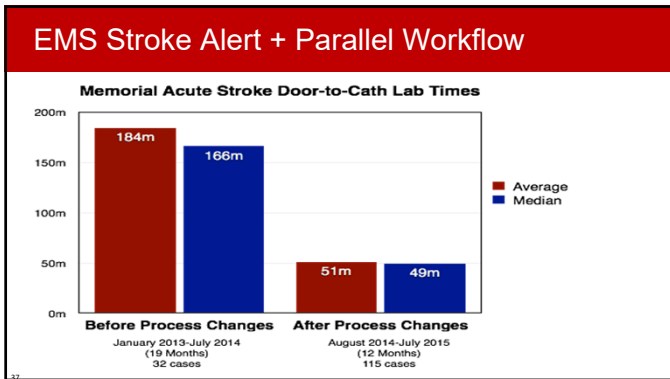
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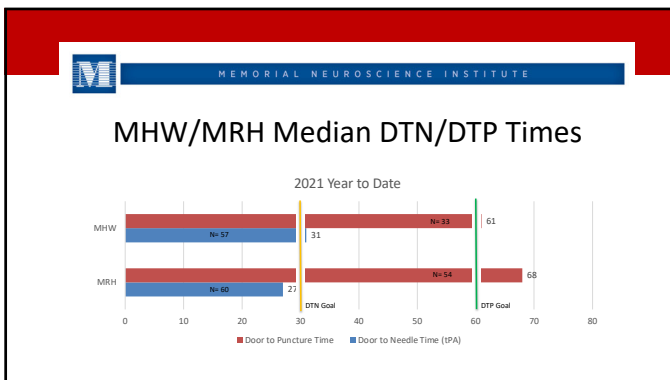
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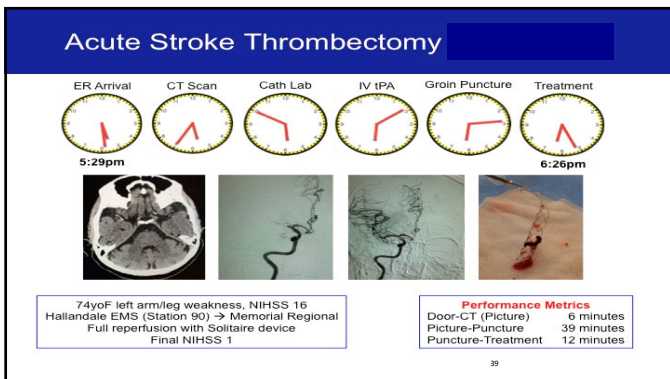
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### Medics in the Cath Lab



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### The Message Has Been Heard



Advances in Acute Stroke Care in the Thrombectomy Era: Guidelines for EMS on behalf of the Society of Vascular and Interventional Neurology (SVIN)

**COMING SOON**

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### Obstacles

- Politics Politics Politics!
- Fear of Litigation (Hospitals intimidated me personally)
- New Stroke Data was still coming out
- Local data collection was difficult and painful
  - Outcomes difficult to obtain
- More Politics

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### Then Sometimes You Get Lucky

FloridaStrokeCollaboration.org

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### Florida Stroke Registry (Magic)

NIH- NINDS	<div style="border: 2px solid green; padding: 10px;"> <p><b>Florida-Puerto Rico Registry</b></p> <p>Implement education programs with a focus on identifying and implementing specific culturally-tailored quality improvement programs to address disparities.</p> </div>
2012-2017	
~\$700,000 (annually) 5 year grant	
76 FL hospitals	
16 PR hospitals	

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### Increased Hospital Representation Across the State

Total number of Florida (ALL) stroke cases = **236,884**

**Number of Florida Stroke Registry Cases**

Year	Number of Cases
2010	21990
2011	22297
2012	22614
2013	23158
2014	25968
2015	29102
2016	28400
2017	31455
2018	31900

Pre-FSR

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### OVERALL Quality of Stroke Care in Florida IMPROVEMENTS

Acute Stroke Treatment Among FSR participating hospitals in Florida	2010	2018
IV tPA use - Overall IV	7%	14%
IV tPA use - patient arriving in 3.5 hrs. and treated within 4.5 hrs. of stroke onset	69%	92%
Door to Needle in 60 min.	19%	91%
Door to Needle in 45 min.	6%	60%
Defect Free Care	85%	95%



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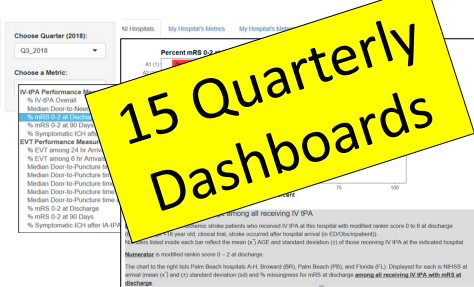
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### FSR Regional Dashboard Format



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### State-level Attestation Had to Go

- **No** onsite survey
- **No** recertification policies
- **No** core measures, metrics or outcomes tracking
- **No** minimum aneurysm treatment requirements
- **No** submission of data to GWTG-Stroke database
- **No** requirement for research



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**New**  
Stroke Legislation in 2018 & 2019

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## AHCA – Self Attestation



As of June of 2021 Hospitals can no longer “self attest” to being a PSC, TSC, or CSC.

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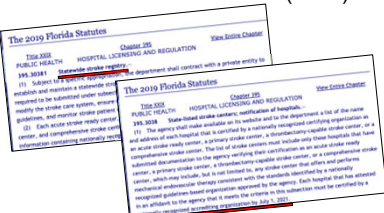
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## Two New State Laws in 2 Years

- Florida Stroke Registry (Live)
- Removal of Self Attestation (2021)



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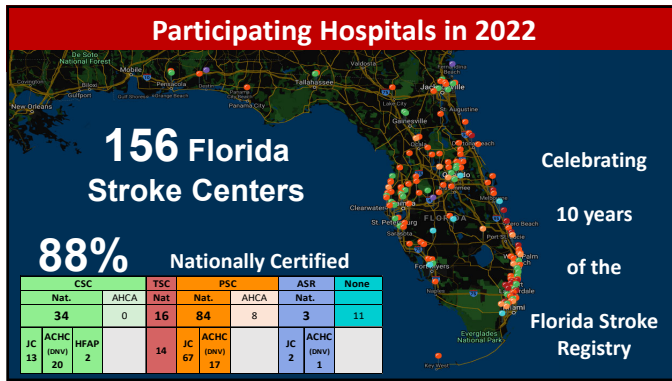
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### The Playbook Recap

1. Start with a "Crazy Idea" (Based on Ground Intel)
2. Bring in an Expert (Zoom is an Option)
3. Initiate a Data Project (Self Reflection)
4. Develop and Build a Coalition (Make a logo ☺)
5. Promote the Idea (Everywhere, in every way)
6. Publish Your Data

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### Lessons Learned

- Don't start with a protocol change and expect it to go smoothly
  - The pre-game plan and warm-up is crucial
- Bring all stakeholders to the table, even though they may disagree with your ideas
- Always keep the patient at the center of your decision making
- Play the long game – don't rush big change

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This Playbook Has Worked For...

- Stroke Registry (Statewide)
- Resuscitation Academy (Statewide)
- Pre-Hospital Whole Blood (Regional)
- Pediatric Arrest Bundle (National)
- Heads Up CPR (Regional)
- Resuscitation Centers of Excellence (Statewide)
- Mobile Integrated Health (Regional)
- COVID Testing Algorithm (Statewide)



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**Most Importantly**

**Don't Be a Lone Wolf**

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Case Conclusion - He is My Why!



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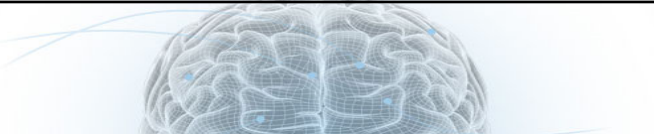
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