

Preventing Venous Thromboembolism in Stroke Patients & New Stroke VTE Safety Recommendations

International Stroke Conference
February 11, 2015



Our Panel

- **Mark Alberts, MD, FAHA**
Clinical Vice-Chair for Department of Neurology and Neurotherapeutics
University of Texas Southwestern Medical Center
- **Laurie Paletz, BSN, PHN RN-BC**
Stroke Program Coordinator
Cedars-Sinai Medical Center
- **Michael Wong, JD**
Founder/Executive Director
Physician-Patient Alliance for Health & Safety



Thanks for Lunch!



Thanks Stroke Group!

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(Neurological Surgery, Wellstar)

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Facilitators Physician-Patient Alliance for Health & Safety:

Michael Wong, JD (Executive Director)
Lynn Razzano, RN, MSN, ONCC (Clinical Nurse Consultant)

Physician-Patient Alliance for Health & Safety

Goal:

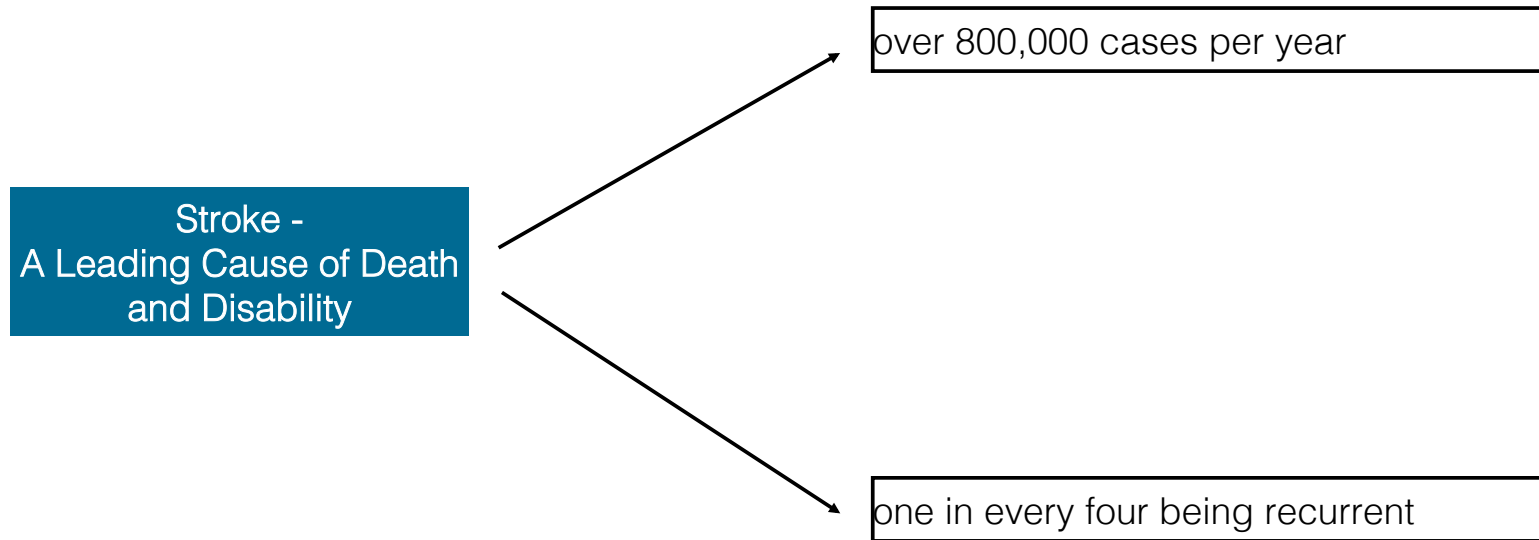
to advance key patient health and safety initiatives that significantly impact patient lives and to do so in a prescriptive and practical manner

Board of Advisors:

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- Kenneth P. Rothfield, M.D., M.B.A., Chairman, Department of Anesthesiology, Saint Agnes Hospital (Baltimore, MD)



Stroke - A Leading Cause of Death and Disability



Guidelines for the Prevention of Stroke in Patients With Stroke or Transient Ischemic Attack: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association (2010)



Medical Complications After Stroke

Dr. Mark Alberts will discuss:
use of anticoagulants and
mechanical prophylaxis

Suffering a Stroke
Often Leads to
Further Medical Complications

24-90% of stroke patients
will have a medical complication

most common complication - DVT/PE:
• DVT 40%
• PE 15%



Medical Complications After Stroke

Laurie Paletz will discuss decreasing
door to treatment time

Strategies for Decreasing Door to Needle Time



Medical Complications After Stroke

Laurie Paletz will discuss decreasing
door to treatment time

Strategies for Decreasing Door to ~~Needle~~ Time Treatment



The Face of Stroke Patients

Steven Spence (68-year-old man) suffered second stroke only hours after being discharged for first one

Steven Spence (68-year-old man):

- admitted for stroke
- discharged after doctors believed blood clot in brain had “broken up”
- within hours after being sent home, suffered a second stroke.
- recurrent stroke has left him:
 - unable to speak
 - family members unsure if he can recognize them
 - increased potential for additional disability may occur as a result of the recurrent stroke.



<http://www.winnipegfreepress.com/local/man-sent-home-suffers-new-stroke-143609656.html>

<http://aptn.ca/news/2012/03/27/man-sent-home-early-from-hospital-suffers-stroke/>



The Face of Stroke Patients

Anna Frutiger
23-years old dental student
Undiagnosed DVT



<http://www.stoptheclot.org/news/article247.htm>

<http://www.everydayhealth.com/heart-disease/dvt/dvt-and-birth-control-anna-frutigers-story.aspx>

Symptoms:

- Pain behind her knee and in her calf (which she attributed to half marathon training or a muscle pull)
- Short of breath whenever she ran
- Dental school friends noted that she limped, and Anna was aware of becoming.

Diagnosis & Discharge:

- Admitted for tests
- Orthopedic surgeon found no injury to suggest a muscle pull.
- Suspected a blood clot in her lower leg.
- Only known risk factor was that she was taking a third generation birth control pill.
- Ultrasound/Doppler results negative for DVT.
- At follow-up exam 3 weeks later, her leg was normal shape and size, and she no longer felt any leg pain.
- As a result, her doctor discharged her.

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Post-Discharge:

- traveled quite a bit:
 - flew for six hours over two consecutive weekends,
 - then saw friends in New York City next two weekends involving 8 hour bus trips with one 10 minute stop
- complained of not being able to breathe easily when carrying groceries to her apartment right after last bus trip

PE & Death:

- next morning, called best friend to drive her to school because felt extremely weak and didn't think she could walk
- collapsed on the lawn outside her apartment after walking downstairs, and blacked out for several seconds.
- upon arriving at ER, suffered cardiopulmonary arrest
- emergency surgery to dislodge huge blood clot causing PE.
- died 2 days after
- autopsy determined not predisposed to blood clots (birth control pill and concentrated travel were major clotting risks)



DVT and PE in Patients with Stroke

Mark J. Alberts, MD, FAHA
Vice-Chair, Neurology
UTSW Medical Center
Dallas, TX



DVT and PE Are Common Peri-Stroke Complications

- DVT can be found in 40-80% of stroke patients
- PEs present in 10-15% of all stroke patients
- PEs accounted for 13-25% of early deaths after a stroke
- More pervasive use of care guidelines have likely reduced some of these rates for DVT and PE

Kappelle, Preventing DVT after Stroke; Current Treatment Options in Neurology, 2011



Risk Factors for DVT in Stroke Patients

Hx of prior DVT or PE	Prior disability
Hx of malignancy	Weakness in a limb
Hx of prothrombotic state	Advancing age
Hx of hormone use	Dehydration
Obesity	Genetic factors

Kappelle, Preventing DVT after Stroke; Current Treatment Options in Neurology, 2011



Treatment Approaches to Prevent DVT in Stroke

<u>Mobilization/General Medical</u>	<u>Mechanical</u>	<u>Pharmacological</u>
Early mobilization	Compression stockings-knee	Heparin or heparinoids-SQ
Improve hydration status	Compression stocking-thigh	Antiplatelet agents
	Intermittent pneumatic compression-knee	NOAC therapy
	IPC—thigh high	



Benefits of Compression Stockings

- Meta-analysis of 2615 patients
- Included knee-high and thigh-high stockings
- Overall no evidence of benefit
- Not currently recommended

Kappelle, Preventing DVT after Stroke; Current Treatment Options in Neurology, 2011



Advantages of Intermittent Compression Boots

1. Non-invasive approach
2. Generally well tolerated
3. Minimal side effects
4. Less costly than medications
5. Can be used in all types of stroke patients



Disadvantages of Intermittent Compression Boots

1. Patients may not always wear them
2. Nurses may not turn machine on
3. May be turned off or not worn when patients are off the ward or getting tested, rehabilitation therapy, etc.
4. Currently a high compliance rate with DVT prophylaxis using antithrombotic agents (> 90% in some studies)



Benefits of Intermittent Pneumatic Compression

- Several small studies suggested a benefit for IPC when used alone, but even more benefit when combined with medical therapy
- Overall RR of 60-80% depending on the study
- Largest study to test IPC in just stroke patients is CLOTS 3 trial

Kappelle, Preventing DVT after Stroke; Current Treatment Options in Neurology, 2011

Clots 3 - Methods



Study involved nearly 3,000 stroke patients at over 100 hospitals across the United Kingdom

- Multi-centre parallel group randomized trial
- Enrolled patients from day 0 to day 3 of admission and allocated them via a central randomization system (ratio 1:1) to receive either IPC or no IPC
 - Technician was masked to treatment allocation
- Compression duplex ultrasound (CDU) of both legs performed at 7—10 days and, wherever practical, at 25—30 days after enrollment.
 - Caregivers and patients were not masked to treatment
- Patients were followed up for 6 months to determine survival and later symptomatic DVT
- **The primary outcome was a DVT in the proximal veins detected on a screening CDU or any symptomatic DVT in the proximal veins, confirmed on imaging, within 30 days of randomization.**

CLOTS Trial Collaboration, Lancet, August 2013



Implementing Clots 3

What type of IPC was used?

- Only thigh-length sleeves were tested in CLOTS 3.
- Many different types of IPC (calf or thigh-length, single or sequential, asymmetric or circumferential, fixed or variable frequency, rapid or slow inflation).



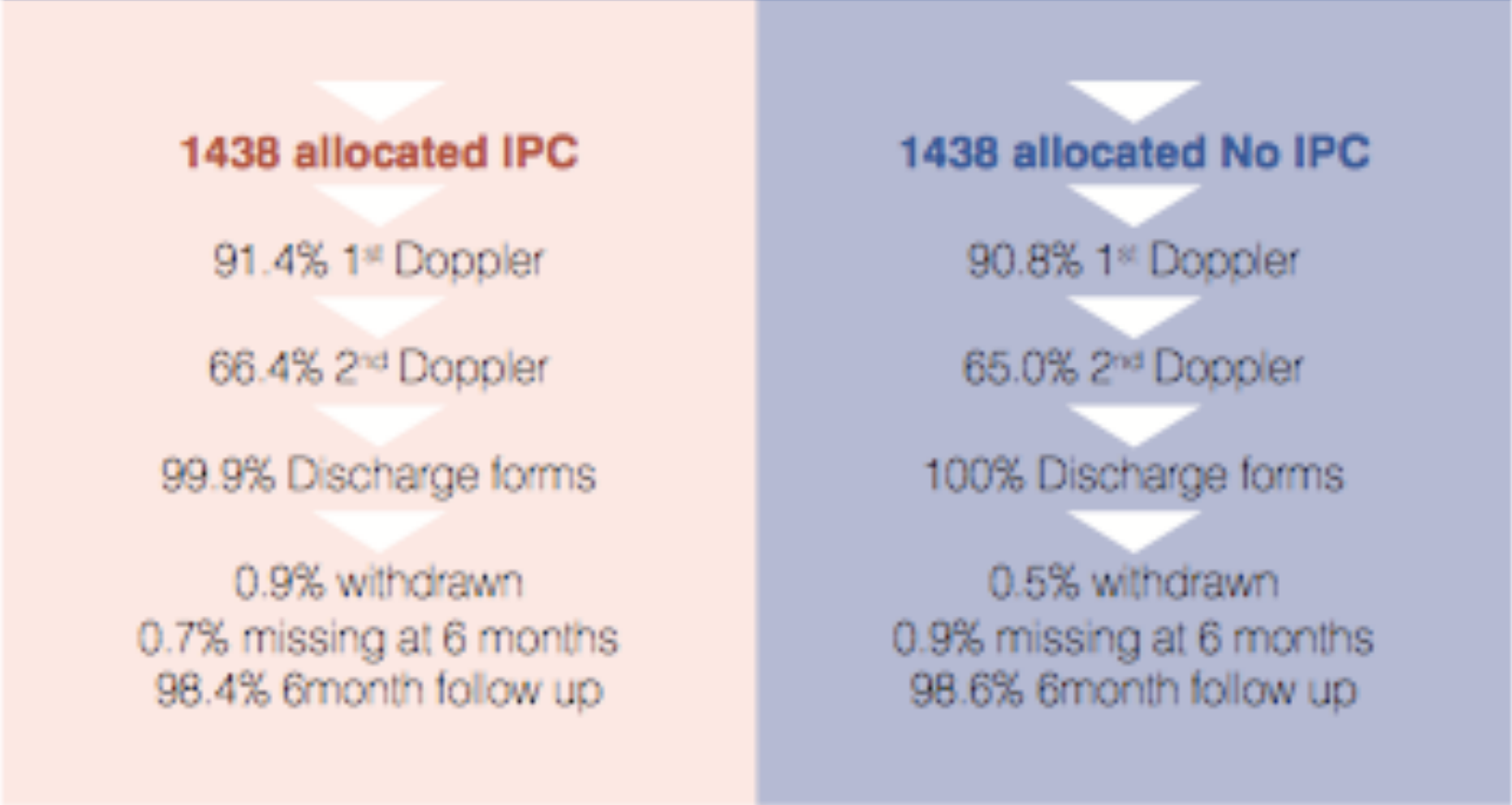


CLOT 3 Patient and Treatment Characteristics

- **Groups were well matched for all baseline characteristics**
- **IPC duration was: Mean = 12.5 days Median = 9 days**
- **Overall adherence to IPC therapy: Mean = 59% Median = 65.4%**

CLOTS Trial Collaboration, Lancet, August 2013

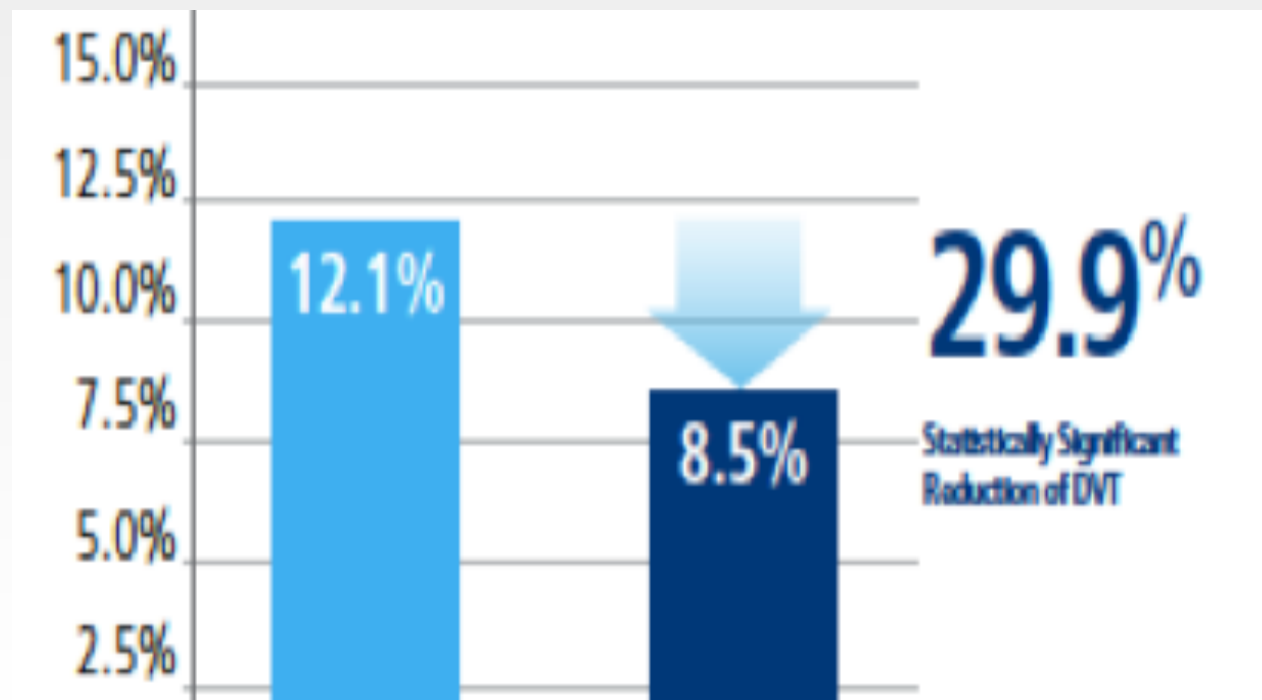
2876 Enrolled



30-32% of patients in each group received some type of anticoagulant



CLOTS-3 Primary Results





Primary and Secondary Efficacy Results

- PRIMARY OUTCOME (any DVT on ultrasound or any Sx DVT within 30 days) **3.6% absolute risk reduction p = 0.001**
- ANY DVT or DEATH **6.6% absolute risk reduction p < 0.0001**
- ANY DVT, PE, DEATH **7% absolute risk reduction p < 0.0001**

CLOTS Trial Collaboration, Lancet, August 2013

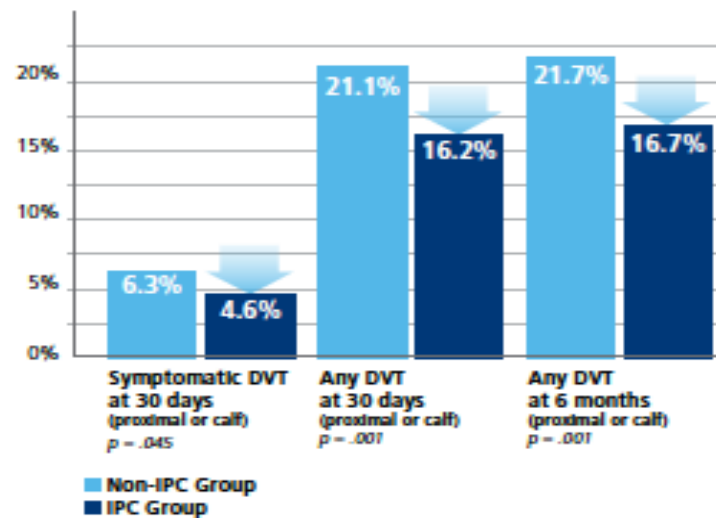


SECONDARY OUTCOMES MORTALITY RISK REDUCTION

14.0%
Mortality Risk
REDUCTION
 $p = .042$

The rate of mortality during the first six months was 14% lower with the IPC Group compared to the non-IPC Group. (Adjusted hazard ratio = .86; $p = .042$)

DVT EVENTS





Adverse Events Seen in Clot 3

Event	IPC	No IPC	P value
Skin breaks	3.1%	1.4%	0.002
Skins breaks due to IPC	0.7%	0.0%	NS
Falls with injury within 30 days	2.3%	1.7%	0.22
Falls due to IPC within 30 days	0.1%	0.0%	NS

CLOTS Trial Collaboration, Lancet, August 2013



Current AHA Stroke Guidelines

1. **The use of SQ anticoagulation for DVT prevention is a class I, level A recommendation**
2. **The use of aspirin is a class IIa, level A recommendation**
3. **The use of external compression devices is a class IIa, level B recommendation (written before CLOTS 3 study)**
4. **The PREVAIL study showed that Enoxaparin 40 mg SQ qd was more effective than UFH 5000 U SQ bid***
 - * This was not a specific guideline recommendation



Conclusions

1. DVT is a common complication after an acute stroke
2. There are several treatment approaches for reducing DVT after a stroke
3. Intermittent pneumatic compression treatment is an important and well tolerated therapeutic option for the prevention of DVT and death after a stroke

Strategies for Decreasing Door to Treatment Time



**American Heart Association
American Stroke Association
CERTIFICATION**

Meets standards for
Comprehensive Stroke Center

Laurie Paletz, BSN PHN RN BC

*Stroke Program Coordinator
Cedars-Sinai Medical Center*



CEDARS-SINAI®

Disclosure

I have no actual or potential conflict of interest in relation to this program/presentation



We *Already* Know

Despite its effectiveness in improving neurological outcomes, many patients with ischemic stroke are not treated with t-PA, because they arrive late or because of delays in assessment or administration of IV t-PA

Earlier administration of IV t-PA after the onset of stroke symptoms is associated with greater functional outcome.



We *Already* Know

- Intravenous rt-PA is recommended for selected patients who may be treated within 3 hours of onset of ischemic stroke (Class I Recommendation, Level of Evidence A).
- Delays in evaluation and initiation of therapy should be avoided, because the opportunity for improvement is greater with earlier treatment.
- rt-PA should be administered to eligible patients who can be treated in the time period of 3 to 4.5 hours after stroke (Class I Recommendation, Level of Evidence B).

The sooner that t-PA is given to stroke patients, the greater the benefit, especially if started within 90 minutes of symptom onset



Hacke, W., G. Donnan, et al. Association of outcome with early stroke treatment: pooled analysis of ATLANTIS, ECASS, and NINDS rt-PA stroke trials. *Lancet* 2004;363:768-74.

- **Emergency Departments must collaboratively establish standard operating procedures and protocols to triage stroke patients rapidly**
- **Standard procedures and protocols should be established for times to quickly and safely evaluate and treat eligible stroke patients with t-PA**
- **Target treatment time with t-PA should be within 1 hour of the patient's arrival in the Emergency Department.**

Comprehensive overview of nursing and interdisciplinary care of the acute ischemic stroke patient: a scientific statement from the American Heart Association. *Stroke* 2009;40;2911-2944



AHA Target Stroke

A national quality improvement initiative of the American Heart Association/American Stroke Association to improve the care of stroke

Primary Phase I Goal: Achieve Door-to-Needle Times within 60 minutes in 75% or more of acute ischemic stroke patients treated with IV tPA

- Secondary Phase II Goal: Achieve Door-to-Needle times within 45 minutes in 50% or more of acute ischemic stroke patients treated with IV tPA



Strategies to Decrease Door to Treatment Time

- 1. Advance Hospital Notification by EMS:** EMS providers should provide early notification to the receiving hospital when stroke is recognized in the field.
- 2. Rapid Triage Protocol and Stroke Team Notification:** Acute triage protocols facilitate the timely recognition of stroke and reduce time to treatment.
- 3. Acute Stroke Team Activation** enhance stroke care and should be activated as soon as the stroke patient is identified in the emergency department or after notification from pre-hospital personnel.
- 4. Single Call Activation System:** A single call should activate the entire stroke team, which simultaneously pages the entire stroke team.



5. Stroke tool kit A Stroke toolkit containing clinical decision support, exclusion criteria any urgent medications and t-PA in a tackle box ready to go

6. Rapid Interpretation of Brain Imaging: It is essential to initiate a CT scan (or MRI) within 25 minutes of arrival and complete interpretation of the CT scan within 45 minutes of arrival to exclude intracranial hemorrhage prior to administration of IV t-PA.

7. Rapid Laboratory Testing: For patients in whom coagulation parameters should be assessed because of suspicion of coagulopathy, INR/PTT results should be available as quickly as possible and no later than 45 minutes after ED arrival. If standard STAT laboratory turnaround times cannot meet this target, point of care INR testing in the Emergency Department can provide the data in the needed timeframe.



8. Rapid Access to Intravenous rt-PA: Once eligibility has been determined and intracranial hemorrhage has been excluded, IV rt-PA should be promptly mixed & administered. tPA should be readily available in the emergency department or CT scanner

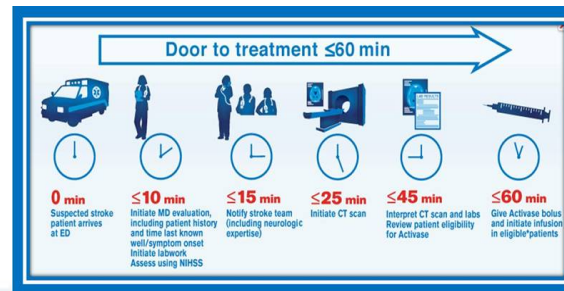
9. Team-Based Approach: A multidisciplinary team has proven to be effective in reducing time to treatment in stroke. An interdisciplinary collaborative team is also essential for successful stroke performance improvement efforts.

10. Prompt Data Feedback: Accurately measuring and tracking your hospital's door-to-needle times equips the stroke team to identify areas for improvement and take appropriate action **Share insights, hurdles, experiences, and successes.**



Time Interval Goals

1. Perform an initial patient evaluation within 10 minutes of arrival in the emergency department
2. Notify the stroke team within 15 minutes of arrival
3. Initiate a CT scan within 25 minutes of arrival
4. Interpret the CT scan within 45 minutes of arrival
5. Ensure a door-to-needle time for IV rt-PA within 60 minutes from arrival.



Adapted from: http://www.ninds.nih.gov/news_and_events/proceedings/stroke_proceedings/recs-emerg.htm#emergency; and Jauch EC. 2010 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*. 2010;122(18 suppl 3):S818-S828.



Collaboration Efforts

ED physicians

ED nurse administrators and nursing staff

- Pre-hospital care coordinator and MICNs
- Tape runs with EMS

Radiology

Laboratory



Components of Successful Process

- Staff education and team building
- Stroke RN first responder triage
- Pre-hospital field Code Brain activation
- Placing Code Brain patients on portable monitors immediately upon arrival to ED
- POC istat blood work or clearly identify CODE BRAIN on labs and CT or any other orders to expedite



Components of Successful Process

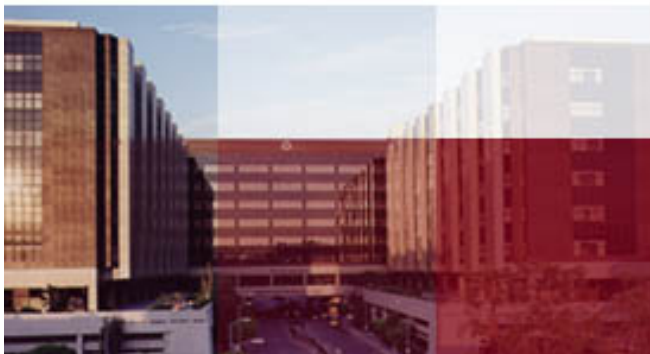
1. Organize stroke team with focused goal to improve Door to Treatment time. (DTN \leq 60 minutes)
 2. Have handy T-PA inclusion exclusion criteria
 3. Meet frequently to discuss all acute stroke team activations
4. Track progress to goal using GWTG (or whatever means of data collection you use).
5. Incorporating LEAN methodology to eliminate waste, develop guidelines, actions, time durations, and collaboration across the hospital system is an effective means to decrease door to treatment time



Components of Successful Process

- Celebrate success with staff.
- Posters, newsletters with DTN times and who was part of that team

Just as the ED staff know the fastest STEMI time they should also know the fastest DTN time as well.



Components of Successful Process

- **Set explicit goals and expectations**
- **Look at and identify gaps in processes**
- **Create a culture in which the focus is not on finding blame but rather focus on how the group can look for improvements collaboratively**



Powerful Results. Proven Prevention.

Proximal DVT REDUCTION **29.9%** **14.0%** Mortality Risk REDUCTION
STATISTICALLY SIGNIFICANT*

- CLOTS 3, a landmark trial, is the largest randomized, controlled study of its kind involving Intermittent Pneumatic Compression (IPC) in medical patients
- IPC delivering sequential compression at a frequency determined by a patient's venous refill time resulted in a statistically significant reduction (29.9%) of proximal DVTs in immobile stroke patients
- Survival to six months was also statistically significant, with a 14% reduction in mortality risk
- IPC is safe and effective in reducing the risk of DVT—and possibly improving survival in immobile stroke patients

Dennis M¹, Sandercock P, Murray G, Forbes J; CLOTS Trials Collaboration. Does intermittent pneumatic compression reduce the risk of post stroke deep vein thrombosis? The CLOTS 3 trial: statistical analysis plan.

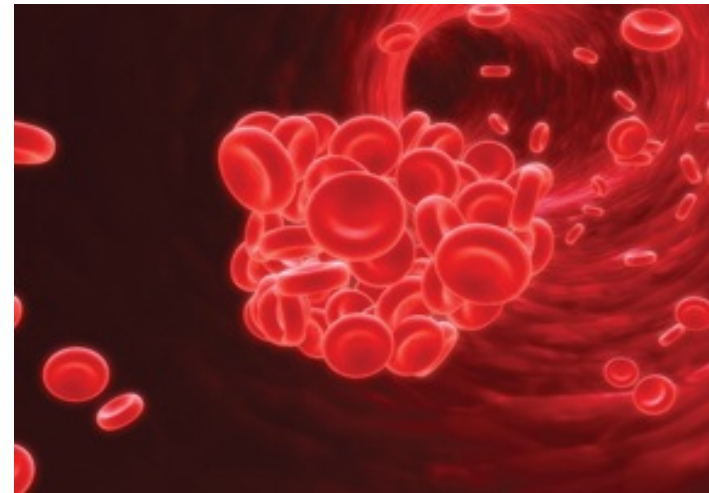


Don't Stop There!!

Provision of Needed Prophylaxis is Sub-Optimal

**Mechanical
and
Pharmacological Prophylaxis**

Use Them!



References

- Clinical tools library: heart.org/stroke clinical tools.

Fonarow G. C., Smith E.E., Saver J.L., Reeves M.J., Hernandez A. F., Peterson E.D, Sacco R. L., Schwamm L. H., Improving Door-to-Needle Times in Acute Ischemic Stroke: The Design and Rationale for the American Heart Association/ American Stroke Association's Target: Stroke Initiative. *Stroke*. 2011;42:00-00. Slide Set - American Heart Association.

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•Summers D., Leonard A, Wentworth D., Saver J. L., Simpson J., Spilker J.A., Hock N., Miller E., Mitchell P. H., on behalf of the American Heart Association Council on Cardiovascular Nursing and the Stroke Council. Comprehensive overview of nursing and interdisciplinary care of the acute ischemic stroke patient: a scientific statement from the American Heart Association. *Stroke* 2009;40;2911-2944

•Target stroke resources. www.targetstroke.org. http://www.strokeassociation.org/STROKEORG/Professionals/TargetStroke_UCM_314495_SubHomePage.jsp

•Target: Stroke Learn More About The Challenge And How We Answer It.

http://www.strokeassociation.org/STROKEORG/Professionals/TargetStroke/Target-Stroke-Learn-More-About-The-Challenge-And-How-We-Answer-It_UCM_432409_Article.jsp

•Target: Stroke Clinical Resources and Tool Kit. http://www.strokeassociation.org/STROKEORG/Professionals/TargetStroke/Target-Stroke-Clinical-Resources-and-Tool-Kit_UCM_432411_Article.jsp



Cedars-Sinai 's Comprehensive Stroke Center Team



American Heart Association
American Stroke Association
CERTIFICATION
Meets standards for
Comprehensive Stroke Center



CEDARS-SINAI

Overview of Stroke VTE Recommendations

STROKE VTE SAFETY RECOMMENDATIONS: APPLIES TO ISCHEMIC AND HEMORRHAGIC STROKE

STEP 1 Admission/Transition of Care (Risk Factor Assessment):

Conduct stroke VTE risk factor assessment and document on all admitted patients with a stroke or rule out stroke diagnosis. Factors to consider, include:

- Personal, family history, or diagnosis of VTE
- Thrombophilia, history of hypercoagulopathy, or hypercoagulable state
- Immobility/bedrest greater than 24 hours
- Obesity BMI >30 kg/M²
- Smoking
- Active cancer (treatment ongoing, treatment within past 6 months, palliative)
- Paralysis, paresis or recent plaster immobilization of the lower extremities
- Major surgery within four weeks
- Localized tenderness along the distribution of the deep venous system, entire leg swollen, calf swelling 3 cm > asymptomatic side (measured 10 cm below tibial tuberosity), pitting edema confined to the symptomatic leg, or collateral superficial veins (non-varicose)
- Acute brain injury associated with trauma
- Current infection and associated treatment
- Pneumonia
- Heart failure, recent MI, or mechanical heart valve
- Lupus, autoimmune disease, inflammatory bowel disease
- Long distance air travel (> 6 hours)
- Current oral contraceptive or estrogen/testosterone supplement use

Documented VTE then consider:

- Consult hematologist for any potential anticoagulation addition or adjustment,
- Consult vascular surgeon or interventional radiologist for inferior vena cava placement or evaluation.

Overview of Stroke VTE Recommendations

STEP 2

Recommended VTE Prophylaxis

For Stroke Core Measures: mechanical and pharmacological therapy is required, unless documented contraindication

- Ambulation progression, as prescribed by health provider
- Mechanical prophylaxis initiated:
 - Intermittent pneumatic compression (IPC) device (thigh length, not knee length)
 - Other compression devices considered:
 - anti-embolism stockings;
 - venous foot pump (VFP)

Contra-indications to VFP/IPC

Dermatitis
Leg ulcers
Severe edema
Severe peripheral vascular disease
Congestive heart failure

- Mechanical prophylaxis ongoing:
 - Wound care team advised of patient's use
 - Ensure on patient
 - Ensure properly measured, fitted, worn, and machine is on
 - Minimally 18-20 hours per day (removed for 30 minutes maximum)
 - Skin inspection minimally every 8 hrs
 - IPC/VFP removed for ambulation
- Patient provided with information on proper use wearing, and able to verbalize understanding.

Contra-indications to Anticoagulant Use

STROKE VTE SAFETY RECOMMENDATIONS: APPLIES TO ISCHEMIC AND HEMORRHAGIC STROKE

BLEEDING RISK contraindications

A patient at higher bleeding risk is assessed by having 3 or more of the following risk factors:

- Age > 65 years.
- Previous history bleed or predisposition to bleeding (e.g. diverticulitis).
- Uncontrolled hypertension.
- Severe renal impairment (i.e. serum creatinine > 200µmol/L, GFR < 30 mL/min/1.73 m² or on dialysis).
- Acute hepatic impairment (e.g. bilirubin > 2x ULN + LFTS > 3x ULN), chronic liver disease (e.g.cirrhosis).
- Low platelet count < 80 x 10⁹/L or a thrombocytopenia or anaemia of undiagnosed cause.
- On concomitant drugs associated with an increased bleeding risk e.g. SSRIs, oral steroids, NSAIDs, methotrexate or other immune-suppressant agents.

ABSOLUTE contraindications

- Known large oesophageal varices.
- Significant thrombocytopenia (platelet count < 50 x 10⁹/L) - *refer to haematologist.*
- Within 72 hours of major surgery w/ risk of severe bleeding - *defer & reassess risk postoperatively.*
- Previously documented hypersensitivity to either the drug or excipients - *consider cardiology opinion.*
- Acute clinically significant bleed - defer & re-assess stroke versus bleeding risk within 3 months.
- Decompensated liver disease or deranged baseline clotting screen (INR > 1.5) - *refer to Gastroenterology / Hepatology.* Contraindication applies to oral anticoagulants only.
- Pregnancy or within 48 hours post partum - seek urgent haematological advice. Contraindication applies to oral anticoagulants only.
- Severe renal impairment (GFR < 30 mL/min/1.73 m² or on dialysis). Contraindication applies to dabigatran only.

RELATIVE contraindications

- Previous history intracranial haemorrhage - as some AF patients especially those considered at higher stroke risk (i.e. CHADS2 score ≥ 3) may benefit from anti-thrombotic therapy, *seek the opinion of a stroke specialist.*
- Recent major extracranial bleed within the last 6 months where the cause has not been identified or treated - *decision for oral anti-thrombotic therapy should be deferred.*
- Recent documented peptic ulcer (PU) within last 3 months - *decision for oral anti-thrombotic therapy should be deferred until treatment for PU completed.* In all cases with history PU give PPI cover whilst on anti-thrombotic.
- Recent history recurrent iatrogenic falls in patient at higher bleeding risk.

A risk of falls is not a contraindication to initiating oral anticoagulation

(e.g. a patient with an annual stroke risk of 5% (CHADS2 score 2-3) would need to fall 295 times for fall risk to outweigh stroke reduction benefit of warfarin).

- Dementia or marked cognitive impairment with poor medicines compliance and no access to carer support.
- Chronic alcohol abuse - especially if associated with binge drinking.

Overview of Stroke VTE Recommendations

STEP 2 CONT'D

Recommended VTE Prophylaxis

For Stroke Core Measures: mechanical and pharmacological therapy is required, unless documented contraindication

STROKE VTE SAFETY RECOMMENDATIONS:
APPLIES TO ISCHEMIC AND HEMORRHAGIC STROKE

- For ischemic stroke, anticoagulant therapy ordered and initiated, as prescribed by health provider, for VTE prevention on day of admission in ischemic stroke and between 72-96 hours after admission in intracerebral hemorrhage

- Fondaparinux sodium
- Low molecular weight heparin (LMWH)
- Low-dose unfractionated heparin (UFH) (for patients with renal failure)
- Other anticoagulant agent (specify _____)

- Discharge planning:
 - Discussed with patient/family
 - Collaboration and recommendations with patient's case manager and/or transition care specialist (discharge coach) for rehabilitation transition potential and patient mobility/functional goals
 - Discussion with physical therapist for current and future mobility/functional goals
 - Anticipated discharge date determined
 - Evaluate patient for mechanical prophylaxis for home use
 - Order continued home mechanical prophylaxis use at time of discharge
 - Continue home use post discharge unless specified differently by the clinician

Structured Clinical Questions

Population	Intervention(s)	Comparator	Outcome	Methodology
Hospitalized acutely ill medical patients	Mechanical prophylaxis (GCS, IPC, IVC filter) and/or pharmacologic prophylaxis (ASA, LDUH, LMWH, fondaparinux, VKA, oral DTI, oral direct Xa inhibitors)	No treatment, placebo, mechanical prophylaxis, and/or pharmacologic prophylaxis	Symptomatic DVT and PE, death, major bleeding events, mechanical prophylaxis complications	RCTs
	LDUH bid	LDUH bid		
	Extended-duration pharmacologic prophylaxis, after initial short-duration prophylaxis	Short-duration prophylaxis		
	Any screening for asymptomatic VTE with ultrasound	No screening		
All patients admitted to a critical care unit	Routine screening with ultrasound for asymptomatic VTE	No screening	Symptomatic DVT, PE, death, major bleeding events	RCTs and observational studies
	LMWH, LDUH	No treatment, placebo, mechanical prophylaxis, and/or pharmacologic prophylaxis	Symptomatic DVT, PE, death, major bleeding events, mechanical prophylaxis complications	RCTs and observational studies
Patients with cancer				
Receiving cancer treatment in outpatient setting	Mechanical prophylaxis (GCS) and/or pharmacologic prophylaxis (ASA, LDUH, LMWH, fondaparinux, VKA, oral DTI, oral direct Xa inhibitors)	No treatment, placebo, mechanical prophylaxis, and/or pharmacologic prophylaxis	Symptomatic DVT, PE, death, major bleeding events, mechanical prophylaxis complications	RCTs and observational studies
With indwelling central venous catheters	Pharmacologic prophylaxis (ASA, LDUH, LMWH, fondaparinux, VKA, oral DTI, oral direct Xa inhibitors)	No treatment, placebo, or pharmacologic prophylaxis	Symptomatic DVT, PE, death, major bleeding events, catheter failure	RCTs and observational studies
Chronically immobilized patients (e.g. nursing home or rehab residents, immobilized persons living at home)	Mechanical prophylaxis (GCS) and/or pharmacologic prophylaxis (ASA, LDUH, LMWH, fondaparinux, VKA, oral DTI, oral direct Xa inhibitors)	No treatment, placebo, mechanical prophylaxis, and/or pharmacologic prophylaxis	Symptomatic DVT, PE, death, major bleeding events, mechanical prophylaxis complications	RCTs and observational studies
Long-distance travelers	GCS, LMWH, ASA	No treatment, placebo, mechanical prophylaxis, and/or pharmacologic prophylaxis	Symptomatic DVT, PE, death, major bleeding events	RCTs and observational studies
All patients	Prognostic factors associated with risk of VTE	N/A	Symptomatic DVT and PE, death from PE	RCTs and observational studies
All patients	Prognostic factors associated with risk of bleeding	N/A	Major bleeding events, death from bleeding	RCTs and observational studies
Asymptomatic persons with thrombophilia (inherited thrombophilia, LAC, AFLA)	Mechanical prophylaxis (GCS) and/or pharmacologic prophylaxis (ASA, LDUH, LMWH, VKA)	No treatment or placebo	Symptomatic DVT, PE, death, major bleeding events	RCTs and observational studies
Asymptomatic persons (ie, no previous VTE)	Stains	No treatment or placebo	Symptomatic DVT, PE, death	RCTs and observational studies

For tradeoff of benefits and harms, only symptomatic VTE events are considered.
 AFLA = antiphospholipid antibodies; ASA = acetylsalicylic acid; DTI = direct thrombin inhibitor; GCS = Graduated compression stockings; IPC = intermittent pneumatic compression; IVC = inferior vena cava; LAC = lupus anticoagulant; LDUH = low-dose unfractionated heparin; LMWH = low-molecular-weight heparin; PE = pulmonary embolism; RCT = randomized controlled trial; VKA = vitamin K antagonist.

THESE RECOMMENDATIONS ARE INTENDED AS A LIST OF RECOMMENDED STEPS TO MAXIMIZE VTE PREVENTION, PROMOTE PATIENT SAFETY AND HEALTH OUTCOMES. NOTHING CONTAINED IN THESE RECOMMENDATIONS MAY REPLACE OR BE A SUBSTITUTE FOR THE MEDICAL ADVICE OF THE ATTENDING CLINICIAN.

February 2015

Overview of Stroke VTE Recommendations

STROKE VTE SAFETY RECOMMENDATIONS:
APPLIES TO ISCHEMIC AND HEMORRHAGIC STROKE

STEP 3 Patient VTE Risk Factor Reassessment

- Risk factors reassessment conducted and documented:
 - Prior to any surgical or procedural intervention
 - Change in patient's condition
 - Minimally once every 24 hours
- Mechanical prophylaxis ongoing:
 - Skin examination (wound care team consulted, if necessary), inspection care plan and treatment recommendations
 - Ensure on patient
 - Ensure properly measured, fitted and worn:
 - Minimally 18- 20 hours per day (removed for 30 minutes maximum)
 - Skin inspection per wound care team protocol or inspected minimally every 8 hrs
 - IPC/VFP removed for ambulation
 - Patient provided with information on proper use and wearing of all mechanical devices and able to read back to caregiver
- Pharmacological prophylaxis continued as prescribed
- Ambulation progression, as prescribed by health provider
- Discharge planning:
 - Discussed with patient/family/
 - Collaboration & recommendations with patient's case manager and/or transition care specialist (discharge coach) for rehabilitation transition potential and patient mobility/functional goals
 - Discussion with physical therapist for current and future mobility / functional goals
 - Anticipated discharge date determined
 - Evaluate patient for mechanical prophylaxis for home use
 - Order continued home mechanical prophylaxis use at time of discharge
 - Continue home use post discharge unless specified differently by the clinician

STEP 4 Patient Discharge or Transition to Rehab

To reduce readmissions and increase better health outcomes, the discharge or transfer to rehabilitation of all stroke patients should be planned. Health professionals should ensure patients understand the role of ordering physician-prescribed pharmacological prophylaxis and of wearing thigh-length compression IPC and stockings to prevent further stroke/VTE incidents are essential.

- Discharge instructions include:
 - Healthcare provider contact information
 - Signs and symptoms of DVT and PE
 - Evaluate patient for home use of:
 - Intermittent pneumatic compression (IPC) thigh length
 - Anti-embolism stockings
 - Venous foot pump
- Discharge instructions:
 - Reviewed with patient and read back
 - Received by patient
- Patient understands DVT/PE risk factors and how to prevent at home
 - Follow up appointment made
 - If immobility or bedrest required:
 - Healthcare provider orders completed, including:
 - Evaluated patient for home use of:
 - Mechanical prophylaxis
 - Length of mechanical prophylaxis treatment
 - Durable medical equipment unit notified of start date of IPC/VFP treatment
- Patient provided with information on:
 - Purpose of mechanical prophylaxis
 - Proper use and wearing
 - Importance on maintaining use at home until MD discontinues
 - Removed for ambulation and skin inspections (every 8 hrs)
 - Worn minimally 18- 20 hours per day (removed for 30 minutes maximum)

Overview of Stroke VTE Recommendations

Currently available in pdf form at:

https://ppahs.files.wordpress.com/2015/02/2015_strokevte_safety_recommendations.pdf

<http://bit.ly/1C76ZqK>

Questions:

- Would you prefer the Recommendations be in current pdf form or web-enabled application?
- Would you be interested in seeing Practical Clinical Tips for preventing VTE in stroke patients?
 - articles
 - podcasts
 - webinars



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Questions?

