

Nuts for Neuro and why I hate EMR

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I have no disclosures, I'm just a working stiff

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Stroke overview: 2018 Guidelines

- Stroke is the primary failure of focal tissue oxygenation and energy supply.
- Despite the increase in the global burden of stroke, advances are being made. In 2008, stroke dropped from the 3rd leading cause of death to the 4th.
- Most of the updates in the stroke guidelines are related to pre-hospital and Emergency room actions, testing and treatments.

In hospital management:

- 1- The use of comprehensive stroke units and the use of stroke order sets are recommended.
- 2-airway support for those with decreased LOC with airway compromise or supplemental oxygen to maintain O₂ sat >94%.

3- BP control

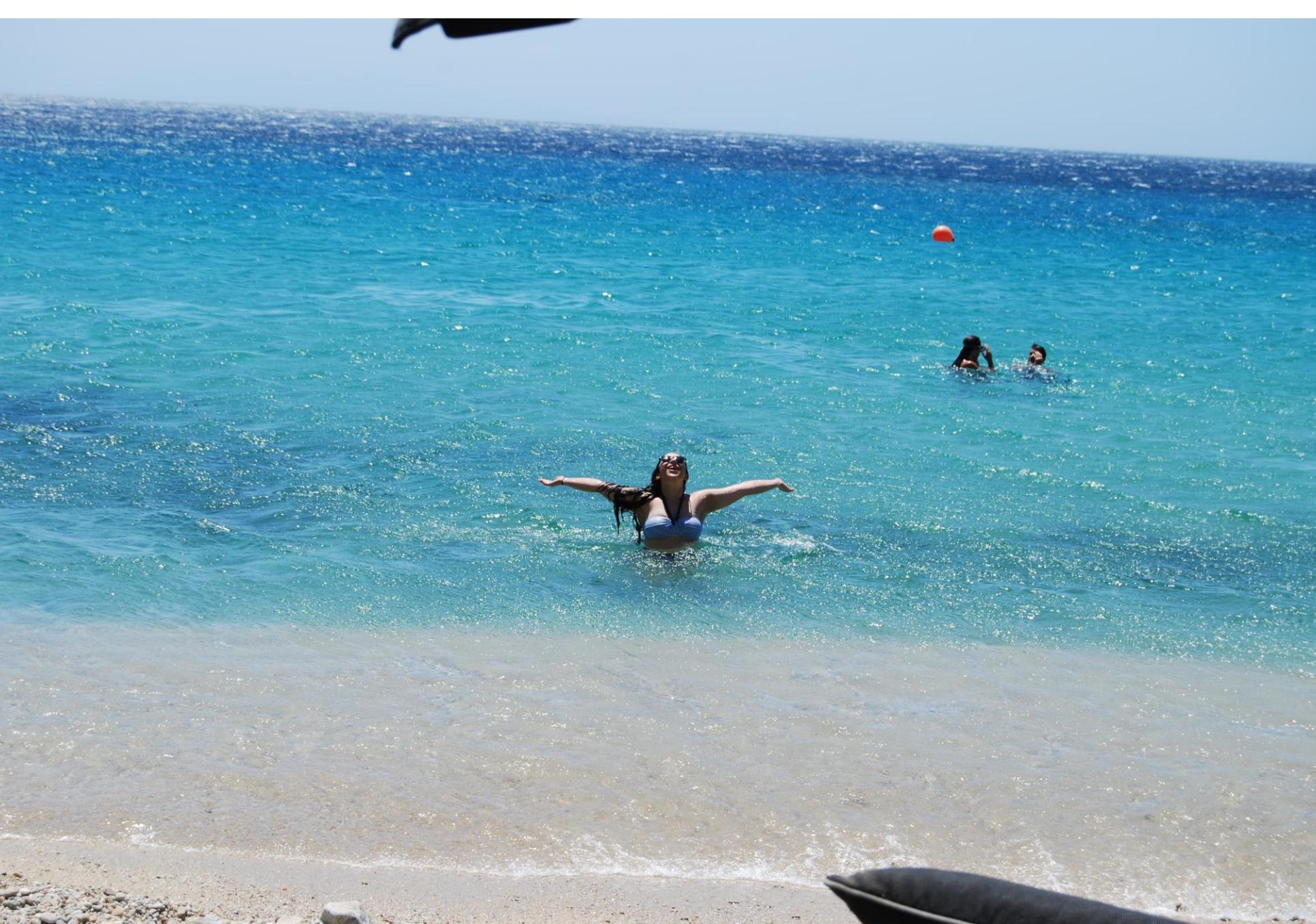
- Early treatment of hypertension is indicated when required by comorbid conditions (acute coronary events, acute heart failure, aortic dissection, post thrombolytic, ICH)
- If tPa candidate/recipient elevated BP should be lowered: syst <185 diast <110 before the initiation of fibrinolytic and <180/105 for the first 24hrs.
- Pt's with higher pressures are at greater risk for hemorrhage
- med options: labetalol, nicardine

- In patient's without comorbid conditions and did not get tPa: BP >220/110 benefit of treatment in the first 48-72hrs is uncertain. After 24hrs. lower by 15%
- (re)starting antihypertensives during hospitalization in patient's with BP >140/90 improves long term control.
- Systemic hypotension and hypoxemia should be avoided and if present, corrected. BP level for best outcome is not known and usefulness of drug induced hypertension is unknown. Use colloids and crystalloids.
- Glucose: persistent hyperglycemia during the 1st 24hrs associated with poorer outcomes. Treatment range 140-180 monitor and prevent hypoglycemia

- Temperature: sources of hyperthermia, $>38^{\circ}\text{C}$ should be identified and treated. Use antipyretics.
- Dysphagia screening by a trained healthcare provider and an instrumental evaluation for patient's with aspiration risk. Enteral diet should be initiated within 7 days. Oral hygiene protocols reduce the risk of pneumonia.
- Anti platelet tx: Should be initiated within 24-48hrs. After 24hrs if received tPa. 325mg ASA.
- a new rec: Dual Therapy (ASA and clopidogrel) begun within 24hrs continued for 21 days, can be beneficial for early secondary stroke prevention for a period of 90 days from symptom onset.

- DVT prophylaxis: immobile stroke patients
- intermittent pneumatic compression
- benefit of prophylactic use of subq heparin or LMWH is not well established. while there is a reduction in PE and DVT, there is an increased risk of hemorrhage. There may be select sub group of patients that are appropriate.
- routine placement of indwelling catheters should NOT be performed due to infection risk
- Rehab: early intervention should start 24hr post acute stroke.

- Treatment of complication:
- patient's with large stroke/major infarctions are at high risk for complicating cerebral edema
- there is no benefit from hypothermia or barbiturates.
- Steroids should NOT be used.
- No benefit to prophylactic anti-seizure meds. Treat a seizure if it occurs.



AMS

RL is a 79y/o W/M is sent from rehab due to AMS

Unable to recall the events of the day, increasing confusion. Reported he felt so bad that he “might as well be dead” Baker act was ordered. Pt was admitted and neurology consulted.

PMH: CAD s/p CABG, HTN, DM, syst heart failure, sleep apnea, chronic LBP with chronic narcotic use, carotid stent, COPD, sleep apnea and CKD

6/22 BUN 95 CR 2.1 GFR 28.28

6/23 BUN 87 CR 2.0 GFR 31.64 HgBA1C 11.3

he was admitted 6/13 with AMS and cellulitis Narcan helped his mentation and it was reported that he lives alone and probably wasn't taking all of his medications.

at DC BUN 38 CR 1.4 GFR 46.04

med list admit 6/13

allopurinol 150mg q D

ASA 81mg daily

breoellipta

Bumetanide 2mg BID

Carvedilol 3.125 BID

Duloxetine 60m BID*

FAmotidine 20mg daily

Furosemide 40mg daily

Homolog sliding scale

Hydralazine 25mg TID

hydrocodone 10/325 TID

Isosorbide mononitrate 30mg q day (was DC'd)

Lantus 40 units BID

Lyrics 200mg TID*

mag Oxide 400mg q day

Metformin 1000mg BID

Montelukast 10mg daily

Plavix 75mg q day

Tamsulosin ER 0.4mg q day

Trajenta 5mg q day

list 6/22

all of the meds from the 13th plus:

meloxicam 7.5mg BID

Cyclobenzaprine 5mg TID

dose changed to 6.25mg

Finasteride 5mg q day

medrol dose pack

cephalexin 500mg BID

Linzess

(was DC'd)

Losartan

The meds in blue* are at max dose and need dose adjustment in renal disease.

- Patient was lethargic but responsive and mildly confused. Lyric was held for 24 hours and reduced to the appropriate renal dose 50mg q 8hr. Meloxicam was DC'd, Duloxetine was reduced to 60mg daily. IV fluids were given at a slow rate
- After 36hrs, He was awake alert and oriented, questioning why he was given all the meds he's been given. neurology signed off the case as the baker act was rescinded and he was ready to return to rehab. 2 days later he was DC'd: BUN 35, CR 1.1 GFR >60
- DC med list: minor other med changes were made, however, Meloxicam 7.5mg BID and Duloxetine 60mg BID were resumed...
- review of records revealed that an admission 4/6/2018 was for "adverse med effect" acute on chronic kidney disease with an initial BUN 69 CR 1.9.

There was note "polypharmacy needs to be addressed by the patient's PCP and cardiologist. Restart diuretics at a lower dose

duloxetine, meloxicam and Lyrica were at the same dosages.

NOTE: 1 year earlier he was on half the duloxetine, same Lyrica and NO meloxicam and he had normal renal function.

- Most frequently reported medication errors include dose omission, wrong, over, or extra dose.
- The Pennsylvania patient safety reporting system found that HIT-related errors occurred at every step of the medication use process and >69% reach the patient.
- Discrepancies between electronic patient medication records contribute to adverse drug events. Regular reconciliation increases accuracy but is often inadequately supported by the EMR.

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5333269> Cognitive Errors in Reconciling Complex Medication Lists 2/10/2017

They study looked at 2 systems with different interface designs: Errors such as omissions to add or DC a drug or to update a dose were analyzed.

Clinicians made 3x's as many errors working with EHR with lists arranged in a single column than with side by side lists. Excessive cognitive effort and reliance on Memory was likely a strong contributing factor for lower accuracy of reconciliation.

- Adverse drug events cause 770,000 injuries or deaths and cost \$1.56 to 5.6 Billion each year in the US.
- Over 25% of inpatient medication errors are due to inaccurate medication lists while errors due to prescription histories occur in up to 67% of cases.
- Lists need to be regularly updates: at the time of admission, discharge or transfer, communicated with the PCP and during ambulatory care.
- How many readmissions are due to inaccurate med lists?



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