Anesthetic Management for Endovascular Treatment of Acute Ischemic Stroke (“STROKE CODE”)
Endovascular Intervention for AIS must be treated as an emergent / crash case.
AVOID ANY DELAYS

1) Preparedness:
   a) Angio suite should be set-up ASAP. This should involve routine set-up with special attention to:
      i) Vasoactive Medications
         1. Phenylephrine and ephedrine pre-filled syringes
         2. Norepinephrine, phenylephrine, esmolol and nicardipine infusions to be ordered as soon as a decision to proceed is made
      ii) Heparin & Protamine
      iii) Glucometer and regular insulin

2) Pre Procedure Evaluation & Communication:
   a) Look up patient information in ORCA and evaluate the patient personally if possible – do not delay intervention in any case
   b) The attending anesthesiologist will call the stroke neurologist on the stroke phone (744-6789) to get report. Stroke neurologist will be expected to provide information regarding:
      i) Territory of stroke, NIHSS, stroke onset time and time frame for intervention
      ii) Level of consciousness, ability to protect airway, respiratory status
      iii) IV tPA administration- yes/no
      iv) Relevant co-morbidities and medications
      v) Current hemodynamic status, management and goals
   c) Anesthesiology attending to call/talk face-to-face with the Neurointerventionalist to discuss and agree specifically on:
      i) Choice of anesthetic technique: MAC vs GA
      ii) Any other major concerns

3) Anesthetic Technique:
   a) The choice of anesthetic technique should be individualized based on clinical characteristics of each patient, in close communication with the neurointerventionalist.
   b) Criteria to guide the choice of anesthetic technique:
      i) MAC: patients with anterior circulation stroke who can protect their airway and are cooperative, specifically, right-side MCA stroke with minimal comorbidities
      ii) General Anesthesia: All other patients, in particular posterior circulation stroke, NIHSS > 15, impaired ability to protect airway, respiratory compromise, agitated uncooperative patients & those already intubated
   c) During MAC cases, the neurointerventionalist will alert the anesthesia provider ahead of time when pain / discomfort due to intracerebral catheter entry may be anticipated. The anesthesia provider should be prepared to administer short acting analgesic (e.g fentanyl) accordingly.
   d) Anesthesia team should be ready to rapidly convert MAC to GA at any time during neurointervention if needed

4) Oxygenation and Ventilation:
   a) Supplemental oxygen for MAC
   b) All patients should have continuous pulse oximetry and capnography with intermittent monitoring of PaO2 and PaCO2
   c) Maintain SpO2 > 92% AND PaO2 > 60 mmHg and PaCO2 35-45 mmHg. Respiratory depression induced hypercarbia should be avoided during MAC.

This is a guideline and should not supercede clinical judgement.
For any questions, please feel free to consult one of the Neuroanesthesiology Faculty.
5) Hemodynamic Management/Monitoring:
   a) The anesthesia team will **NOT** place dedicated arterial lines as a routine. The groin access for intervention may be used for lab work and when possible, for blood pressure (BP) monitoring. Otherwise, monitor non-invasive BP every 3 min. This is expected to avoid delays in definitive endovascular intervention.
   b) Maintain SBP $\geq 140$ mm Hg and $\leq 180$ mm Hg (if the patient has received IV tPA) and $\geq 140$ mm Hg and $\leq 220$ mm Hg (if the patient did NOT receive IV tPA) using fluids and vasopressors based on individual patient characteristics.
   c) For patients who arrive with baseline pre-intervention SBP $< 140$ mmHg, the SBP should be maintained within 10% of that value.
   d) While the SBP target may be liberalized in communication with neurointerventionalists and neurologists following successful recanalization, the SBP should remain $\geq 140$ mm Hg or within 10% of baseline.
   e) For patients with significant cardiovascular co-morbidities and ongoing intensive care, the hemodynamic goals may have to be adjusted in discussion with intensivists and neurologists.

6) Fluid Management:
   a) Use non-dextrose containing crystalloid
   b) Fluid boluses may be required. Goal is normovolemia.
   c) All patients will have a Foley catheter placed.

7) Glycemic Management:
   a) Glucose should be sampled at least once every hour - capillary / venous / arterial blood may be sampled with point of care glucometer or blood gas analyzer.
   b) Maintain glucose in the range of 80-180 mg/dL with insulin treatment initiated for glucose values $> 180$ mg/dL and treatment for hypoglycemia being initiated for glucose values $< 50$ mg/dL.

8) Emergence:
   a) In general, all patients who were not intubated prior to arrival to angio suite should be extubatable at the end of intervention using standard extubation criteria.
   b) Check with the neurointerventionalists before extubation if they have any concerns.
   c) Telephone report should be given to ICU before transporting the patient. Occasionally, post intervention head CT may be requested for intubated patients.

10) Post-procedure debriefing:
    a) After completion of the intervention, a quick debriefing should be initiated with anesthesiology, neurology and neuroradiology involvement discussing procedural details and further management.