Creighton ACGME M4 Anesthesiology Questions/Testing/Board Review

Books: 1) Degowan: Physical Dx 2) Lange: Anesthesiology 3) Raj: Pain Mgt.

Goals: Student should be able to answer/discuss the questions/clinical topics below, perform a practical test with RA/GA, complete a written test and partake in an oral board Anesthesiology exam type procedure after the one month rotation.

:

1) 1% xylocaine = \_\_\_\_ mg/ml. 1 ml. 1% xylocaine with 1:200,000 Epi. equates to how much epinephrine?

2) Sevoflurane and Desflurane – Define with respect to each one: MAC, blood - gas/lipid solubility, uptake, SEs.

3) N20: Second gas effect and diffusion effect

4) Biggest leak in circuit – where? Other leaky places in circuit? Unable to repair leak – immediate surgery – describe clinical response.

5) Mechanism of actions and SEs of Propofol/Zofran/Reglan/phenergan/Decadron/vistaril/ Benadryl/ Dramamine – all anti emetics.

6) Prolonged QT – meaning? Name common drugs which cause prolonged Q-T interval. Describe how to manage a Cardiac Pacemaker in surgery. Magnet? ICD?

7) Define Mallampati Score and characteristics of a difficult airway. Other airway parameters: Submental distance/TMD/C Spine motion/tongue size/jaw recession/history of difficult intubation.

8) NPO rules for Anesthesia (Adult v Peds): Pre treatment full and high risk empty stomachs?IV and po meds – have a plan. Full stomach with RSI – NG/OG tube?

9) Preop lab – when necessary? K+? I/E ratio? When loss or gain occurred is important and why? Other considerations include Hgb., chemistries, renal/liver function, cardiac enzymes. BNP - useful?

10) Propofol SE and mechanism of action? Know backwards! Egg allergy? Etomidate as back up potentially safer induction agent. Other induction agents with more CV stability. Ketamine? Versed?

11) Inhalation A. mechanism of action? Know most common accepted theory.

12) Mixed GA technique – Describe: TIVA - Describe: Describe most CV stable induction and maintenance GA technique for long OR case with .2 EF, Multiple comorbidities. Describe inductions with renal failure acute and chronic, CHF, uncontrolled DM and hypoglycemia immediate inductions – discuss peri - operative tx.. Describe an induction with pt. hyperthyroid – know symptoms and signs/lab analysis – which medications to use and avoid. Adrenal crisis mgt peri operatively? Pt. hypotensive (BP 70 Systolic /frail/dark urine/poor medical and surgical preop workup – describe your efficient mgt. and tx. for going to surgery NOW).

13) Tx for base deficits and excess. Describe your introp tx. for ph 7.12, PCO2 48, HCO3 10 meq/L. PO 2 on 100% O2 of 57.

14) Muscle relaxation: Describe depolarizers v non depolarizers, T of 4 and tetany to stimulus (electrical). Name common depolarizers mechanism of action and SEs.

15) Alpha 2 agonist for General Anesthesia/Sedation is what drug? SEs?

16) Etomidate mechanism of action? Safety? Dose? SEs?

17) BOWDITCH effect? Describe tx. and where it is successfully utilized. Is there a lecture series at Harvard in his name yearly? Starling mechanism with intravascular volume and use of medications to assist. How do you determine where you are with Starling mechanics (Clinically and with gadgets)

18) Reversal of Neuromuscular relaxation with what drugs and how they work. What may prolong NM block? Describe clinical conditions and medications which may prolong NM block.

19) Phase 2 Neuromuscular Block – describe – Treat? Theory?

20) Dibucaine # How does it help? Succinylcholine qualitative deficit? What does a decreased level of pseudocholinesterase mean? Dx. and Tx. What conditions to avoid Anectine. Describe another RSI technique without Anectine.

21) Transient neurologic syndrome: TNS ? Describe: What drug mainly? Other drugs?

22) Layers of posterior spine before dura: Prior spine surgery – epidural space gone? Can you still to intrathecal tx.? Why or why not?

23) Labor Stages 1 and 2 need what nerve fibers blocked for pain control? Approaches? Doses of intrathecal narcotics and LA.

24) Tx of PDPH? Meds/procedures/epidural catheter in place – describe tx..

25) Sniff position in peds – describe. Peds lost IV access and no central access – where is there IV or IO access? Pt has end of case pediatric laryngospasm - describe immediate treatment. What drugs drawn up and immediately available IM and IV dosages. Are you really ready? Did you review with circulating RN ?

26) FRC in peds/obesity/post laparoscopic/robotic surgery is decreased? Explain consequences.

27) Heavy Beard and need to mask: Discuss treatment including gels/airways.

28) When/why do RSI? Unable to intubate – describe your GA airway mgt. plan. Do you have fiberoptic/video laryngoscopy/eschmann/airways/A help available/different blades/small ETs/stylets.

29) Cerebral perfusion is increased/decreased by what A. drugs? When would it matter? Optic N. (Intraocular)Pressure – why would that be a clinical concern? Name a technique which would increase intraocular P and another technique that would decrease intraocular P. Name risk factors for prone optic nerve injury and how to avoid.

30) Increased intracranial pressure is increased/decreased by what A. drugs? Increased ICP – Describe GA induction and maintenance techniques. Name all common drugs/dose/use/discuss with neurosurgeon.

31) Tx for SVT and VT under A? Tx of bradycardia? Tx of asystole?

32) Shock: Fluid Mgt./Blood/Monitors/A. Agents – Mgt./ABG Analysis/Transfusion.

33) Describe use of ephedrine/phenylephrine/dopamine – dobutamine/levophed/phenylephrine/epinephrine. Monitors (Lines?)

34) Htn. in PACU/ICU – describe tx./infusions – cardene/NTG/Nipride

35) Differences in Mac 3, Mac 4, and Miller blades? Lost light source on both Laryngoscope handles. Describe a technique to intubate immediately. Unable to intubate – describe next airway mgt. steps.

36) Inhalation technique for child/adult – differences? Describe simply uptake and distribution of common inhalation agents and differences. This needs to be memorized.

37) Use of alternative GA agents: Describe induction and maintenance/differences: Etomidate/Ketamine/Benzodiazepines/ alpha 2 agonists.

38) Prevention of A. recall? Describe drugs used to avoid recall.

39) Site of opioid mechanism of action in CNS. Describe narcotic receptors and how altered in COT (Chronic Opioid Therapy). Benzodiazepine receptors?

40) Renal and Cardiac effects of GA/agents.

41) Toradol use and SEs. Cox I or II. Contraindications?

42) Nim Monitor – describe. Know what nerve is being monitored and where to place the ET. What GA technique should be used and what drugs to avoid.

43) SEs of CVP, Arterial Line, and Swan insertions. Surgeon says he doesn’t want to wait/not necessary – your response.

44) IM induction of GA – Agents/Technique.

45) Cerebral Protection under GA – Describe technique and monitoring. Brainstem and auditory EPs, cerebral oximetry, EEG. Is neurologic outcome improved with mild hypothermia?

46) Shivering/hypothermia in PACU – describe tx. Hypotension/hypertension in PACU –tx?

47) PFTs – Uses – Describe Simple Measurements. When should we order a bedside measurement?

48) Tx of pre/intra/post bronchospasm and laryngospasm.

49) Describe what a grounding pad does and where it should be placed. Describe an electrical burn, cardiac pacemaker malfunction, or dysrhythmia with electrical injury. Describe a safe heating tx. for pt.. Concerns re heating blankets underneath pt.. Surgeon/nurse wants to place Bear Hugger hose under blanket – your response?

50) GA for burns – describe safe technique.

51) TEE uses/indications/SEs from placement. When would a bedside pre or post op exam be of benefit?

52 )EKG findings with ischemia/infarction – dx. and tx. under GA.

53) Renal function tests and recs. for GA with renal function decline:

54) LFT abnormalities and recs for GA with liver ds.:

55) Dx. and Tx. of pneumothorax under GA: Paravertebral thoracic block/catheter - collapse in middle of long case, no BS on affected side and O2 saturation declining. Describe your mgt..

56) Stepwise Airway Mgt. with ancillary techniques and adjunctive devices: Describe crico-thyrotomy technique and need for surgeon to be available during induction.

57) Epidural and spinal mechanism of action of LA/narcotics. Level required for CS/hernia/Lower Extremity /Gallbladder. Morbidly obese CS – describe technique of RA.

58) Transfusion reaction under GA: Dx. and Tx:

59) Discuss crystalloid v colloid tx. – intravascular volume replacement. Monitors (urine/clinical (Jugular veins/skin/lungs/cardiac/edema) and CVP/Swan Ganz monitors.

60) Why would you use Lasix/Bumex under GA ? (Position/albumin level/clinical edema/renal and cardiac function). Is there interstitial tissue in lung and does fluid collect there with clinical risk factors?

61) Blood transfusion level (Healthy CS at Hgb 7.0 v middle aged pt. with multiple co morbidities and Hgb. 9.0). Discuss.

62) GA with no monitors: Discuss your eye and other sensory functions to monitor pt’s VS. Which pulses? Color of pt.?

63) Discuss a common neonatal GA technique – PDA/hernia/bowel obst./cranial repairs?

64) B blocker tx. for routine pt. upon awakening, with CAD, with Htn.? SEs? Alternative anti htn. Tx.? Know B1 and B2 blocking effects. Metoprolol v Labetolol – KNOW.

65) Mgt. of T1 and TII DM Pre/post/intraop. Discuss use of insulin preop with timing of surgery, TII agents discontinuance and why, and insulin drip post op to maintain tight BS control. Why would you want to know Hgb A1 C level preop? BS 500 preop and emergency surgery – describe mgt. technique.

66) Extubation criteria for sick pts. Recovery of Respiratory function may require time. ICU mech V? Why? Give parameters re lung function, muscle relaxation, wakefulness, underlying diseases. ICU head nurse gives you grief re mech. V and PACU in ICU? Explain your response.

67) Explain 10 Potential Vagal clinical events. Why would you pre treat with small amount of anticholinergic?

68) Peribulbar block and asystole or seizure response. Dx. and Tx. Tx. of high spinal/intracerebral LA block.

69) Describe LA block and regional anesthesia of eye for cataracts and retina surgery.

70) Hypotension/Bradycardia during robotic surgery: Response.

71) Describe Mayo clinic preemptive pain tx. surgical protocol. Meds used?

72) Perioperative blindness: Dx./prevention/tx./at risk pts.?

73) Describe supine and prone position pearls. Why grounding pads? Burn prevention (chemicals?).

74) Axillary roll for lateral decubitus: Describe how it works for safety. How do you monitor intra operatively the brachial plexus – name 2 methods.

75) Brain death criteria (Harvard).

76) IV Hyperalimentation DCed preop. What do you monitor clinically and how do you prevent occurrence?

77) PACU dose of MS/Dilaudid/Fentanyl on peds/adults/elderly.

78) Indications for telemetry/oximetry on floor. Describe OSA criteria and monitoring.

79) Describe mechanism of inhalation RT for wheezing: Racemic epi., duoneb, albuterol, steroids, atropine. Refractory bronchospasm – tx.?

80) Unable to intubate/V/cannulate a line/refractory unstable VS. Call for \_\_\_\_\_\_.

81) Trauma: ABG analysis ? Give HCO3? Describe when? Lactate levels? Ancillary Monitors used. Levophed DOC? Why?

82) Spinal fusion from L1 – S1 – describe neuraxial tx. for labor. T2 – S1 scoliosis tx.- describe neuraxial or other tx. for labor. What can be done other than IV medications for labor pain control? Know caudal landmarks.

83) Newborn airway mgt. = Blade/ intubation of newborn. ET size? Cuff?

84) ESWL cardiac SEs and tx. Discuss VT and VF tx. in OR? Discuss SVT in OR – drugs/maneuvers/safety .

85) Temperature Maintenance in OR? Tx of fever in OR. MH signs. Evaluation and tx. Describe GA for high risk MH pts.?

86) Pacemaker mgt. in OR. Use of magnet?

87) Pt. unable to squeeze your hand during CS under SAB? Explain. Tx.?

88) Risks of GA in elderly/kids/middle aged adults? What do you instruct family? Neuro – cognitive decline in elderly with GA? How do you do this in 5 minutes considering the RN hasn’t provided information, surgeon is pacing instead of preparing the pt. for surgery (*capped IV/hypotension/dark urine –chrmd triad of induction collapse*). What are the most important instructions to family and patient? What are you doing (Multi-tasking) to the patient while you are explaining GA/risks?

89) Infusion of vasoconstricting drug into extremity (Dopamine). SEs if soft tissue infusion?

90) A. Colleague injecting Fentanyl and refuses tx. . Your actions!

91) Coagulation Cascade: Draw on paper or chalkboard and describe what/where each common coagulation test evaluates. Describe TEG, Soma clot, tx. of DIC, platelet function tests additionally. Know uses and indications of Factor VII, Cryo precipitate, FFP, platelets, whole blood v RBC transfusions, fibrinogen levels. Know Level ONE transfusion device indications. What tests are in a DIC Screen?

92) You are supervising a CRNA. He brags that he is saving a ton of $$$ with low flow O2/N2O (1 L/min). Ultane is at 3.5 %. No narcotics are being used as we are into saving $$$. What are your concerns if any?

93) The Co2 cannister is purple. What is happening? Describe the chemical reactions with the CO2 absorbents.

94) The O2 flush doesn’t work conventionally by filling the bag on A. machine. You cannot generate gas flows into bag despite everything appearing normal (wall pressure O2/O2 cylinder pressures (describe)/flow meters working). What is going on right in front of your face? Look again at the nobs. Where is the O2 flush going? Correct this immediately!

95) What is the difference in Pressure and volume ventilation? Advantages of SIMV? Why is oxygenation better with some patient effort? Discuss pulmonary V/Q relationships based on lung mechanics/gravity/effects of disease/FRC loss.

96) You are checking out the A machine and notice 2 things Clark electrode isn’t accurate and inspiratory valve is stuck. Your actions.

97) Describe watershed areas of cerebral circulation in the elderly. Should you consider 100% oxygen with high risk elderly patients with potential compromised cerebral circulation?

98) Describe oxygen toxicity of the newborn.

99) Anaphylaxis to marcaine on prior hospitalization. What drug would you utilize now for RA?

100) Describe positioning to avoid ulnar N. palsy in supine and prone positions? What can cause brachial plexus injuries in the supine position? Femoral N. is injured in what surgical position?

101) Describe pulmonary Htn. – Dx. (Name 2 methods to diagnose). Tx.? GA considerations.

102) V – tachycardia tx. under GA. Distinguish from Junctional tachycardia with aberration.

Medical and Interventional Pain Mgt:

1) Particulate steroids (Depomedrol v Kenalog v Decadron). Complications from particulate matter? Mechanism? Loss of hydrocortisone equivalents/efficacy deviating from methylprednisolone?

2) Marcaine/lidocaine/ropivicaine – length of action: % v volume v mgs re efficacy?

3) Action of anti - seizure medications in pain mgt.. Dose of Lyrica/Gabapentin/Tegretol/Tripleptal/Lamictal

4) Tramadol is slightly metabolized to a narcotic –Tamadol SE with SSRI drugs = \_\_\_\_\_\_\_

5) Waddell Signs – name 5. Fibromyalgia – describe. OA describe – Clinical pearls of Heberden’s/Bouchard’s nodes noted within 5 secs. of E/M.

6) Hysteria v malingering? Differentiate.

7) Cervical facet arthrosis symptoms? Myofascial muscles involved in C Spine pain? Which ones? Occipital Neuralgia – common? Which nerves? How tx.? What is difference between < and > Occipital Nerves and distribution? Pain in mastoid trough is which nerve? What is CDH and is the CS involved?

8) Lumbar stenosis gets better or worse with lumbar flexion? Claudication means what? Are you checking pulses v nerves? US? Why? EMG/NCV testing – describe in neuropathy/radiculopathy/stenosis.

9) CDH v Migraine v Cluster? KNOW. Describe simple topical sphenopalatine block tx: Other txs.?

10) Back to Occipital neuralgia dx. and tx: Common? Describe C3 Nerve root and potential treatment. Dangerous? Where is vertebral artery with respect to CS injections?

11) Flexeril mechanism of action? Soma/Robaxin? SEs? NMDA antagonism – describe. Dolophine/Methadone non narcotic and narcotic uses/SE. Half life of 90 hours?

12) Name 2 Cox 2 inhibitors? Dose? Use of NSAIDS in gastric bypass/sleeve pt.?

13)Symptoms and Signs of lumbar DDD? Facet arthrosis? Bogduk’s Studies on MBB RF?

14) Cervical and lumbar radiculopathy symptoms and signs?

15) #1 chronic pain associated comorbidity?

16) Signs of CRPS? Stepwise treatment – describe.

17) Describe multimodality pain tx.:

18) Describe acute and chronic shingles tx:

19) Hyperalgesia, hyperpathia, allodynia – Describe:

20) Stellate ganglion block – describe: Use? SEs?

21) Tx for intravascular IV LA injection?

22) TAP block covers what nerves? Use in OR and Pain Mgt.?

23) Nerve injury under US – describe next steps with pt.. Neuropraxia heals v neurotemesis/axonotemesis – describe: B vitamins? Dose? PT?

24 SEs of spinal narcotics? OSA comorbidity increases risk?

25) Know parent drug of Norco, Percocet, Duragesic, dolophine, opana, MS. Know one SL narcotic preparation/use. What % of drug remains in fentanyl patch after 3 days?

26) % oxycontin released in first one hour?

27) Mechnaisms of SCS, intrathecal narcotics, TNS.

28) Briefly describe the autonomic nervous system.

29)Tx of cephalgia: First HA worst ever warrants immediate clinical mgt. Describe.

30) CTS v Radiculopathy in PE/EMG/NCV tests/tx. Cub. Tunnel syndrome signs/sx/PE/tx.

31) Body landmarks for RA neuraxial access: Caudal, L5/S1.facet/MBB. S1 SNRB bedside tx.

32) Describe a VAS pain scale.

33) Hysteria v somatoform disorder v malingering v Munchhausen’s syndrome v secondary gain issues.

34) TCA v SSRI v SSNE RI v Dopamine reuptake inhibitors in pain mgt. Describe a simple mgt. plan with what drugs? Name 2 antidepressant drugs which do not increase wt. knowing that many cause wt.gain of 20 lbs and up to 100 lbs.

35) Safe sleep meds and dosage.

36) Adult and peds safe dose of lidocaine, ropivicane, and marcaine. Epi. increase safety? SE of epi. in LA?

37) Discuss US landmarks for brachial plexus, TAP, femoral and sciatic neural blocks, ankle, wrist, elbow, anterior/posterior LS plexus neural blocks.

38) Discuss wind up as a theory of chronic pain? Gate theory applicability?

39) A delta and C fiber role in pain mgt.? Hyporeflexia means \_\_\_\_\_\_Hyperreflexia means\_\_\_\_\_\_\_.

40) The most important spinal pathway in acute and chronic pain is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Pain is brain perceived where (section of brain)? When would you perform a pituitary ablation for pain control? Epidural neurolysis with phenol?

41) Discuss discography and its meaning. What does a SNRB tell you clinically?

42) Risk factors for perpetuation of chronic pain include:

43) EMG/NCV/EPs measure what indices?

44) Post cholecystectomy pain – describe 5 etiologies.

45) Sympathetic v Nociceptive v Neuropathic v Mixed Pain – describe what pt. feels.

46) Fibromyalgia/OA,RA/SLE /psoriatic arthritis/Mixed CTD/Myofascial disease/CMT (Charcot Marie Tooth ds.) - components of joint/ soft tissue pathology – know differences.

47) Efficacy of COT (Chronic Opioid Therapy) re VAS scales and actual pain relief/efficacy long term.

48) Central Pain: Describe and provide disease states causal.

49 Topical LA – adjunctive medications: Describe tx for what disease states.

50) Efficacy of ACP, NMT/Manual Medicine (Cochrane analysis).

51) Visceral pain tx; Causes and meds: Other tx.? Celiac block/paravertebral upper lumbar block?

52) Phantom and stump pain: Dx. and tx. CRPS?

53) Daily dose of Acetaminophen maximum chronically.

54) Evaluation and Tx of cluster v Temporal Arteritis Headache. ESR?

55) Evaluation and Tx of obstetric sciatica. Scan/Clinical exam/history/treatment.

56) Pain Mgt. drugs used during pregnancy and Lactation. Know FDA risk scales.

57) Cognitive therapy as pain tx..

58)Describe Celiac Plexus block and neurolytic tx.

59) Describe Addiction v Opioid Withdrawal (Physical Signs) v Pain tx.

60) Synvisc v steroid tx. in arthritic joints.

61) Restorative PT – describe. Uses?

62) Efficacy of translaminar v transforaminal ESI tx. Complications?

63) SEs of minimally invasive lumbar surgery/kyphoplasty/SCS /Intrathecal tx.

64) Tx of Sickle Cell disease and its pain:

65) SL Hospice and other pain preparation use. Know 2 preparations: SL absorption? Is it oral?

66) ER tx. of pain in chronic pain pt..

67) Radiation SEs over time on pain mgt. provider?

70) SIJ evaluation and tx.. Know 3 diagnostic tests. Fusion at age 40? Common in middle aged females?

71) Pulsed and thermal RF tx. Uses and efficacy. MBB C and LS Spine.

72) Describe an injection into elbow/wrist/knee/hip clinically and with fluoro/ US.

73) COT – describe a safe approach including rotation/dose/adjunctive medications/holidays/prn use.

74) SEs and mechanisms of action of skelaxin, Cox I, and mexitil.

75) Lumbar pain – Discuss overall mgt. and tx. Sciatica tx: - Acute v chronic

76) Sciatica post lumbar surgery: Discuss mgt.

77) Paravertebral blocks for RSD/Vascular ds., CRPS – discuss.

78) Narcotic contracts: Discuss merits.

79) Discuss suboxone tx.: Drugs in preparation/Dose/uses/indications/length of tx/SEs Tx for pain long term? Federal government regulations?

80) Distinguish CRPS from CTD (Cumulative Trauma Disorder).

Oral Boards:

1) Pt. healthy and develops refractory hypotension and bradycardia with induction of GA? Describe your immediate response and what you are thinking clinically? Review Rose Medical Center Cases Denver, Co. 1980s.

2) 38 year old CS develops Bradycardia and hypotension with inability to breathe and stuporous condition post marcaine spinal with full dose (15 mg). Describe your response and what is happening clinically.

3) Endovascular Repair of iliac stenosis: Surgeon says he doesn’t want lines or extra supplemental supportive drugs/drips. EF .25 COPD, OA, Obesity/DM T2/ Mild Anemia/hx of CVA. Describe A technique and how to deal with surgeon:

4) Class 4 Ariway (RSI v Awake techniques): Normal GI tract v full stomach techniques: Describe Airway Mgt.- Describe technique with active vomitus post induction.

5) Prolonged Trendelenburg position and CV collapse. Describe clinical response:

6) Electricity off – including generators (flashlights available): Describe GA technique/Monitors (In middle of bowel case).

7) Last case of ASC. ACL Repair with femoral/sciatic block. Uncontrollable PACU pain despite IV/Oral meds. PACU nurses want to admit for pain control. Surgeon doesn’t want to admit and do rounds/have phone calls/etc.. Pain is in medial knee. Pt. received 200 mg marcaine 4 hours prior (75 kg 40 y/o female) Describe your evaluation and tx..

8) Double lumen L endobronchial tube. L. lung is down and surgeon is working removing tumor. L. Lung keeps expanding and interfering with surgery. Describe your stepwise approach to correct problem.

9) Pediatric 4 y/o induction – no IV – parent present. Immediate laryngospasm after GA induction. Describe your response.

10) Multisystem trauma surgery: Swan placed and right carotid artery cannulated with use of dilator. Describe response.

chrmd