**ST. DOMINIC-JACKSON MEMORIAL HOSPITAL**  
**JACKSON, MISSISSIPPI**

**POST-OP CARDIAC SURGERY (CABG-VALVE) CLINICAL PATHWAY**

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**Admit to CVR Status-Post:** Anesthesia End Time:

**Nursing Orders:**

- **□ All of the following orders will be ordered as a group:**
  - DISCONTINUE ALL PRE-OPERATIVE ORDERS.
  - Initiate ACLS guidelines
  - Notify cardiologist and primary care physician of patient’s admission to unit.

**Monitoring/Vital signs:**

- **Vital signs:** Document q 5 minutes until stable; q 15 minutes x 4; q 30 minutes x 4; q 1 hour x 24 OR until de-lined and off vasoactive infusions; then q 4 hours. Keep SBP 120-150mmHg or as ordered by MD.
- Strict I+O q 1 hour.
- Daily weight until discharged
- Apply NIBP to non-A line arm (if not contraindicated). Release cuff after each measurement. If NIBP does not correlate with ABP within 10-15 points systolic monitor NIBP every hour.
- Connect FloTrac to EV1000 monitor on arrival to unit and prior to anesthesiologist leaving patient’s room.
- Wedge swan- PCWP-Document on arrival, prior to anesthesiologist leaving patient’s room and q 4 hours (if present and not contraindicated).
- Maintain continuous ABP, CO/CI, CVP, SVRI, SVV monitoring (include temperature and PAP if swan present), document per vital sign order.
- Notify surgeon if: CI < 2.2, HR <60 or >90, RR <12 or >20, Temp >37.5 C, O2 sat < 94%, PAD <12 or > 20, CVP <5 or >15, PVCs > 6/minute.
- If patient has a femoral A-line and a functional radial A-line, AND is hemodynamically stable, remove femoral A-line post extubation.
- If core temperature is < 95 degrees F, use heated vent circuit and bair hugger blanket until temp is >/= 98.6 degrees F. USE FLUID WARMER FOR ALL IV FLUIDS IF TEMP < 97.0 DEGREES F.
- If temp is >/= 102 degrees F and not relieved by Tylenol, apply cooling blanket and notify MD.

**Lines/Tubes:**

- Nurse may insert Salem-sump NGT/OGT prn nausea/vomiting/prolonged intubation, if not already present. Connect to low continuous wall suction. Irrigate with water q 2 hours prn to keep patent. Discontinue with extubation. May reinsert prn nausea/vomiting unrelieved with antiemetic.
- Chest tubes to Atrium drain at 20cm H2O suction. Assess tubes q 5-10 minutes on arrival to CVR/immediate post op.
- If patient has Blake drains, milk/strip as needed until drainage decreases then q 1h and prn. DO NOT milk/strip unless visible clot is present. Call surgeon if bleeding exceeds parameters.
- Record chest tube output q 15 minutes if patient is bleeding. Notify surgeon if CT drainage is > 300ml in hour 1; > 200 ml in hour 2; > 100 ml in any hour thereafter.
- RN may discontinue mediastinal tubes on POD #1 if drainage is less than 25m/hr. x 4hrs and pt has sat up twice. Confirm with MD and write order to discontinue before removing tubes.

**DOCTOR’S ORDERS**

**BOTTOM EDGE OF PATIENT LABEL**

REV 10/15; SD40-3
### POST-OP CARDIAC SURGERY (CABG-VALVE) CLINICAL PATHWAY

**Pharmacy Mnemonic:** POCSURG2

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<td></td>
<td>Leave cordis/introducer in place while patient is in CVR. If unable to keep central access patent, notify MD for line change or consult for PICC team. Discontinue all central line access on patients prior to transfer to floor (PICC line is okay). PT MUST HAVE 2 FUNCTIONING IVs PRIOR TO TRANSFER (20g OR LARGER)</td>
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<td>Patient MUST have 2 patent INT prior to d/c of cordis/central lines. If unable to place INT consult PICC team for INT or PICC (double lumen). If PICC placed put PICC line protocol on chart.</td>
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<td>If patient is off vasopressors and/or inotropes and CI is stable, discontinue Swan at 0500 on POD #1. <em>(Do not pull swan on post-op valve/document ed bad ventricle/EF&lt;45% patients until seen by MD).</em></td>
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<td>MAINTAIN ALL VASOACTIVE/VASOPRESSOR DRIPS ON A CENTRAL LINE.</td>
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<td>Convert all peripheral sites to INT on POD #1 if stable.</td>
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<td>Maintain base IVF @ KVO to cordis/introducer until discontinued.</td>
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<td>Do not discontinue central line until transfer to 2East.</td>
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<td>Confirm with MD need for central line and/or removal POD#5 due to infection control.</td>
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**Nursing Care:**

- Surgical bra on all female patients (total bilateral mastectomy without breast implants are excluded) and male patents with excessive breast tissue/gynecomastic chests.
- Vaseline gauze/4x4 gauze directly to CT sites for 24 hours, then open to air on POD #2. If pt continues to have drainage from sites, redress prn *(all shifts are responsible for dressing changes if needed).*
- If pt has PICO dressing on sternum, leave in place until day of discharge or POD #7, then remove. If pt has island dressing on sternum, leave in place until POD #3. If dressing has excessive drainage change as needed. Once dressing is changed, change daily and prn.
- Change pleural chest tube dressings daily and prn. Once sternal dressing is changed, Change mediastinal tube dressings daily and prn.
- Paint incision with betadine POD 2 and then daily
- If patient has IABP in place, redress insertion site with betadine ointment and sterile dressing daily and prn. If patient has an iodine allergy, use Neosporin ointment instead.
- For patients with silver dressings on sternum, leave in place until POD #7. At discharge, if prior to POD 7, please change dressing and ensure edges are completely sealed so that patients may shower.

**Core Measures:**

- **All of the following orders will be ordered as a group:**
  - **CM: SCIP-Surgical Care Improvement Project** *(Nursing order-do not delete).*
  - **CM: SCIP-Foley to be discontinued on POD #1.**
    1. MD or NP must document need for continuing urinary catheter longer than day 1.
    2. Maintain Foley to gravity. Document UOP q 1 hour. Notify MD if UOP<60 ml/2 hrs. Or less than 0.5 ml/kg/hr. Remove Foley once ambulating/prior to transfer to 2East. If patient has not voided 6-8 hours after removing foley, nurse will do a bladder scan. If residual is >/= 250ml, straight cath patent. If patient continues to have difficulty voiding, notify MD. *(IF FOLEY WAS PLACED BY UROLOGY, DO NOT REMOVE UNLESS PER THEIR ORDER)*
CM: VTE prophylaxis (mechanical): Apply TEDS and SCDs to all patients on arrival to CVR ONCE STABLE. If pt arrives with ACE wraps, leave in place until POD #1, then remove ace and apply TED. If unable to get a proper fit with TEDS, reapply ACE wraps.

1. Mechanical
   □ SCDs plus TED hose □ Bilateral □ Right □ Left
2. Pharmacologic: Begin 18 hours post anesthesia end time: ___________
   □ Heparin 5,000 units subcutaneously □ q 8 hours □ q 12 hours
   □ Lovenox (enoxaparin) 40 mg subcutaneously q 24 hours. (Pharmacy to renally adjust)

Activity:
□ All of the following orders will be ordered as a group:
   • Range of motion to all extremities q 4 hours until ambulatory.
   • Elevate HOB 15-30 degrees immediately post op (as patient tolerates).
   • Progress to standing at bedside with assistance.
   • Sitting at edge of bed or up in chair for all meals, as tolerated.
   • Ambulate 3-5 times on POD #1-begin at 0530, as tolerated.
   • Ambulate 5 times daily starting on POD #2 and continue until discharge.
   • When not ambulating, have patient sitting up in chair for 2 hours 3x/day.

Diet:
□ All of the following orders will be ordered as a group:
   • NPO until extubated. Once extubated, start sips of water/ice chips. Do not advance diet if pt develops nausea/vomiting.
   • POD #1 advance diet to 60/60/60.
   • POD#2 advance to 75/75/75.
   • If patient requires diet modification due to preexisting comorbidities, is NPO >48 hrs. Or if pt requires prolonged intubation, consult Nutrition Support Team for nutrition recommendations (enteral/parenteral).

Labs/Orders: **NOTE**: If A-line available get labs from A-line not venous**
□ All of the following orders will be ordered as a group:
   • Immediately on arrival to CVR:
     • CBC with diff, BMP, serum magnesium, PCXR, EKG, ABG complete.
     • Coag Profile, including fibrinogen
     • Hgb/Hct q 6 hours x 2, unless bleeding, then as directed by surgeon.
     • Serum K+ and Mg q 6 hours x 2 (unless using CC electrolyte protocol, then follow labs per protocol).
     • Accuchecks q 2hr x 3, then q 4 hours x 24 hours (if pt not already on intensive insulin protocol). Initiate intensive insulin per protocol if glucose> 150 and place order set on chart.
     • Nursing order: If pt has elevated BUN/creatinine or known renal disease do BMP q 6 hours x 2.
     • Nursing order: Infuse cell saver if not done in OR.
     • Nursing order: If HCT <21, transfuse 2 unit PRBCs x 1, then per MD orders.
     • Nursing order: If platelets are <100,000, change flush bag(s) on A-line/CVP/swan to 0.9%NS.
     • Nursing order: If Ionized Calcium is <1 or serum Calcium is <8.9 on immediate post-op labs, give Calcium Chloride 1 Gm/50ml DSW over 30 min x1.
     • Notify MD if Creatinine>2, Platelets<100,000, or HCT<24.

DOCTOR’S ORDERS
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**Pharmacy Mnemonic:** POCSURG4

**PCXR POD #1 and # 3 Indication:** s/p Cardiac surgery

**Daily:**
- CBC with diff, BMP, Mg.
- ABG daily and prn if pt on vent, bipap, aquanox, or if having respiratory distress.
- PCXR if patient has CTs, is on vent, and 4:00am day after extubation, prn for resp. distress.

**Nursing order:** Daily EKG if pt on Amiodarone infusion, requires pacing, or per MD. EKG prn with chest pain or any EKG/rhythm changes.

**EKG POD #1**

**Respiratory therapy orders:**
- All of the following orders will be ordered as a group:
  - After patient has been in CVR 2 hours (minimum) and is stable, begin to wean and extubate per respiratory guidelines. Have copy of guidelines placed in order section of patient’s chart.
  - Obtain ABG on arrival to CVR, on spontaneous, post extubation, and prn.
  - If base excess is $\leq -2$, give 100 meq Sodium Bicarbonate 8.4% IVP and call surgeon.
  - Repeat ABG 30 min after each dose of Sodium Bicarbonate.
  - Post-extubation: O2 via nasal cannula, face mask, Bipap, or Aquanox to keep O2 sat $\geq 92%$.
  - EZpap q 4 hrs. X 24 hrs. Then change to incentive spirometry if pt tolerates.
  - Incentive spirometry q 1 hr. x 10 breaths, while awake.
  - If incentive spirometry $< 750ml$, start IPPB q 4 hrs.
  - RN to deep breathe, cough, and turn pt q 2 hrs., as tolerated, while awake.
  - HHN: UDP prn wheezing. If pt is on home nebulizers, inhalers, or bipap/cpap continue if okay with MD.
  - If new onset A-fib avoid beta-2 adrenergic stimulators

**BIPAP**

**Medications:**

**IV FLUIDS:**
- Dextrose 5% and 0.45% Sodium Chloride with 40 mEq KCl at 50 mL per hr.
- 0.45% Sodium Chloride with 40 mEq KCL at 50 mL per hr. for patients with A1C $>6$
- Dextrose 5% and 0.45% Sodium Chloride at 50 mL per hr. for patients with K$^+>5$

**Volume expanders:**
- Albumin 5%-250ml infuse over 30 minutes for systolic less than 90 or MAP less than 65. May repeat x 1.
- Lactated Ringers 1000ml: bolus 250mL for systolic less than 90 or MAP less than 65. May repeat x 3 for a maximum of 1000ml total
- For renal patients: 0.9% Sodium Chloride 1000ml: bolus 250 mL for systolic less than 90/ MAP less than 65 /May repeat x 3 for a maximum of 1000ml total
- IF PT HAS NO RESPONSE FROM FLUID BOLUS, CALL SURGEON FOR ORDERS.
Infusions: NOTIFY SURGEON IF STARTED

- **HYPERTENSION/VASODILATORS:**
  - Cardene (nicardipine) 20mg in sodium chloride 200 mL at 5 mg/hr. Increase by 2.5 mg/hr every 15 minutes PRN to maintain SBP<140 mm Hg. Max rate is 15 mg/hr. Call MD if not effective. (If volume restriction is needed, call pharmacy for double-strength concentration.
  - If patient has a radial artery harvest, infuse Nitroglycerin 25mg/250ml D5W at rate received from OR. Do not titrate for hypertension. If MAP<70 hold infusion and call surgeon.

- **HYPOTENSION/VASOCONSTRICTORS:**
  - Levophed (norepinephrine) 8mg/250ml D5W. Start at 5 mcg/min. Increase by 2.5 mcg/min every 10 minutes PRN to keep MAP 65-85 mm/Hg. Once rate is at 10mcg/min, add Vasopressin and call MD
  - Vasopressin 20 units/100ml 0.9% NS at 0.04 units/min (12mL/hr)
  - Epinephrine 4mg/500ml D5W. Start at ___mcg/min. Call MD before starting. Increase by 1 mcg/min every 5 minutes PRN to keep MAP 65-85 mm HG. Max rate is 20 mcg/min for weight < 90 kg, 30 mcg/min for weight >90 kg. Notify MD if max rate is reached.
  - Dopamine 800mg/250ml D5W. Increase by 2.5 mcg/kg/min every 5 minutes PRN to keep MAP 65-85mmHg. Call MD before starting. Start at 5mcg/kg/min. Max rate is 20mcg/kg/min.

- **INOTROPES:**
  - Dobutrex (dobutamine) 500mg/250ml D5W Start at _________mcg/kg/hr.
  - Primacor (milrinone) 40mg/200ml D5W. Start at _________mcg/kg/hr.

Electrolyte replacement:

- All of the following orders will be ordered as a group:
  - Place Critical Care IV Electrolyte Replacement Orders on chart.
  - Potassium chloride-if K+ < 4.5, give 20meq KCl/100ml sterile water over 1 Hour. Follow Critical Care Electrolyte Replacement Orders after first dose Infused. (CENTRAL LINE INFUSION ONLY)
  - Magnesium sulfate-if Mg is <2, give 2Gm/50ml D5W over 2 hours. Follow Critical Care Replacement Orders after first dose infused. (MAY BE INFUSED VIA PERIPHERAL IV, CENTRAL LINE INFUSION PREFERED.

Sedation Orders:

- All of the following orders will be ordered as a group:
  - Dexmedetomidine (Precedex):
    - Determine if pt meets criteria for using drug:
      - Awake/arousable with residual paralytic effects
      - Hemodynamically stable on NO more than 1 pressor and HR>70
      - No excessive chest tube output (ex. 3ml/kg/hr. over 2 consecutive hours)
      - No ventricular assist devices in place (ex. IABP)
      - Extubation attempt is expected within 24 hours
• Place Dexmedetomidine order set on chart.
• Dexmedetomidine 200mcg/50ml 0.9% NaCl; begin infusion at 0.2 mcg/kg/hr. Increase by 0.2 mcg/kg/hr every 30 minutes to RASS -1 to 0. (Maximum rate is 0.8 mcg/kg/hr.). Hold for HR<60 or MAP<70.
• DO NOT INFUSE BEYOND 24 HOURS. If pt requires prolonged sedation, does not achieve sufficient level of sedation, does not tolerate drug, or has a known allergy to the drug, call MD for different sedation medication (ex. Diprovan, Fentanyl, Versed). If any of these drugs used, place appropriate order set on chart.
• For breakthrough pain (>3-4/10) and/or agitation give ½ doses of adjunct pain med or sedation.
• DISCONTINUE DEXMEDETOMIDINE UPON SUCCESSFUL EXTUBATION

PAIN MANAGEMENT: (If pain continues to be unrelieved, call surgeon for order)
• Dr. Keller requests no IV pain med after patient is extubated and tolerating PO. If patient is unable to achieve pain level <= 3/10 with po meds, call MD for orders.
  □ Morphine 2mg IVP q 4 hour PRN for moderate pain (5-7/10)
  □ Morphine 4mg IVP q 4 hour PRN for severe pain (8-10/10)
• If patient has a morphine allergy or pain unrelieved by 2 doses of morphine give:
  □ Dilaudid (hydromorphone) 0.2 mg IV q 4 h PRN for moderate pain (5-7/10)
  □ Dilaudid (hydromorphone) 0.4 mg IV q 4 h PRN for severe pain (8-10/10)
  If patient becomes obtunded and respiratory rate is ≤ 10, administer Narcan (naloxone) 0.4 mg IV STAT and notify physician immediately (unless patient is considered terminal, comfort care only, or hospice).

• DO NOT EXCEED MORE THAN 3 GRAMS OF ACETAMINOPHEN IN 24HOURS
  □ Norco (hydrocodone/acetaminophen) 5/325 one tab PO q 4 hours PRN moderate pain (5-7/10)
  □ Percocet (oxyccodone/acetaminophen) 5/325 one tab PO q 4 hours PRN severe pain (8-10/10)
  □ Tylenol (acetaminophen) 325 mg 1-2 tab(s) PO q 6hr PRN mild pain (3-5/10) or fever> 101 degrees F
  □ Tylenol (acetaminophen) supp 650mg 1 PR q 6 hours PRN mild pain (3-5/10) or fever> 101 degrees F. Use if patient is unable to take PO

• Nursing Order: Consider Toradol if pain not relieved by narcotics. OBTAIN ORDER FROM MD FIRST.
  • Do not administer Toradol if: creatinine > 1.0; history of GI bleeding; peptic ulcer disease; gastric disease; or patient is > 60 years old, or platelets less than 100,000
**POST-OP CARDIAC SURGERY (CABG-VALVE) CLINICAL PATHWAY**

**MEDICATION:** Administer medication utilizing range order guideline.

**Post-op ANTIBIOTICS:** **Antibiotics should not be administered more than 48 hours after the documented Cardiac Anesthesia End Time unless specifically and additionally ordered by a physician. Suspected infection should be clearly documented.**

- [ ] Administer Ancef (cefaclorin) 2 grams IVPB q 8 hrs x 3 doses (if patient weighs > 120 kg give 3 grams)
- [ ] If allergic to PCN or meets criteria listed below Substitute: Vancocin (vancomycin) 15 mg/kg IVBP q 12 hours x 2 doses.

**CM: SELECT REASON FOR USE OF VANCOMYCIN BELOW:**
- Significant penicillin allergy or allergy to cephalosporin
- High-risk due to inpatient hospitalization within the last year
- Increased MRSA rate either facility-wide or procedure-specific
- High-risk due to residence in long-term care setting within the last year
- Known prior colonization with MRSA
- Patient has chronic wound care or on dialysis
- Hospital inpatient for >24 hours prior to procedure

**ROUTINE MEDS:**
- Pepcid (famotidine) 20 mg IV slow push q 12 hours. Change to PO post extubation or if pt remains intubated may give via NGT/OGT.
- Colace (docusate) 100mg PO q 12 hours. May substitute liquid form if patient has NGT/OGT, hold if patient has diarrhea
- Enteric coated aspirin [ ] 81mg or [ ] 325mg PO daily.
- If NPO, give via NGT/OGT [ ] aspirin chewable 81mg or [ ] aspirin 325mg daily.
- **If unable to take PO/NGT/OGT substitute:** ASA 300mg Suppository PR daily
- Plavix (clopidogrel) 75mg PO daily, hold if platelet count < 100,000.
- Vitamin C (ascorbic acid) 1 Gram PO/NGT daily
- TheragranM (multivitamin with minerals) 1 tab PO daily (give liquid vitamin supplement if patient has NGT)
- Lipitor (atorvastatin) 10 mg PO daily at 2100
- Prinivil (lisinopril) 5 mg PO daily. Begin POD #1. Hold if SBP<100, HR<70, or creatinine>1.3, Notify MD.
- Lasix (furosemide) 40mg IVP q 12 hours x 3 days. Begin POD #1. Discontinue when patient’s weight is within 2 pounds of preop weight.
- Lasix (furosemide) 20mg IVP [ ] daily or [ ] q 12 hours x 3 days. Begin POD #1. Discontinue when patient’s weight is within 2 pounds of preop weight.
- Potassium chloride 30 meq PO q 12 hrs while on Lasix. Begin POD #1. Do not give if Lasix has been discontinued. Do not give if serum K+ is >5.0
0.9% NS 10 ml flush to all unused central line/swan ports q 6 hours and prn
0.9% NS 3 ml flush to all unused peripheral/INT sites q 6 hours and prn

PRN MEDS:
- MOM Concentrate (milk of magnesia) 10-20mL q 12 hours PRN constipation
- Senokot 1 tab PO bid PRN constipation
- If patient does not have results from PO meds: check for fecal impaction.
- Dulcolax (bisacodyl) 10mg suppository PR x 1 dose if impacted
- Fleet's enema PR x 1 dose if no results from Dulcolax
- Zofran (ondansetron) 4mg IVP q 6 hours prn nausea/vomiting. If ineffective, call MD for secondary antiemetic. (Do not give Phenergan to Dr. Kennedy’s patients).
- Maalox Plus (Alum-maghydrox-simeth 200-200-20mg/5mL) 15-30 mL PO q 6 hrs PRN indigestion
- Restoril (temazepam) 15mg PO q HS prn sleep. May repeat x 1. Do not give after 0200.
- Benadryl (diphenhydramine) 25 mg PO q HS prn sleep. May repeat x 1. Do not give after 0200.

7. Consult Orders
- All of the following will be ordered as a group:
  - Pharmacy: glycemic control
  - Nutrition Services: Cardiac surgery pathway
  - Cardiopulmonary Rehab: “Cardiac Surgery Clinical Pathway” for inpatient rehab. Arrange for outpatient rehab or Ornish Program.
  - Social Services for discharge planning: please update chart routinely.
  - PT: evaluate and treat POD: 1
- Re-consult Cardiology
- Consult:

Date / Time

Physician Signature