

주요 성인 심장 질환 환자에서의 수술 후 관리 원칙

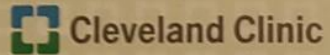
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Department of Thoracic and Cardiovascular Surgery

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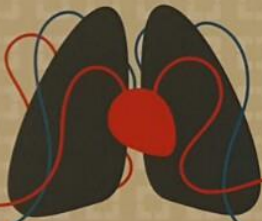


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"Nurses... without whose aid I am
sure such success as I have had
would not be possible."

*Frank E. Bunts, MD
Co-founder, Cleveland Clinic*

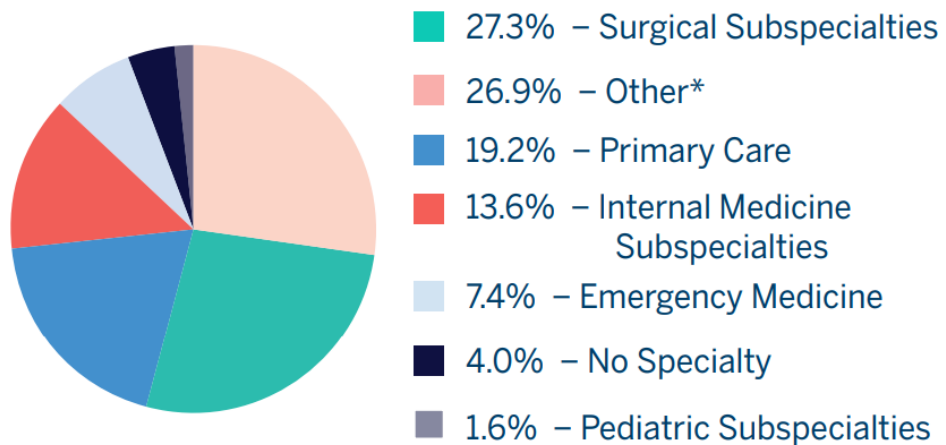


What is a PA?

PAs (physician associates/physician assistants) are licensed clinicians who practice medicine in every specialty and setting. Trusted, rigorously educated and trained healthcare professionals, PAs are dedicated to expanding access to care and transforming health and wellness through patient-centered, team-based medical practice.



PAs practice medicine in all specialties



*2023 AAPA Salary Survey,
All data based on clinically practicing PAs in the U.S.*

*Other refers to a variety of healthcare settings including but not limited to psychiatry, hospice and palliative care, obstetrics and gynecology, addiction medicine, pain management, public health and dermatology.

WHAT DO PAS DO?

PAs' specific duties depend on the setting in which they work, their level of experience, their specialty, and state laws.

Generally, PAs can:

- Take medical histories
- Conduct physical exams
- Diagnose and treat illness
- Order and interpret tests
- Develop treatment plans
- Prescribe medication
- Counsel on preventive care
- Perform procedures
- Assist in surgery
- Make rounds in hospitals and nursing homes
- Do clinical research

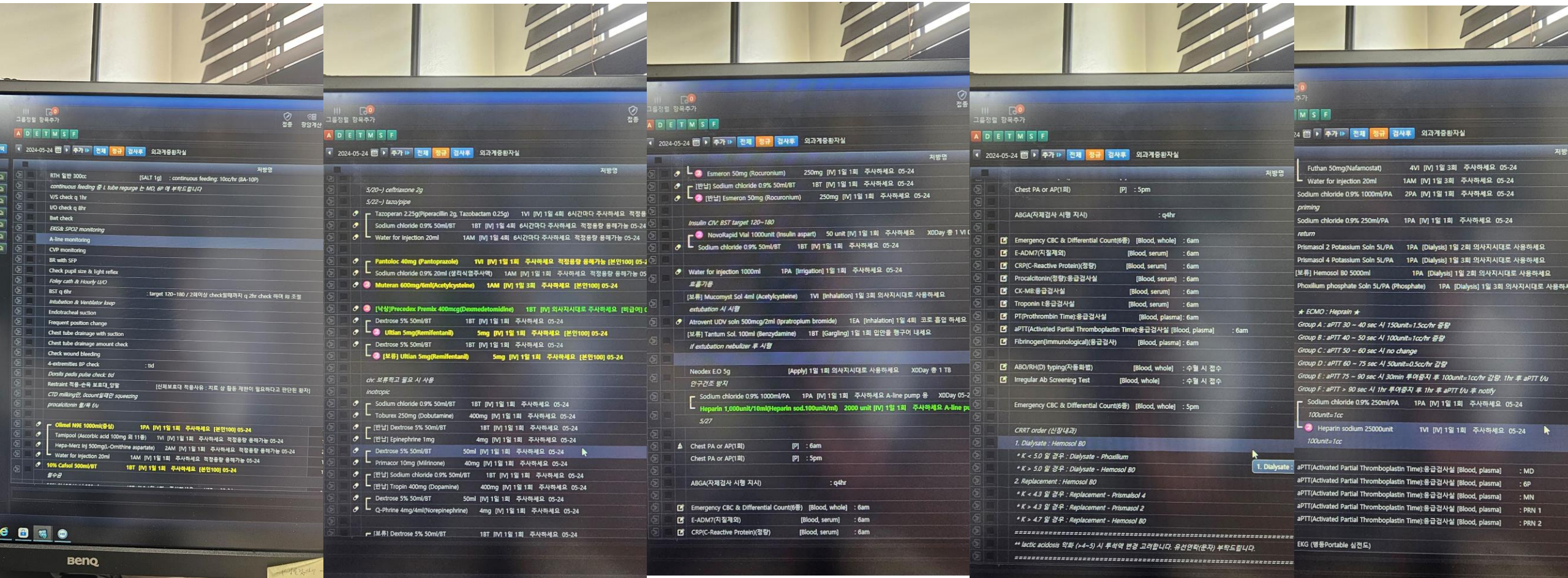
For us

- Physician
 - Medical reasoning → Assessment → Plan → Intervention
- Nurse
 - Nursing / Care / Acting
- Physician assistant
 - Somewhere between
 - How to Assist Physician

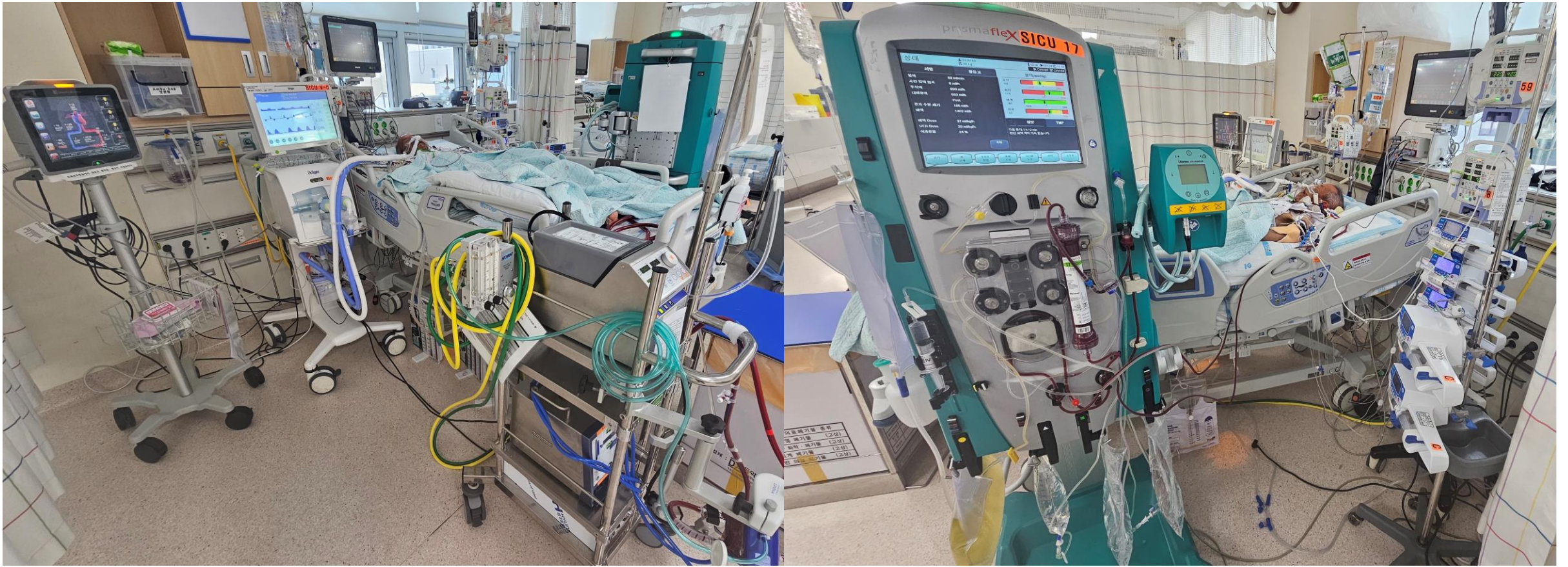
When I was primary physician...

- "주치의는 오더로 말한다"
- Your order for the patient looks like he or she really looks

Let's Imagine how he looks like



Maybe...



고단백 연식
V/S check q 8hr
I/O check q 8hr
BST (x4/day)
Bwt check
Encourage ward ambulation
엑스레이 환자 걸어서 갈수있도록 해주세요
뉴티당 2번 이상 운동 시켜주세요
혈, 목 lab, CXR t/u
소변 화장실에서 보실 수 있게 격려 부탁드립니다.
식사 바로 내놓지 말고 소량씩 자주 드시도록 해주세요
5/28 GDS, BAI t/u 및 PSY t/u(-)
4/29-) Ceftriaxone 2g q24hr + Metronidazole 500mg q8hr
4/30-5/4) Metronidazole 500mg q8hr
5/7-14) Metronidazole PO 500mg q8hr
Aspirin enteric coated 100mg(Aspirin) 1TA [P.O] 1일 1회 아침 식후30분에 복용하세요
Lypstar plus 10/10mg (Ezetimibe/Rosuvastatin) 1TA [P.O] 1일 1회 아침 식후30분에 복용하세요 hold
Dilatrend 12.5mg (Carvedilol) 1TA [P.O] 1일 2회 아침, 저녁 식후30분에 복용하세요
Osartan 50mg (Losartan potassium) 25mg [P.O] 1일 1회 아침 식후30분에 복용하세요
Diabex 500mg (Metformin) 1TA [P.O] 1일 1회 아침 식사직후에 복용하세요 X0Day
식이량, BST 확인 후 복용 confirm
Pantoline 40mg (Pantoprazole) 1TA [P.O] 1일 2회 아침, 저녁 식전30분에 복용하세요
Ganakhan 50mg (Itopride) 1TA [P.O] 1일 3회 매 식후30분에 복용하세요
Bisacodyl 5mg 1TA [P.O] 1일 1회 아침 식후30분에 복용하세요 [비급여] 따르프장

저방명

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Bisacodyl 5mg 1TA [P.O] 1일 1회 아침 식후30분에 복용하세요 [비급여] 따르프장
변비 시 복용, 설사 시 중단
[보류] Magnesium oxide 250mg 2TA [P.O] 1일 3회 매 식후30분에 복용하세요
환자 월말시 주세요
Lyrica 75mg (Pregabalin) 1CA [P.O] 의사지시대로 정해진 시간에 복용하세요
Thrupas 4mg (Silodosin) 1TA [P.O] 1일 2회 아침, 저녁 식후30분에 복용하세요
Hinechol 25mg (Bethanechol) 1TA [P.O] 1일 2회 아침, 저녁 식후30분에 복용하세요
Trast Patch 48mg (Piroxicam) 3EA [Patch] 격일로 붙이세요 [본인100]



- Vital sign
 - Blood pressure
 - Heart rate
 - Respiration rate
 - Body temperature
- Diet
- Activity
- Nursing
 - Monitor
 - Drain
 - Care
- IV
 - Fluid
 - Antibiotics
 - Continuous infusion
 - Protocol
 - Other drugs
- PO
 - Cardiovascular drug
 - Antiplatelet / Anticoagulant
 - Anti-arrhythmics / Anti-hypertensive
 - Lipid-lowering
 - DM medications
 - Symptom control
 - Analgesics
 - Mucolytics
 - Anti-ulcerative
 - GI
- Lab
 - Routine blood lab
 - Simple X-ray
 - EKG
 - CT or EchoCG

Vital sign

- Blood pressure
 - Target blood pressure
 - Coronary artery disease
 - Rheumatic severe MS
 - Aorta → Bleeding or Malperfusion
 - SBP/DBP/MBP, Pulse pressure → Meaning in specific condition (ECMO, LVAD...)
 - Inotropics / anti-hypertensives
- Heart rate
 - not only rate, but **rhythm**
 - not only rhythm, but **rate**
 - And **Symptom**
 - Targe HR
 - Coronary artery disease, Aorta, Severe AS, Hypertrophic LV
 - Post-op. MS, TR, AR

Vital sign

- Respiration rate
 - Dyspnea, not only rate but exertion
 - Hyperventilation? really?
 - Delirium vs. **Agitation**
- Body temperature
 - Control target – Bleeding, HF, Tachycardia, Post-CPR
 - Sign of inflammation including infection
 - Chilling / Shivering or Sweating
 - Leukocytosis, CRP, ESR, Procalcitonin elevation
 - Atelectasis, 5Ws (Wound, Water, Wind, Wonder drug, Walking)

- Diet
 - Ingredients
 - HTN (low salt) / CKD (limit amino acid) / DM (glycemic index)
 - 고추 장아찌에 개고기라도...
 - Routes
 - NPO – for what? why not?
 - Semi-fluid via L-tube / 경구 죽식/ 연하곤란식이
 - Prolonged intubation / Tracheostomy / Recurrent laryngeal n. injury
- Activity
 - ABR
 - BR with SFP (not supine)
 - Encourage ward ambulation ➔ Really encouraging?

Nursing

- Monitor
 - I/O, Bwt. → Chest X-ray, BUN/Cr. (pre-renal or cardio-renal), HF symptom
 - Mental status (Glasgow coma scale, Obey-command, Motor power)
 - Perfusion status (4-extremity BP, Dorsalis pedis pulse, color change)
 - Other than vital signs
 - EKG - rhythm, ST change
 - SpO2 → O2 supplement?, 산소는 보약인가?
 - A-line (Arterial blood pressure) → ABGA, real-time BP monitor
 - C-line (CVP)
 - Swan-ganz catheter → Direct measurement of cardiac output / LV & RV function
 - Ventilator monitoring
 - Lung condition? → PF ratio (pO2 / FiO2), lung compliance (Tidal volume / Pressure control, Ambu-bagging)
 - PEEP: Prevention of respiratory complication / Circulatory effect / Mediastinal bleeding
 - E-tube → Secretion (pulmonary edema / pneumonia)
 - BST → Silent, but critical; Wound healing / Infection / Graft patency

Nursing

- Drain
 - Urine
 - Index of cardiac output & Tool for balancing I/O and electrolyte
 - Color, amount, response to diuretics (IV or PO), Blood pressure and cardiac output
 - BUN/Cr., K+, Base excess, Chest X-ray
 - Chest tube
 - Patency (Squeezing/Milking), Color, Amount, Suction status
 - Chest X-ray, Hb., Coagulation profile, Anti-platelet/Anti-coagulation
 - Other drains:
 - Wound drain → amount and color, culture results, wound status
 - L-tube
 - PTGBD → Bilirubin, inflammation sign

Nursing

- Care
 - Lung care
 - Activity, Nebulizer, Suction, Spirometer, Position change and percussion
 - Wound care
 - Dressing → Assessment (Color, oozing)
 - Sore care
 - Activity, Position change, Dressing
 - Oral hygiene
 - Restraint → Sedatives or NP drugs
 - DVT prevention
 - Voiding
 - Foley in situ / RU check / CIC

IV

- Fluid
 - TPN, Main fluid (Glucose)
 - Crystalloid (NS / Hartmann / Plasma solution)
 - Diet, I/O, Electrolyte
- Antibiotics
 - Prophylactic / Empirical / Therapeutic
 - Infection focus / Micro-organism / Patient status
 - Duration / Route / TDM / Side effect
- Continuous infusion
 - Inotropics / Anti-arrhythmics / Anti-hypertensives
 - Heparinization / Insulin

IV - Continued

- Protocol
 - Steroid for adrenal insufficiency / ARDS
 - PPI for UGI bleeding
 - LMWH for DVT or warfarin bridging
 - Insulin - MSII
- Other drugs
 - Diuretics (Furosemide, or renal cocktail)
 - Mucolytics (NPO)
 - IV PCA

PO

- Cardiovascular drug
 - Antiplatelet / Anticoagulant
 - CABG / Valve surgery / Bypass surgery
 - Underlying condition: Stroke – mechanism / CAD, h/o PCI / PAOD / NVAF
 - Anti-arrhythmics / Anti-hypertensive
 - Rhythm control or Rate control (Amiodarone, BB, non-DHP CCB, Digoxin)
 - ARNI (Entresto), ARB/ACEi, BB, CCB, Diuretics
 - Nitrates, alpha blocker, Berasil, Viagra
 - Lipid-lowering
 - Statin
 - Ezetimibe/Fibrate
 - DM medications
 - SGLT-2 inhibitor (Forxiga, Jardiance)
 - Metformin
 - Glimepiride/Gliclazide

PO

- Symptom control
 - Analgesics
 - Mucolytics
 - Anti-ulcerative
 - GI (Hepatotonics, Prokinetics, anti-emetics, anti-diarrhea)
 - NP drugs (Anxiolytics, hypnotics, anti-psychotics)

Lab

- ABGA / VBGA, lactate
- CBC, Differential count
- LFT
- Renal panel
- CRP
- Procalcitonin
- BNP
- Coagulation profile –Hemostasis? Or Warfarin?

X-ray / EKG

- Chest X-ray
 - AP or PA / Decubitus
 - Cardiac shadow – Bleeding / pericardial effusion / something wrong
 - Pulmonary infiltration – edema / effusion / atelectasis / pneumonia
 - Air – Pneumothorax / Stomach gas
 - Tubes / Lines / catheters / drains
- Abdomen
 - Supine or Erect
 - Gas / Step-ladder
- EKG
 - Rhythm – A.fib/flutter, AV block (Pacing?)
 - QTc – Torsade de Pointes (Amiodarone, Seroquel...)

CT / EchoCG

- CT
 - Where to see, for what reason?
 - Chest CT, Coronary CT, Aorta CT, PTE CT, LA mapping CT
 - Is contrast safe? → Metformin, BUN/Cr., Allergy
- EchoCG
 - Right timing? → A.fib w/ RVR, on Inotropic support, Chest tube in situ
 - Reassurance – results of surgery
 - LVEF / RWMA / Valve function
 - Medication
 - HF drug, anti-coagulation
 - Disease/complication w/u
 - Delayed bleeding with cardiac tamponade → Exploration
 - Post-pericardiotomy syndrome with hemodynamic significance → PCC
 - Fever with PVL, r/o early infective endocarditis

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 - DM medications
 - Symptom control
 - Analgesics
 - Mucolytics
 - Anti-ulcerative
 - GI
- Lab
 - Routine blood lab
 - Simple X-ray
 - EKG
 - CT or EchoCG

- Vital sign – q8hr
 - Blood pressure
 - Heart rate
 - Respiration rate
 - Body temperature
- Diet - NRD
- Activity – Ward ambulation
- Nursing - Self
 - Monitor
 - Drain
 - Care
- IV - None
 - Fluid
 - Antibiotics
 - Continuous infusion
 - Protocol
 - Other drugs
- PO – No change
 - Cardiovascular drug
 - Antiplatelet / Anticoagulant
 - Anti-arrhythmics / Anti-hypertensive
 - Lipid-lowering
 - DM medications
 - Symptom control
 - Analgesics
 - Mucolytics
 - Anti-ulcerative
 - GI
- Lab – when needed
 - Routine blood lab
 - Simple X-ray
 - EKG
 - CT or EchoCG



Thank You