HEART FAILURE PATHWAY

Provisional diagnosis	Previous Medications:
Duration of previous hospitalization (if any)	
Previous lab investigations if any	

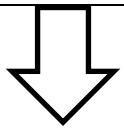
CO-MORBIDS	☐Hypertension	☐COPD	☐Immunocompromised	☐Post-Transplant
	☐Type 2 Diabetes Mellitus	☐CLD	☐Malignancy / Chemo Tx	☐Alcoholic
	☐CAD	☐CKD	☐Steroids / Immuno suppressant Drugs	☐Smoker

Recognize

Symptoms	**+/- Signs**	**+ Risk factors**
Breathlessness	Elevated JVP	H/o MI/CAD/Arrhythmias/Valvular diseases
Orthopnea	Hepatojugular reflex	Hypertension / DM
PND	Third heart sound	Alcoholism
Fatigue	Pulmonary crepitations	CKD
Ankle swelling	Laterally displaced apical impulse	Cardiotoxic Chemotherapy
		Family h/o Cardiomyopathy or sudden death
		Abnormal ECG

SPARSH CRITICAL CARE

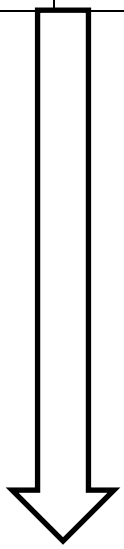
Evaluate and address immediately...
Hypoxia (SpO2 < 90%) → Provide O2 support
Respiratory distress →Provide NIPPV or IPPV
Cardiogenic shock (SBP < 90 mm Hg for 30 minutes despite adequate volume status) → Give vasopressor +/- Inotropes
Pulmonary Oedema → Diuretics +/- Vasodilators
Lung ultrasound (if readily available)→ look for B-lines, pleural effusions, other causes of SOB



Ask for …
12 lead ECG
2D Echo
Chest X-ray
BNP/NT-proBNP
Routine blood tests (CBP, Renal profile, Blood glucose, Thyroid function, Lipid profile)
Iron studies if applicable

Determine the Phenotype			
HFrEF	**HFmrEF**	**HFpEF**	**AHF**
Symptoms +/- Signs LVEF </= 40%	Symptoms +/- Signs LVEF 41 – 49%	Symptoms +/- Signs LVEF >/= 50% Evidence of Structural or functional cardiac abnormalities	Severe Symptoms +/- Signs Seeking urgent medical attention or unplanned admission

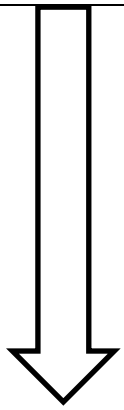
SPARSH CRITICAL CARE



Identify the precipitating cause and treat
ACS
Arrhythmias
Uncorrected hypertension
Concurrent infections
Non-compliance with the treatment plan, sodium and/or fluid restriction
Excessive use of toxic substances
Drugs exacerbating condition (e.g., calcium channel blockers, steroids, NSAIDs)
Exacerbation of COPD
Pulmonary Embolism
Metabolic or hormonal disorders (e.g., thyroid dysfunction, DM, OSA)
Cerebrovascular accident
Acute mechanical cause (e.g., Mitral valve insufficiency, ventricular septal rupture, endocarditis)
Additional acute cardiovascular causes (e.g., pericardial effusion, myocarditis)

Admit to the ICU/CCU if …
Need for intubation or already intubated
Evidence of organ hypoperfusion
SpO2 < 90% on O2 support
Increased breathing effort, respiratory rate >25/min
Heart rate < 40 bpm or >130 bpm, SBP < 90 mm Hg

SPARSH CRITICAL CARE

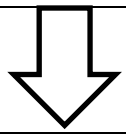


Management of Heart Failure based on Phenotype						
HFrEF	**HFmrEF**	**HFpEF**	**Acute Heart Failure**			
			ADHF	**APO**	**Isolated RVF**	**CS**
Class 1: 1) ACE-I / ARNI 2) Beta Blocker 3) MRA 4) SGLT2-I 5) Loop diuretics	Class 1: 1) Diuretics	Class 1: 1) Screen and treat the etiological factors 2) Diuretics	<u>Wet and warm:</u> 1) CPAP / HFNC 2) Diuretics 3) Vasodilators 4) RRT if needed	<u>Wet and Warm:</u> 1) Diuretics 2) Vasodilators	<u>Dry and cold:</u> 1) Vasopressors 2) Inotropes	<u>Wet and Cold:</u> 1) Inotropes 2) Vasopressors 3) +/- MCS / RRT
Class 2: 1) Ivabradine 2) Vericiguat 3) Hydralazine 4) Sorbitrate 5) Digoxin	Class 2: 1) ACE-I 2) ARB 3) Beta Blocker 4) MRA 5) ARNI		<u>Dry and cold:</u> 1) Inotropes 2) Vasopressors 3) +/-MCS		<u>Wet and cold:</u> 1) Diuretics 2) Vasopressors 3)Inotropes (prefer Levosimendan or Milrinone)	
ICD or CRT-D/-P when and where appropriate			* Wet: Congestion present Dry: Congestion absent Cold: Hypoperfusion present Warm: Hypoperfusion absent Vasopressor: Preferably Noradrenaline Inotropes: Dobutamine, Milrinone, Levosimendan Vasodilators: Nitroglycerine MCS: IABP, LVADs, ECMO			

SPARSH CRITICAL CARE

Monitor during ICU stay…
Vital signs
Weight
Fluid balance
Renal function
Electrolytes

BNP/ NT-proBNP
2D Echo



Discharge If…
Adequately Decongested
Precipitating cause addressed
Comorbidities controlled
Stabilized for ≥24 hours
On oral Heart failure therapy for ≥24 hours

SPARSH CRITICAL CARE

ICU Days	EVENTS / SUPPORTS
1	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
2	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
3	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
4	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
5	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
6	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
7	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
>7 days Course of illness	

Outcome

I. APACHE II/IV Score: _____ 2. SOFA Score at the time of admission:_____ , 48hr: _____ at the time of transfer out / LAMA / Discharge:_____ 3. Length of ICU Stay:_____ 4.Length of Hospital stay:____

II. Organ Failure : ☐AKI ☐Liver failure ☐Coagulopathy ☐Encephalopathy ☐Myocardial Dysfunction ☐CIPNM ☐MV dependent

III. Renal replacement therapy_____day from CRRT / SLED

IV. MV_____ duration ☐Proning ☐ECMO ☐Tracheostomy

V. Outcome: ☐Death ☐Survived (Discharged from ICU / Transfer out to stepdown / HDU/ Room) ☐LAMA

☐Ambulated ☐Bed ridden (with support / without support)

Doctor Name: _____, Sign: _____

SPARSH CRITICAL CARE

Appendix 1

List of abbreviations:

ACS: Acute Coronary Syndrome

ACE-I: Angiotensin Converting Enzyme Inhibitors

ADHF: Acute Decompensated Heart Failure

AHF: Acute Heart Failure

APO: Acute Pulmonary Oedema

ARNI: Angiotensin Receptor-Neprilysin Inhibitor

BNP: B-type Natriuretic Peptide

CAD: Coronary Artery Disease

CBP: Complete Blood Picture

CCU: Coronary Care Unit

CKD: Chronic Kidney Disease

COPD: Chronic Obstructive Pulmonary Disease

CPAP: Continuous Positive Airway Pressure

CRT-D/-P: Cardiac Resynchronization Therapy with Defibrillator / Pacemaker

CS: Cardiogenic Shock

CVA: CerebroVascular Accident

DM: Diabetes Mellitus

ECMO: Extra-Corporeal Membrane Oxygenation

HFNC: High Flow Nasal Cannula

HFmrEF: Heart Failure with mildly reduced Ejection Fraction

HFpEF: Heart Failure with preserved Ejection Fraction

HFrEF: Heart Failure with reduced Ejection Fraction

SPANISH CRITICAL CARE

IABP: Intra-Aortic Balloon Pump

ICD: Implantable Cardioverter-Defibrillator

ICU: Intensive Care Unit

IPPV: Invasive Positive Pressure Ventilation

JVP: Jugular Venous Pressure

LVAD: Left Ventricular Assist Device

LVEF: Left Ventricular Ejection Fraction

MCS: Mechanical circulatory Support

MI: Myocardial Infarction

MRA: Mineralocorticoid Receptor Antagonist

NIPPV: Non-Invasive Positive Pressure Ventilation

NSAID: Non-Steroidal Anti-Inflammatory Drug

NT-proBNP: N-Terminal pro-B-type Natriuretic Peptide

OSA: Obstructive Sleep Apnea

RRT: Renal Replacement Therapy

RVF: Right Ventricular Failure

SBP: Systolic Blood Pressure

SGLT2-I: Sodium-GLucose co-Transporter 2 Inhibitor

SOB: Shortness Of Breath

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SPARSH CRITICAL CARE