

# Vía crítica para diagnosticar y tratar la IC aguda descompensada



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Vía para el tratamiento de la

# Insuficiencia Cardíaca Aguda

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**Critical Pathways in Cardiology 2005;4:37-42**

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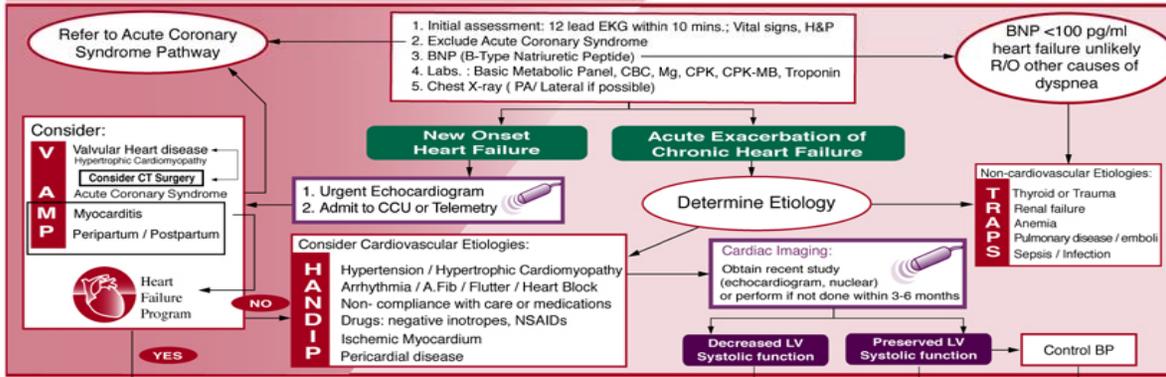
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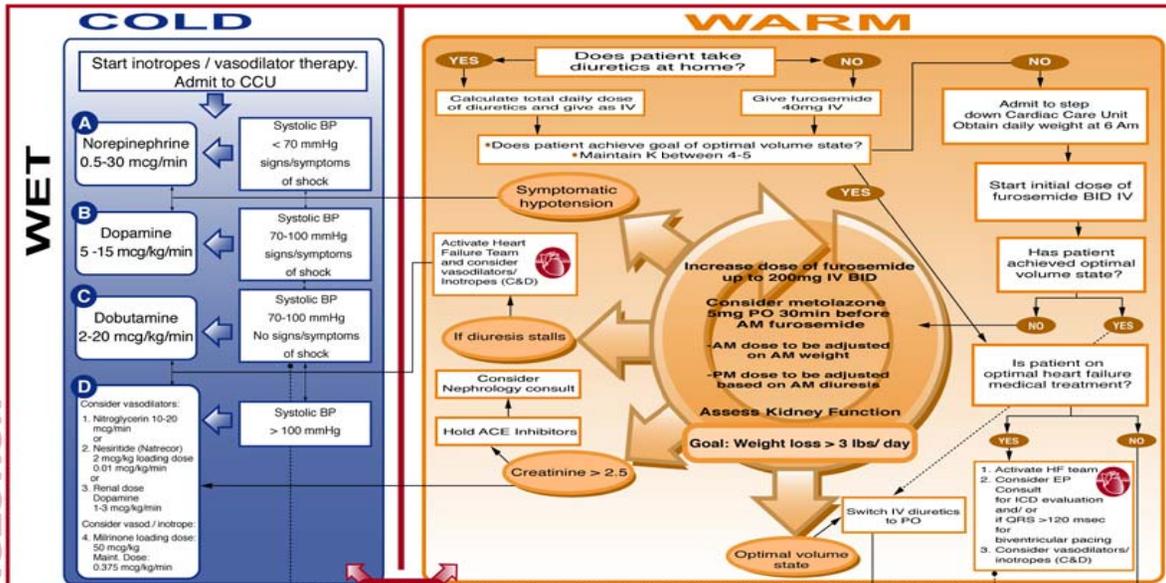
**Heart  
Failure  
Program**

# Pathway For The Management Of Acute Heart Failure



Clinical Assessment of Hemodynamic and Volume Status - Obtain weight, Assess JVP, rales, ascites, hepato-jugular reflux, pedal edema

## PERFUSION



CONGESTION

**DRY**

Consider:

- Fluid Challenge
- IABP
- Pulmonary Artery Cath
- Consult Heart Failure Team

**OPTIMAL DOSING OF HEART FAILURE MEDICATIONS:**

Medication Class	Medication	Initial Dose	Target Dose
ACE Inhibitors	Captopril (Capoten)	6.25 mg	50 mg (TID)
	Lisinopril (Prinivil, Zestril)	2.5 - 5 mg	20 mg (Daily)
	Enalapril (Vasotec)	2.5 mg	10 mg (BID)
	Fosinopril (Monopril)	5 - 10 mg	20 mg (Daily)
	Ramipril (Altace)	1.25 - 2.5 mg	10 mg (Daily)
Diuretics	Furosemide (Lasix)	40 - 240 mg (BID)	
	Bumetanide (Bumex)	0.5 - 4 mg (BID)	
	Torsemide (Demaderm)	5 - 100 mg (Daily-BID)	
	Melitazone (Zaroxolyn)	2.5 - 5 mg 30 min prior to dosing	
	Lanoxin (Digoxin)	0.125 - 0.25 mg (Daily) - Consider age/ Cr	
Beta Blockers	Carvedilol (Coreg)	3.125 mg (BID)	6.25 - 25 mg / > 85 kg 50 mg (BID)
	Metoprolol succinate (Toprol)	12.5 - 25 mg (Daily)	200 mg (Daily)
	Aldosterone Antagonists		
Aldosterone Antagonists	(Avoid with K > 5 & Cr > 2.5)		
	Spironolactone (Aldactone)	12.5 - 25 mg	25 - 50 mg (Daily)
	Eplerenone (Inspra)	25 mg (Daily)	25 - 50 mg (Daily)
ARBs	Losartan (Cozaar)	25 mg	25 - 100 mg (Daily)
	Valsartan (Diovan)	40 mg	40 - 160 mg (BID) Max daily dose 320
	Candesartan (Atacand)	4-8 mg	8 - 32 mg (Daily)

Consider for African Americans: Hydralazine/ ISDN 37.5/ 20 - 75/40mg (TID)



# Objetivos de esta vía

- 1. Evaluación rápida en la Sala de Emergencias, para excluir síndrome agudo coronario y obtener niveles de BNP para excluir causas no cardiovasculares de disnea cuando se dude del diagnóstico de IC.**

Refer to Acute Coronary Syndrome Pathway

1. Initial assessment: 12 lead EKG within 10 mins.; Vital signs, H&P
2. Exclude Acute Coronary Syndrome
3. BNP (B-Type Natriuretic Peptide)
4. Labs. : Basic Metabolic Panel, CBC, Mg, CPK, CPK-MB, Troponin
5. Chest X-ray ( PA/ Lateral if possible)

BNP <100 pg/ml  
heart failure unlikely  
R/O other causes of  
dyspnea

# Objetivos de esta vía

2. Diferenciar entre IC de reciente comienzo y exacerbación aguda de IC crónica.
3. Desarrollar un enfoque sistemático para la fisiopatología de la IC mediante el uso de siglas.

# New Onset Heart Failure

# Acute Exacerbation of Chronic Heart Failure

1. Urgent Echocardiogram  
2. Admit to CCU or Telemetry

**Consider:**

- V** Valvular Heart disease  
Hypertrophic Cardiomyopathy  
**Consider CT Surgery**
- A** Acute Coronary Syndrome
- M** Myocarditis
- P** Peripartum / Postpartum

 Heart Failure Program

**Consider Cardiovascular Etiologies:**

- H** Hypertension / Hypertrophic Cardiomyopathy
- A** Arrhythmia / A.Fib / Flutter / Heart Block
- N** Non - compliance with care or medications
- D** Drugs: negative inotropes, NSAIDs
- I** Ischemic Myocardium
- P** Pericardial disease

Determine Etiology

**Non - cardiovascular Etiologies:**

- T** Thyroid or Trauma
- R** Renal failure
- A** Anemia
- P** Pulmonary disease / emboli
- S** Sepsis / Infection

**Cardiac Imaging:**

Obtain recent study (echocardiogram, nuclear) or perform if not done within 3-6 months

**Decreased LV Systolic function**      **Preserved LV Systolic function**      **Control BP**

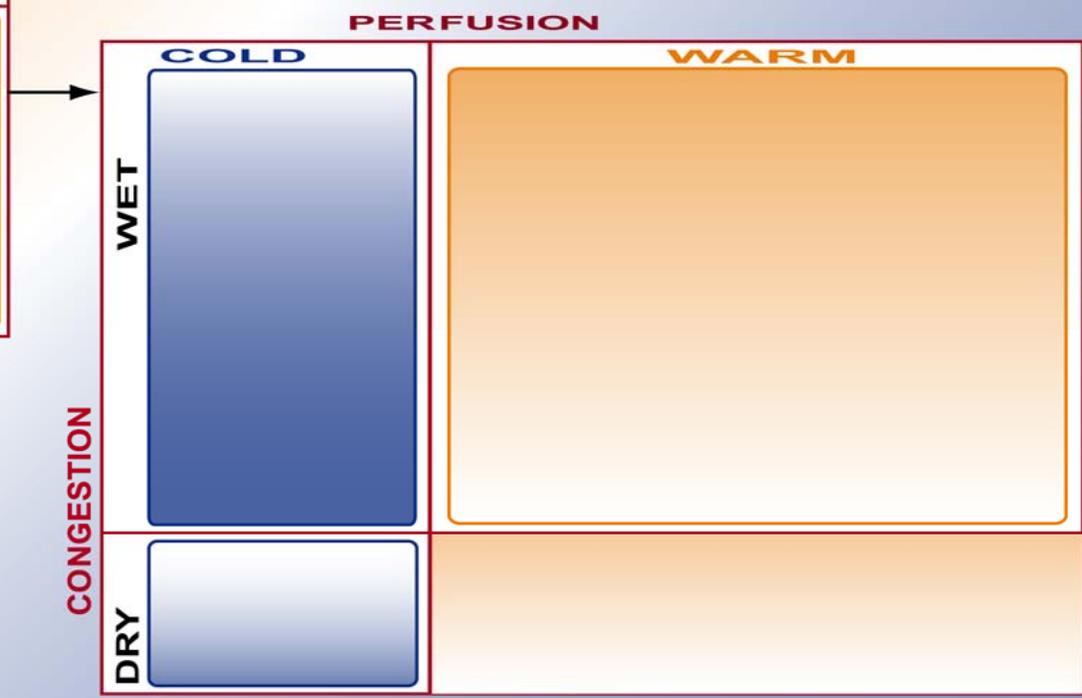
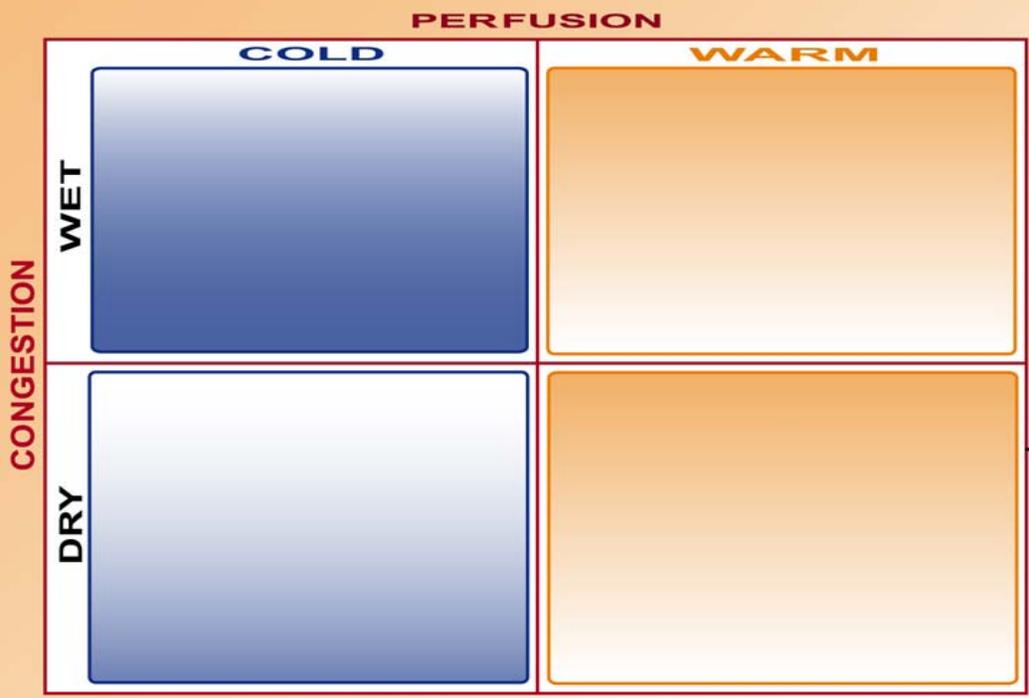
**Clinical Assessment of Hemodynamic and Volume Status - Obtain weight, Assess JVP, rales, ascites, hepato-jugular reflux, pedal edema**

# Objetivos de esta vía

4. Una guía para la urgencia acerca del uso de la ecocardiografía u otras modalidades de imágenes para evaluar la disfunción del VI: sistólica y diastólica.

# Objetivos de esta vía

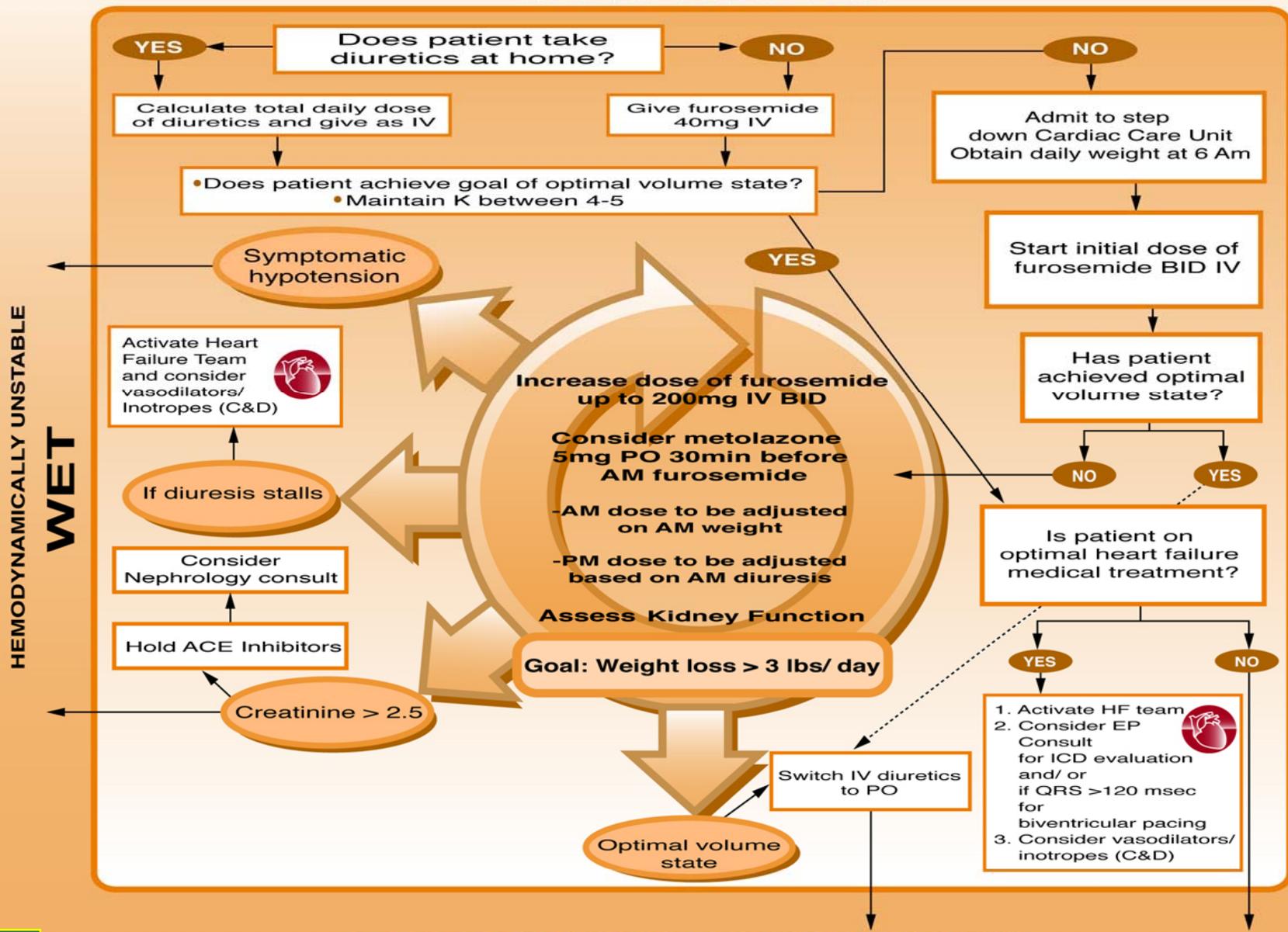
5. **Rápida evaluación clínica del estado hemodinámico en base a la perfusión y congestión.**
6. **Comprender que la mayor parte de los pacientes hospitalizados con IC aguda tendrían una fisiología cálida-húmeda (warm-wet).**



OBJETIVOS

VÍA

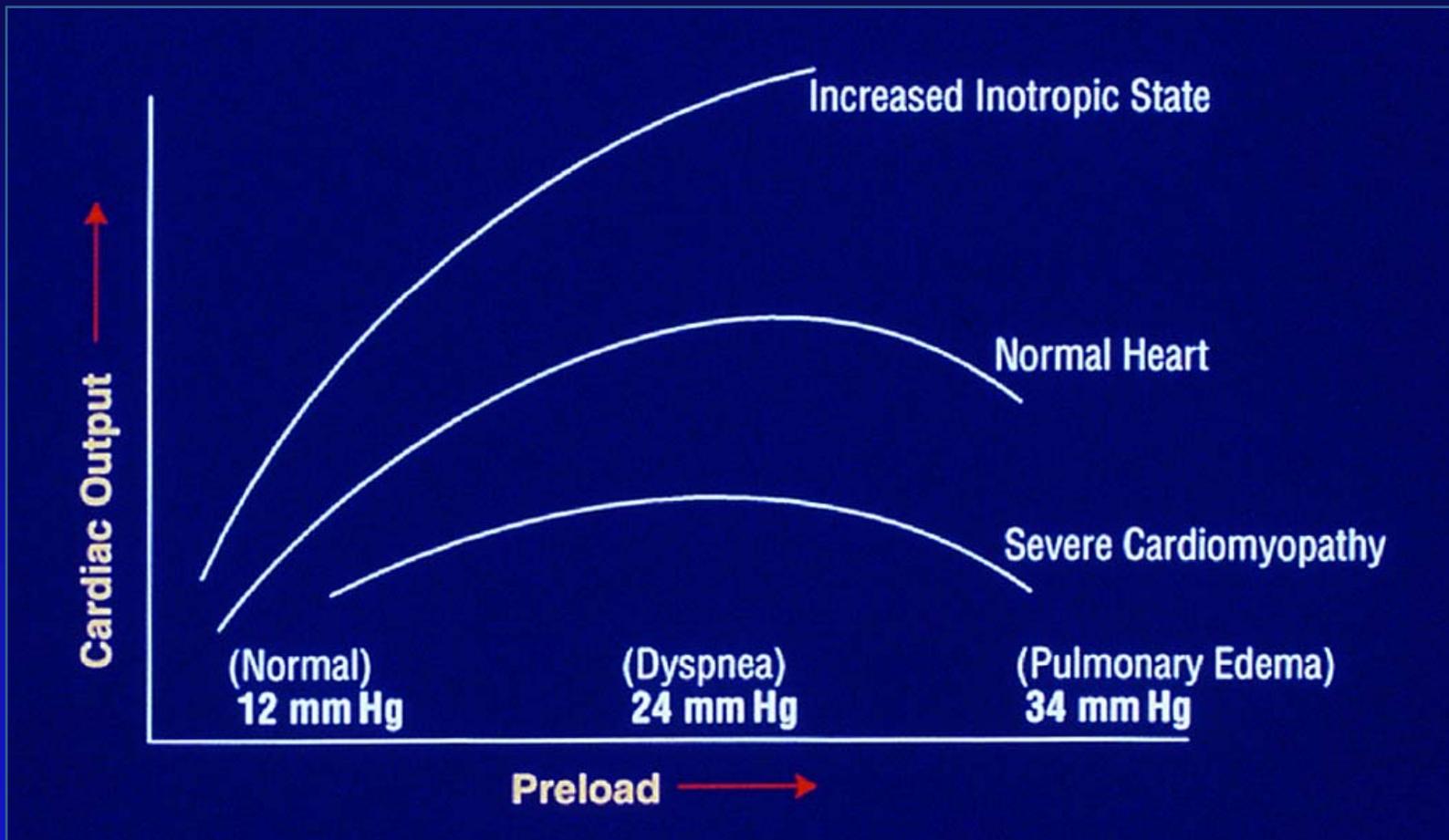
# WARM



HEMODYNAMICALLY UNSTABLE  
**WET**

OPTIMAL DOSING OF HEART FAILURE MEDICATIONS:

# Efecto de la pre-carga y contractilidad en el gasto cardíaco



Gravanis MB (ed). *Cardiovascular Pathophysiology*.  
New York, NY: McGraw-Hill, Inc. 1987:379-418

# ¿IECA durante diuresis?

- Arteriolas eferentes vs. aferentes
- A corto plazo vs. crónicos

# Objetivos de esta vía

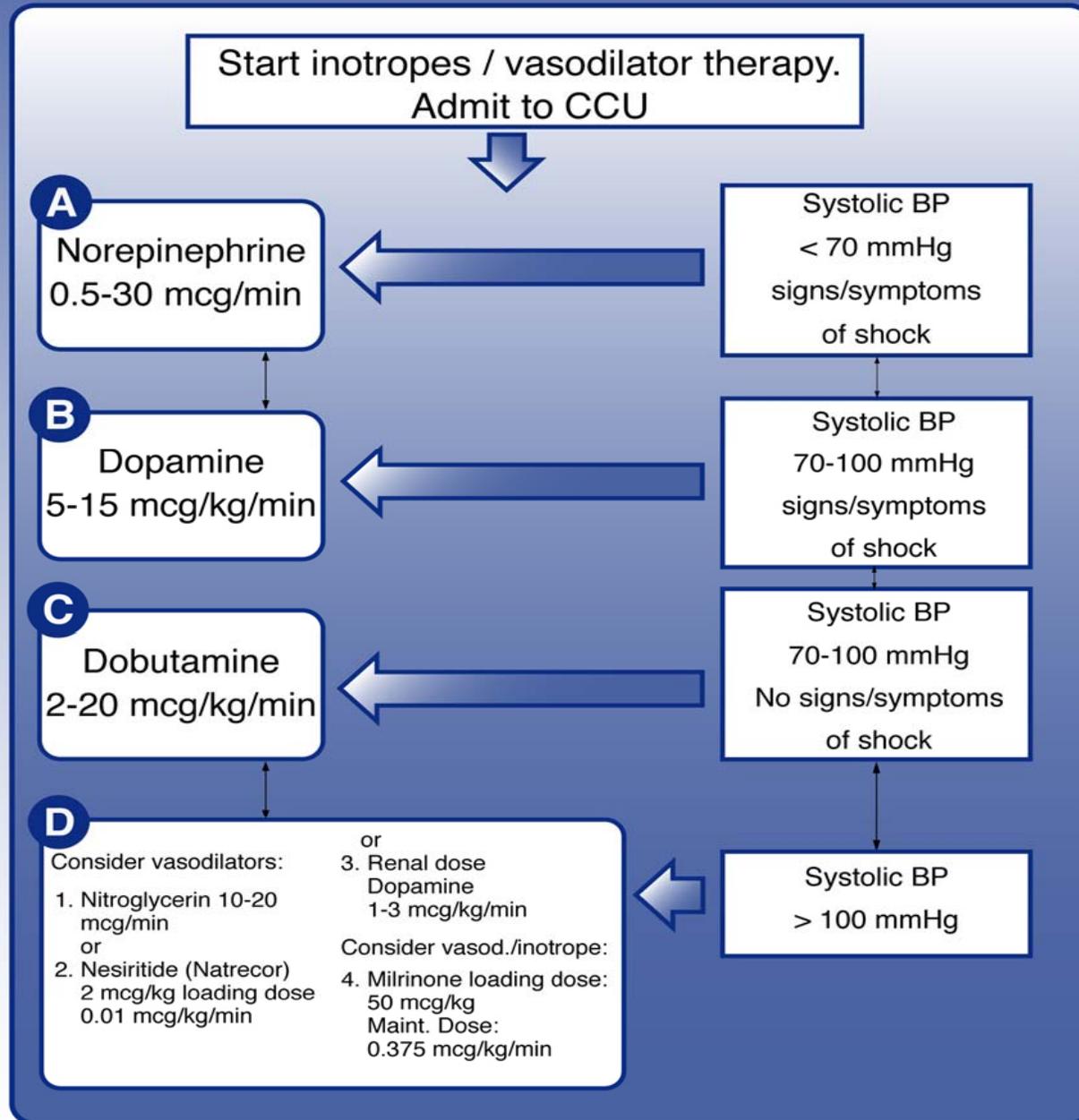
- 7. Consideración precoz de dispositivos eléctricos y colaboración estrecha con electrofisiólogos.**

# Objetivos de esta vía

8. **Guías de tratamiento de pacientes hemodinámicamente inestables en base a las guías ACLS (Soporte Cardíaco Avanzado de Vida).**

# COLD

WET



# Objetivos de esta vía

- 9. Enfatizar la dosis óptima de medicamentos orales para la IC mientras el paciente se prepara para el alta.**

**ACE Inhibitors**

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Captopril ( Capoten )	6.25 mg	50 mg (TID)
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PO Target Dose ( freq/day )	
Furosemide ( Lasix )	40 - 240 mg (BID)
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Initial Dose	Target Dose ( freq/ day )	
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Consider for African Americans: Hydralazine/ ISDN 37.5/ 20 - 75/40mg (TID)

# Objetivos de esta vía

**10. Enfoque sistemático en la consulta por IC.**



Heart  
Failure  
Program

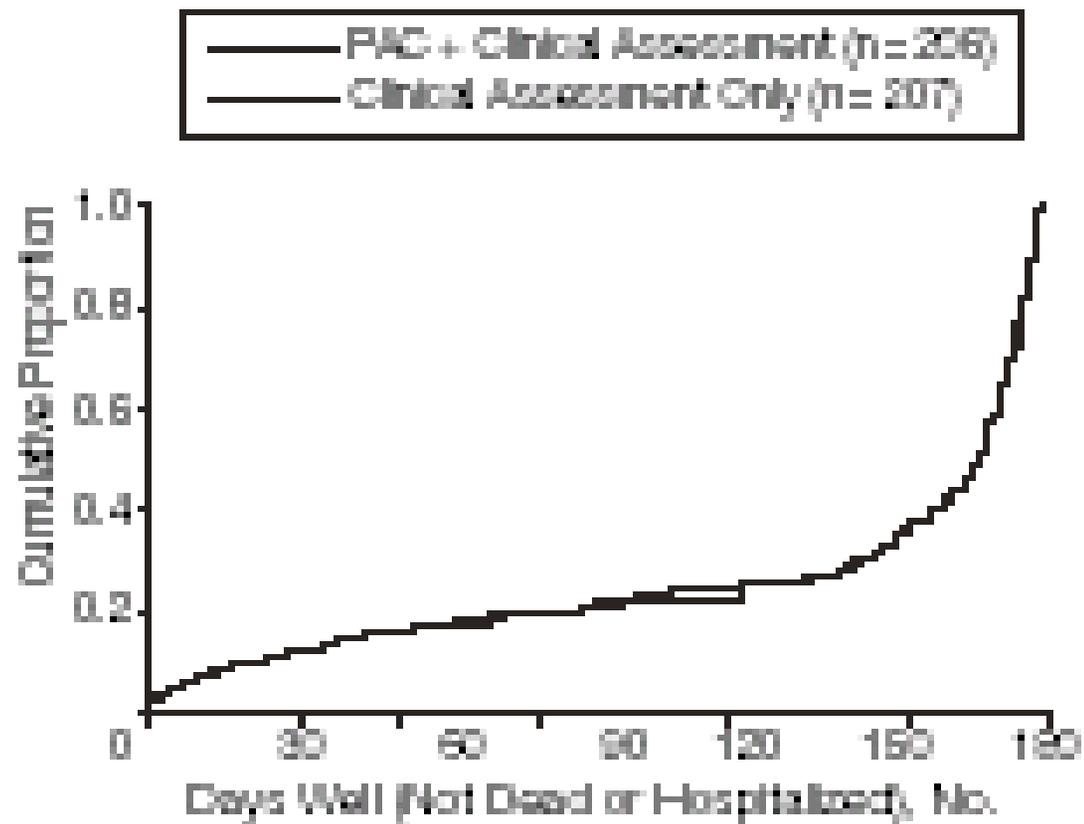
# Evaluation Study of Congestive Heart Failure and Pulmonary Artery Catheterization Effectiveness

The ESCAPE Trial

JAMA. 2005;294:1625-1633

- Ensayo controlado randomizado
- 433 pacientes
- 26 sitios
- FEy 19%
- TA sistémica 106 mmHg
- Creatinina 1,5 mg/dl

**Figure 2. Cumulative Primary End Point (Days Alive and Out of Hospital)**



Cumulative proportion of patients contributing each

**Table 4. Primary Outcomes: Mortality and Hospitalizations**

Measure	PAC Group	Clinical Assessment Group	End Point Estimate (95% CI) <sup>a</sup>	$\chi^2$	P Value
Days alive out of hospital, mean					
LVADs/transplants coded dead	133	135	Hazard ratio, 1.00 [0.82-1.21]	0.00	.99
LVADs/transplants coded well	141	143	Hazard ratio, 0.99 [0.82-1.21]	0.00	.95
Mortality (dead at 180 d), No.	43	39	Odds ratio, 1.26 [0.78-2.03]	0.86	.35
Total days initial hospitalization, mean	8.7	8.3	Hazard ratio, 1.04 [0.86-1.27]	0.18	.67
PAC-related deaths, No.	0	0	NA	NA	NA
Early deaths (in-hospital plus 30 d), No.	10	11	Odds ratio, 0.97 [0.38-2.22]	0.04	.97

Abbreviations: CI, confidence interval; LVAD, left ventricular assist device; NA, not applicable; PAC, pulmonary artery catheter.

<sup>a</sup>Values less than 1 favor PAC.