



**Emergency Department
Patient Hypertensive
Emergencies:**
*What treatment strategies do
we as emergency physicians
utilize in the ED?*

William B. Felegi, DO, FACEP 



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William B. Felegi, DO, FACEP 

William B. Felegi, DO, FACEP


Vice Chairman

*Department of Emergency Medicine
Morristown Memorial Hospital
Morristown, NJ*

William B. Felegi, DO, FACEP 


Disclosures

- None

William B. Felegi, DO, FACEP 


Global Objectives

- Maximize patient outcome
- Utilize health care resources well
- Optimize evidence-based medicine
- Enhance ED practice

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Sessions Objectives

- What are HTN emergencies?
- What is the pathophysiology of HTN emergencies?
- How do we identify HTN emergencies and in what clinical settings?
- What tests are useful for identifying & treating HTN emergencies?
- What are management principles?

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Hypertensive Emergency
Key Concepts

- Clinical Syndrome” rapidly progressive end-organ damage with significant elevation of BP
- Goal to reduce Mortality (90%)
- Emergencies assoc with DBP > 120
- **CAVEAT:** Severe HTN \neq HTN Emergency
- Minority of patients will require intensive treatment

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Hypertension Demographics
Key Concepts

- HTN most common primary diagnosis
- 25% of population
- 30% of patients unaware
- Control rates < 50%
- > 50 years of age, SBP > 140 mm Hg more important CVD Risk factor than DBP
- Risk of CVD begins at 115/74 mm Hg & doubles with each increment of 20/10 mm Hg

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Pathophysiology
Key Concepts

- Failure of normal autoregulatory function
- Abrupt increase in systemic vascular resistance
- Concurrent endovascular injury with fibrinoid necrosis of arterioles

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Pathophysiology
Key Concepts

- Cycle of ischemia, platelet deposition and further autoregulatory failure with release of vasoactive substances
- Specific triggers UNKNOWN
- TX GOAL – Mitigate damage to whichever organ system is manifesting the most disease

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Pathophysiology
Key Concepts

- Normal conditions tissue perfusion remains relatively constant, despite normal BP fluctuations
- With severe HTN, ability to autoregulate shifts upward – protect exposed organ
- Lower threshold of autoregulation (threshold for hypoperfusion) 20 – 25% lower than prevailing BP

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Hypertensive Emergency
Definitions DBP > 120 mm Hg

- **Crisis** - suggests need for immediate intervention, perhaps de-emphasizing the term
- **Emergency** – acute & rapidly evolving end organ damage, control of BP in hours with admission to critical care
- **Urgency** – requires improvement in BP control over 24 – 48 hours, absence of end-organ damage, little evidence of clinical benefit

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ED Hypertensive Emergencies *Key Concepts*

- Verify hypertensive emergency
- Assess for end organ damage
- Make clinical diagnoses
- Determine need for therapies
- Establish endpoint for Rx success
- Reassess end organ dysfunction
- Disposition based on Dx, Rx, risk

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ED Hypertensive Emergencies *Key Concepts*

- Verify hypertensive emergency
- 2 readings 5 minutes apart (seated)
- Recheck BP yourself
- Check manually as needed
- Calculate MAP
- Determine baseline chronic BP

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ED Hypertensive Emergencies *Key Concepts*

- Assess for end organ damage
- CNS: Encephalopathy, ischemia, ICH
- Cardiopulmonary: ACS, AMI, edema
- Vascular: Aortic dissection, aneurysm
- Renal failure or insufficiency
- Gastrointestinal ischemia
- Pregnancy induced HTN

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Pt Case Presentation

- 55 yo white male
- Sudden onset “bad” headache
- BP 180/120, P-100, R -16, T-37
- PMH – “Slightly elevated BP”
- Medications - None

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ED Hypertensive Emergencies *Key Concepts*

- Make clinical diagnoses
- Related to symptoms
- Related to hypertension
- Related to anatomic lesions
- Related to dysfunction

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ED Hypertensive Emergencies *Key Concepts*

- Determine need for therapies
- BP trend
- Baseline BP
- Diagnosis and end organ damage
- Risk and benefit

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Pt Case Presentation

- 62 yo black female
- Twisted her ankle
- BP – 170/120, P-90, R-14, T-37
- PMH – Asthma
- Medications – Inhaler PRN
- No routine medical care

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ED Hypertensive Emergencies Key Concepts

- Address the issue of urgency – identification doubtful (helps for choice of drug)
- EKG
- Urinalysis
- Blood Sugar
- HCT
- Serum K+, Creatinine (GFR), Calcium

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Appropriate Follow-up Asymptomatic Patients Without Major End-Organ Damage

| BP (mm Hg) | Follow up |
|-----------------|-------------------------------|
| 140-159/90-99 | Observe, confirm within 2 mo |
| 160-179/100-109 | Confirm & treat within 1 mo |
| 180-209/110-119 | Confirm & treat within 1 week |
| 210+/120+ | Confirm, evaluate & begin Tx |

Data from National Heart, Lung, & Blood Institutes, JNC VII

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Conclusions

- Remember to Tx patients, not numbers
- Treatment goal is long-term control
- Symptoms, HTN, anatomic lesions, physiologic dysfunction
- Blood pressure control critical
- Optimal Rx limits complications, enhances patient outcomes

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Questions?

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