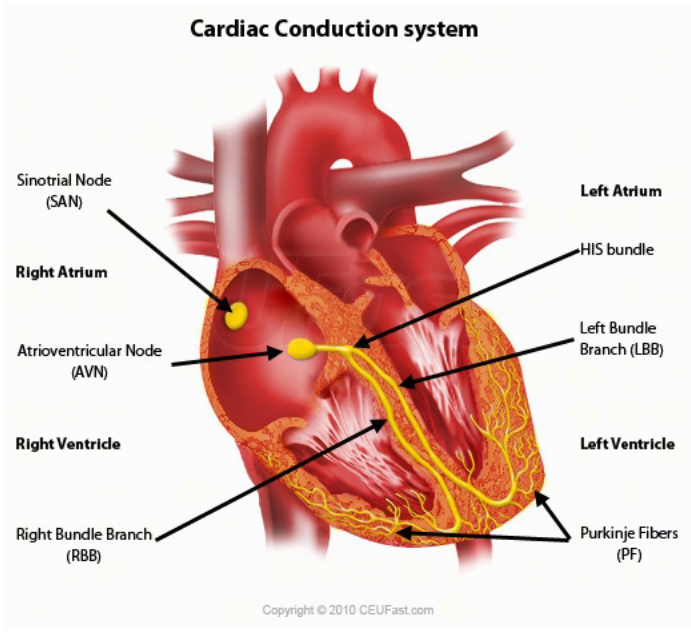
OMD Podcast: Diltiazem Administration for Atrial

Summary Points:

-What is Atrial fibrillation and RVR
-What Does Afib Look Like On EKG
-Atrial Flutter
-General Points On Afib Management
-When to Consider Dilt/How it works
-When Dilt isn't appropriate
-Proposed Approach to Dilt
-Dilt Algorithm Example



- **Background Info on Afib**

-Atrial fibrillation is when the atria contract in a rapid, disorganized manner

-Not all Afib has RVR (rapid ventricular response)
-AV node is the hand brake and prevent signals from getting to the ventricles and prevents tachycardia from atrium signals
-SA node will beat at 300bpm in Afib, AV node cannot block all of these impulses and you get elevated HR

-In RVR, the AV node fails to block all of the extra impulses and the ventricles begin to beat in a rapid and irregular fashion

-May be asymptomatic
-Can cause vague symptoms of palpitations, weakness, lightheadedness, CP, SOB
-If fast enough, can lead to hypotension

- Paroxysmal Afib (first time episode or flip in or out) vs. Permanent Afib (that is the patient's permanent underlying rhythm, usually with rate control by medications)

-Patients with previous history of Afib will likely be on:

- Blood thinners (not always so important to ask)
-Rate control medications (Beta blockers (-olols) or calcium channel blockers (diltiazem/verapamil) for example)

-If a patient is in RVR, need to consider what the cause of the rhythm change is and search for underlying issues

-Infection, alcohol, thyroid problems and metabolic issues can all lead to decompensation of Afib and result in RVR

- **Afib EKG Findings**

-Afib can be identified on an EKG by the following:

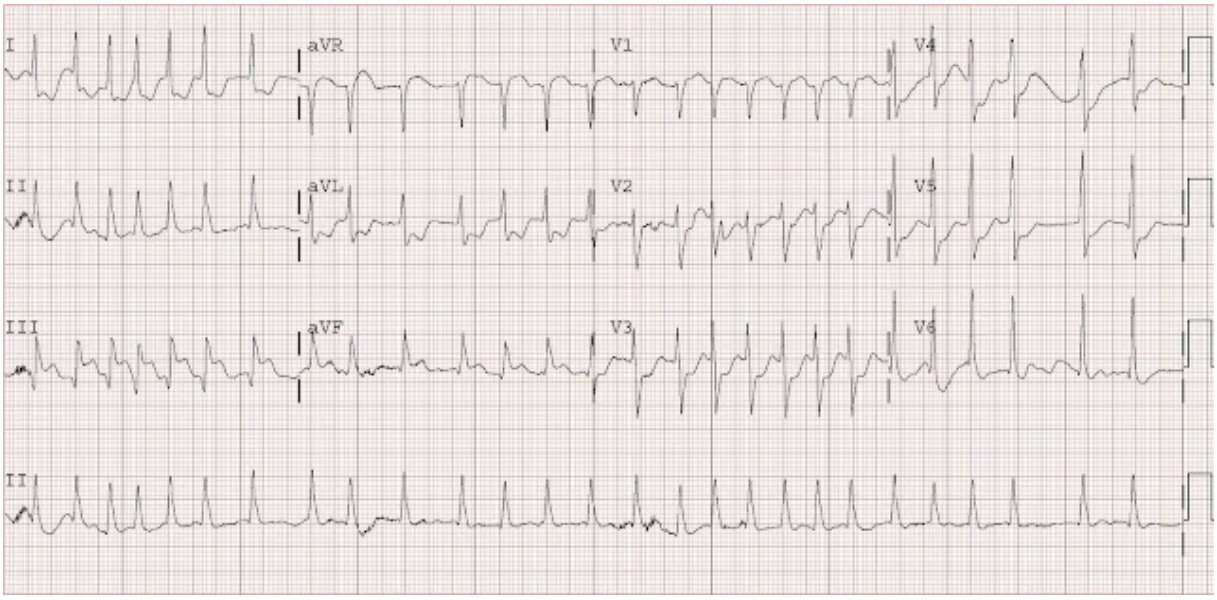
-Irregularly irregular rate – the intervals between R waves is irregular and does not follow any sort of repeating pattern
-The QRS segment is narrow (<120ms)

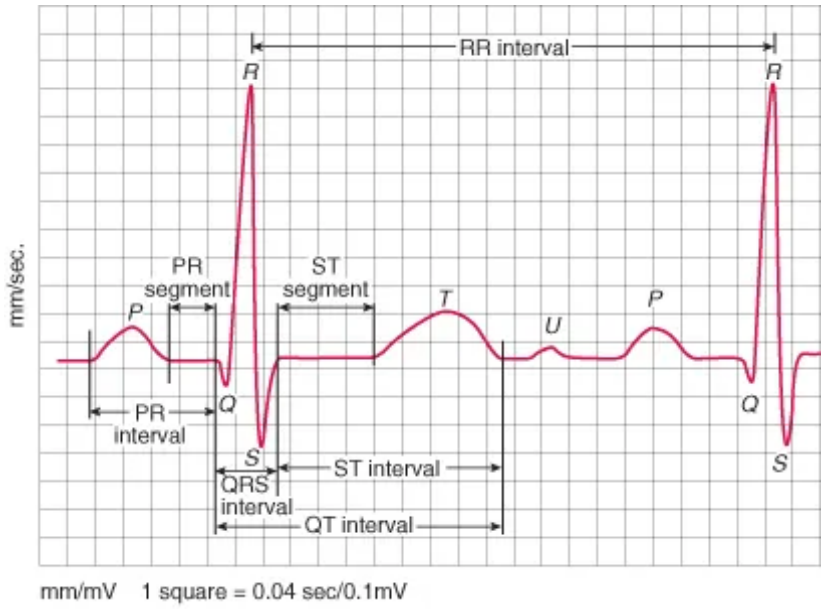
-RVR is defined as HR > 110bpm in presence of Afib

***Wide QRS that is Irregular may be Afib but should NEVER be given DIlt

-Afib causes hypotension by making the ventricles beat so fast that they do not have time to properly refill between beats

-Treat by slowing the rate to allow filling and restore stroke volume





- **Atrial Flutter**

-Similar to Afib but flutter implies rapid coordinated atrial beats

-Again, AV node blocks most transmission

-Classically transmitted at a certain ratio (2:1/3:1/4:1)

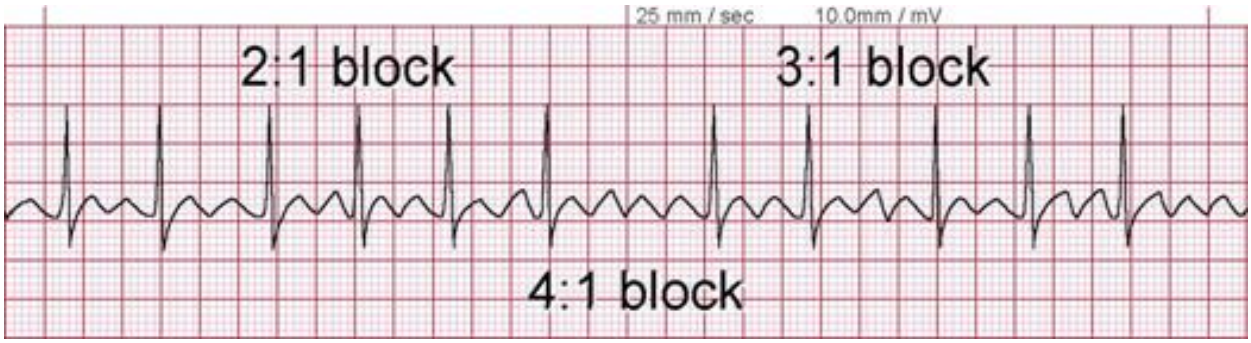
-Higher ratios easier to recognize on EKG (sawtooth pattern)

-For variable blocks (not consistent) can generate an irregular HR

-QRS is narrow (<120ms)

-Can use adenosine to "unmask" the underlying flutter

-Treat similarly to Afib but may be harder to get rate control



- **General Afib Management**

-Consider underlying cause – treat appropriately per protocol

-GIVE FLUIDS – unless there are signs of fluid overload (edema in the legs, pulmonary edema)

-Fluids will help increase preload for the heart and decrease HR, may be enough to convert out of RVR

-Look at Vital Signs

-If patient is hypotensive or unstable (AMS/severe symptoms), consider electrical cardioversion

-If borderline, do fluids and reassess

-CARDIOVERSION not defibrillation – need to hit the sync button to cardiovert RVR

-If patient is stable with minimal symptoms

-Consider no additional intervention (other than fluids) and transport

-Dilt is a dangerous medication, don't fix what ain't broke

- **Diltiazem: How it Works and When to Consider Giving**

-Diltiazem (cardiazem) is a calcium channel blocker and works by boosting the AV nodes' ability to block signals from the atrium to the ventricles

-Allows the ventricles to "ignore" the extra signals and slow down

-Also affects the blood vessels of the body causing decreased BP

-Is a dangerous drug as too much can lead to severe hypotension that is hard to reverse and even a high degree heart block

-Give with extreme caution – not a benign intervention

-Keep in mind, most Afib patients will have been in Afib for a long time and do NOT need emergent rate control

-If stable, ok to transport without aggressive intervention

-Consider diltiazem in patients with extremely high heart rate with STABLE blood pressure

-Consider diltiazem in patients with STABLE BP and severe sx (SOB/CP)

-If you give Dilt, it will require at least 15 minutes to exhibit its effects
    -Wait and see what they do with the first dose
    -If RVR resolves, consider drip (if BP will tolerate) and transport
-If you are considering a second dose:
    -Did the patient improve with the first dose? If not, don't give more
    -Did you wait at least 15 minutes and reassess VS?
    -Are new VS stable enough to tolerate Dilt?
    -Don't rush to give more
-Drip if improved but not resolved

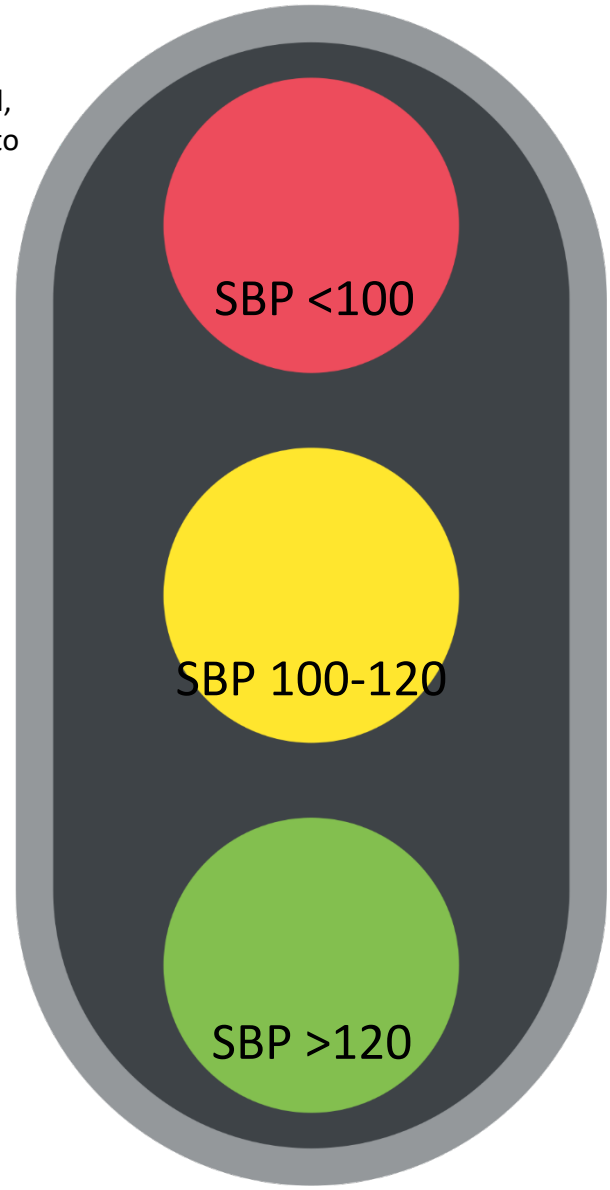
- **When Diltiazem Isn't the Answer**

-When patient in Afib WITHOUT RVR
-When patient in a NON AFIB TACHYCARDIA (SVT, VTach)
-When patient is HYPOTENSIVE
    -Though hypotensive Afib is treated in the hospital, different medications are used than are available to you and requires advanced resus skill. Not appropriate for prehospital

- **Proposed Way to Approach Afib**

-Assess patient, give fluids unless contraindicated
-Get first FULL set of VS with 12-lead
-Review algorithm below
-Think of the stoplight method
    -If symptomatic RVR with SBP>120, GREEN for Dilt
    -If symptomatic RVR with SBP 100-120, YELLOW. Consider stabilizing measures, Dilt likely risky in this patient
    -If symptomatic RVR with SBP<100, RED. DO NOT GIVE DILT, patient does not have enough BP to tolerate

-If considering Second Dose of Dilt, see second table below
    -Consider: is HR high enough to justify risk
    -Do not give if BP borderline or low
-Consider drip for good first response with persistent good BP and elevated HR



Summary in Brief

-Afib is narrow irregularly irregular rhythm, RVR > 110bpm

-Most Afib is stable and does NOT require intervention

    -IVF is something all Afib patients should get unless contraindicated

-If Afib is unstable, SHOCK (synchronized cardioversion)

-If Afib is stable, decide management based off VS

    -SBP> 120 with minimal symptoms – IVF and transport

    -SBP> 120 with severe symptoms – IVF and consider Dilt

    -SBP 100-120 with minimal symptoms – IVF and transport

    -SBP 100-120 with severe symptoms – IVF and Dilt ONLY if SBP improves with fluids

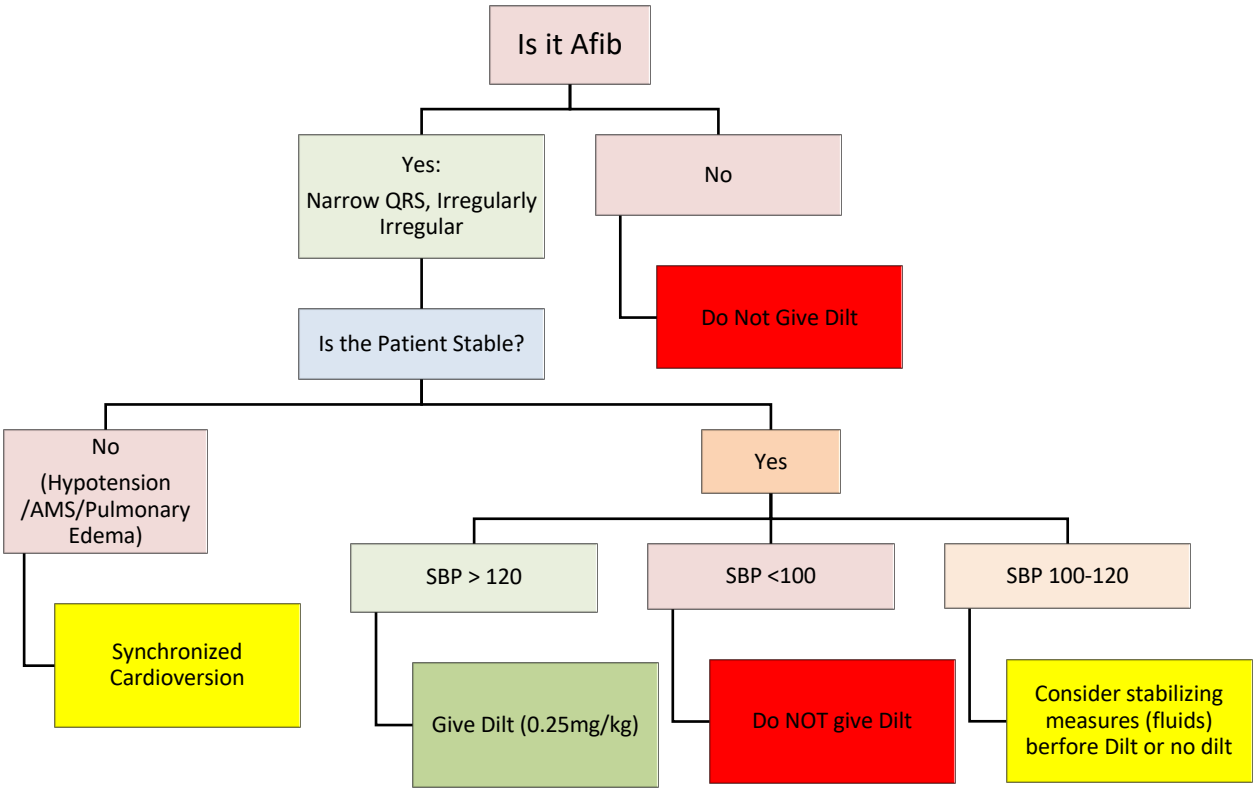
    -SBP <100 – NO DILT, consider electricity if unstable

-For second dose of Dilt: ONLY use if first dose improved HR and Symptoms AND SBP>120

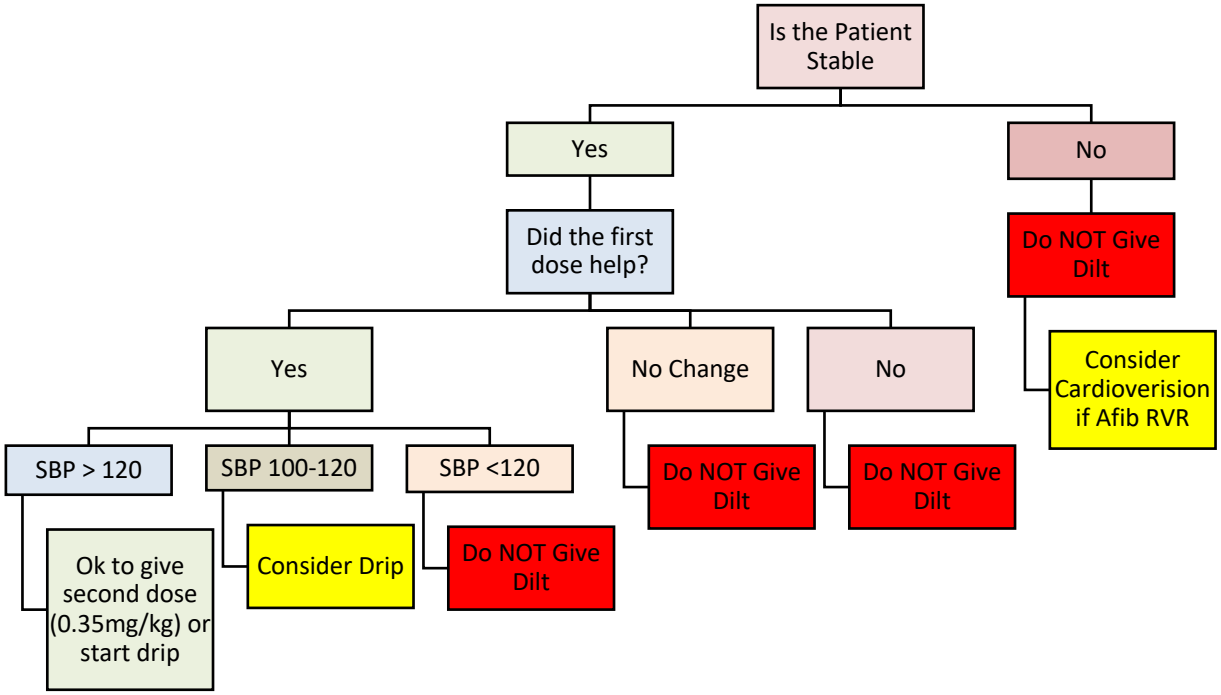
-For Drip: ONLY use if initial dose(s) helpful and BP will tolerate

ILLUSTRATED ALGORITHM BELOW

Algorithm for First Diltiazem Administration:



Algorithm for Second Diltiazem Administration:


Is the Patient Stable
Yes
No
Did the first dose help?
Do NOT Give Dilt
Yes
No Change
No
Consider Cardioverision if Afib RVR
SBP > 120
SBP 100-120
SBP <120
Do NOT Give Dilt
Do NOT Give Dilt
Ok to give second dose (0.35mg/kg) or start drip
Consider Drip
Do NOT Give Dilt