

# Clinical Use of Pulse Wave Analysis: Proceedings From a Symposium Sponsored by North American Artery

## Clinical Case Example V: Uncontrolled Hypertension with Diabetes

### Clinical Question: Medication Adjustment in a Complex Regimen

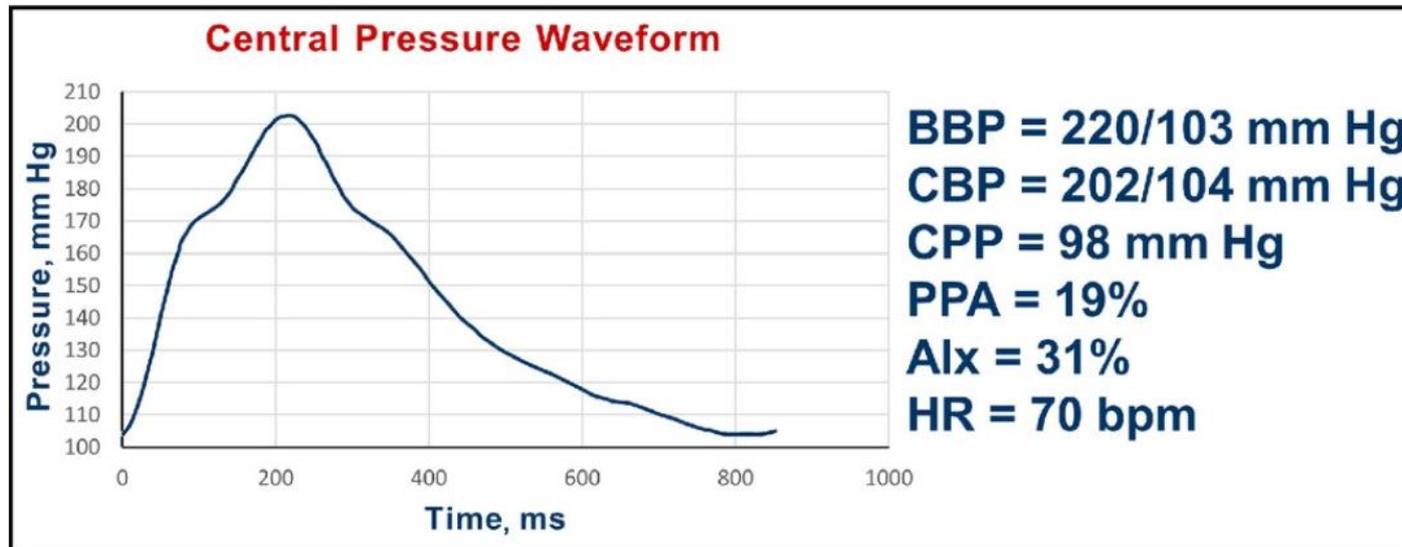
- 58-year-old African American woman with diabetes mellitus and hypertension
- Brachial BP while seated was 220/103 mm Hg, with a heart rate of 70 beats per minute
- Amlodipine 10 mg daily, clonidine patch #2 once weekly, lisinopril 20 mg daily, rosiglitazone 30 mg daily, metformin 1000 mg daily, simvastatin 20 mg daily, and aspirin 81 mg daily

Initial PWA is shown in Figure 13.

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## Clinical Case Example V

Figure 13



### Interpretation:

The central pressure profile indicated a pulse pressure amplification of 19%. The central systolic pressure of 202 mm Hg is much more than the desired value of 124 mm Hg. The Alx was 31%. In this case, there is a clear second peak in the aortic pressure contour just above 170 mm Hg with a systolic pressure of 202 mm Hg. This indicates that about 30 mm Hg of the 98 mm Hg, ie, Alx of approximately 31%, central pulse pressure is augmented pressure.

BBP indicates brachial blood pressure systolic/diastolic; CBP, central blood pressure systolic/diastolic; CPP, central pulse pressure; Alx, augmentation index; HR, heart rate; bpm, beats per minute.

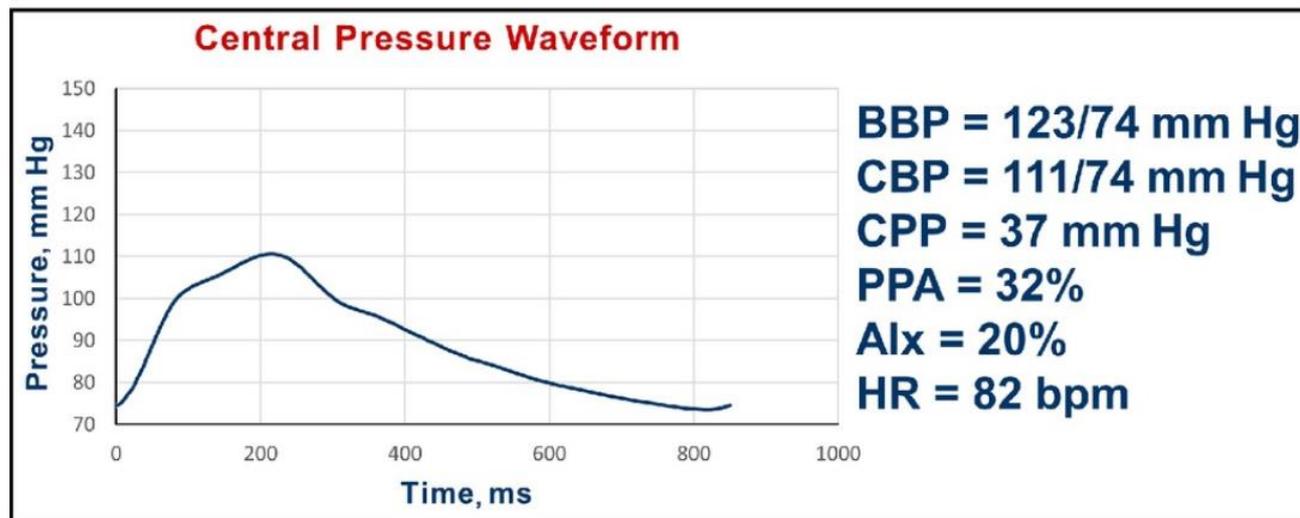
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## Clinical Case Example V

### Intervention:

The approach emphasized vasodilation while trying to preserve heart rate to improve pulse pressure amplification while reducing brachial BP. The nitric oxide–promoting  $\beta$ -blocker nebivolol 5 mg was started, amlodipine dosage (after discussion with the patient) was increased to 20 mg daily, and combination hydrochlorothiazide/spironolactone 25 mg/25 mg was added. Her clonidine patch was tapered and discontinued. The changes in the PWA are shown in Figure 14.

Figure 14



BBP indicates brachial blood pressure systolic/diastolic; CBP, central blood pressure systolic/diastolic; CPP, central pulse pressure; Alx, augmentation index; HR, heart rate; bpm, beats per minute.

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## Clinical Case Example V

### Interpretation:

The central pressure profile now shows a pulse pressure amplification of 32%. The central systolic pressure of 111 mm Hg is less than the desired value of 124 mm Hg. The AIx was reduced from 31% to 20%. No further changes were made.

### Summary:

In this instance, the central pressure profile was used to help guide alteration of her regimen, which included the addition of a  $\beta$ -blocker and other changes, without the loss of a desirable central pressure profile.