THE PLOT STIFFENS

Loss of arterial compliance:

• Begets drug resistance
• Underlies Isolated Systolic Hypertension
  • Causes RDN Failure
Conflict of Interest

Rox Medical, Inc.  Chief Science Officer
Cibiem, Inc  Chief Medical Officer
Rainbow Medical, Inc. Consultant
Abbott Ventures Consultant
Boston Scientific, Inc. Consultant
Ablative Solutions, Inc. Consultant
Outline

• ISH is due to large arterial stiffening not increased PVR
  – Drug therapy inherently fails to address the underlying defect

• Drug resistance is likely a consequence of arterial stiffening
  – Further assaults with drugs targeting PVR (neuro-hormonal targets) are not likely to be effective
  – Assaulting patients with direct vasodilators will result in significant and frequent orthostatic symptoms

• Treatment failure in renal denervation is related to Arterial Stiffening
BP and Pulse Pressure Rise with Age

Burt. Hypertension 1995;25:313
Aortic PWV and Age

Avolio et al; *Circ*:1983
Elastic Artery (Windkessel effect)
Cushioning Systolic Pressure, Diastolic Support
The Physiology of Blood Pressure

*Physiology; Berne & Levy*
Different Forms of Hypertension

Essential Hypertension

Adapted from *Physiology*; Berne & Levy
Different Forms of Hypertension

Isolated Systolic Hypertension

Adapted from *Physiology*; Berne & Levy
Isolated Systolic Hypertension is difficult to treat........
Differential Control of Systolic and Diastolic Blood Pressure
Factors Associated With Lack of Blood Pressure Control
in the Community

Donald M. Lloyd-Jones, Jane C. Evans, Martin G. Larson, Christopher J. O’Donnell,
Edward J. Roccella, Daniel Levy

Lloyd-Jones et al Hypertension 2000; 36: 594-599
Baroreceptor Stimulation......
Baroreceptor Stimulation
Renal Denervation......
“Hold the catheters” – renal denervation may not be the answer to the management of resistant or hard-to-treat hypertension

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Does Arterial Stiffness Predict RDN Failure?
Reduced Effect of Percutaneous Renal Denervation on Blood Pressure in Patients With Isolated Systolic Hypertension

Sebastian Ewen, Christian Ukena, Dominik Linz, Ingrid Kindermann, Bodo Cremers, Ulrich Laufs, Stefan Wagenpfeil, Roland E. Schmieder, Michael Böhm, Felix Mahfoud
The ROX Coupler:
Adding Compliance and Reducing Resistance to the Arterial Tree:

A Mechanical Treatment for Arterial Hypertension.
Results of a Prospective, Randomized, Controlled, Blinded-Endpoint, Multicenter European Trial on Resistant Hypertension

On Behalf of the RH-02 Investigators:
Creation of an iliac arteriovenous shunt lowers blood pressure in chronic obstructive pulmonary disease patients with hypertension

John Faul, MD, a Danny Schoors, MD, PhD, b Sofie Brouwers, MD, b Benjamin Scott, MD, FSCAI, c Andreas Jerrentrup, MD, d Joseph Galvin, MD, e Sandra Luitjens, BSc, f and Eamon Dolan, MD, g Dublin, Ireland; Brussels and Antwerp, Belgium; Marburg, Germany; and San Clemente, Calif
You can’t help getting older, but you don’t have to get old.

[George Burns]
Conclusions

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[George Burns]

Therapeutic modulation of arterial stiffness IS POSSIBLE
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