

## Prof. Solomon Aronson: why is it important to manage acute blood pressure?

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*Prof. Solomon Aronson (Figure 1), the Executive Vice Chairman of Anesthesiology Department in Duke University Medical Center, who gave an impressive speech on “From the evidence to the best practice” in the cardiovascular anesthesiology session in 2014 China Heart Congress” and got applaudive response from audience. After the meeting, the Annals of Translational Medicine (ATM) was honored to have the chance to meet Dr. Aronson. With the enthusiasm to Anesthesiology, Dr. Aronson impressively shared his resourceful expertise in this area.*

**ATM:** *Do you think that preoperative blood pressure is important, not only to patients with hypertension, but also to non-hypertension patients? Could you explain it to us?*

**Prof. Aronson:** One of the things that we have known for many years is that hyper-tension in the generic sense of the world is predictive of worse outcome, which is to say if someone is hypertensive. It is reflective of vascular pathophysiology and should not be ignored. That said, what we know today about hypertension and risk is very different from what we have known for the last several decades. We now know that the type or the characterization of hyper-tension, is also very significant. I think, therefore it's important that we no longer just simply use the phrase “hypertension” but rather we evolve to another level of specification and better characterize what type of hyper-tension we are referring to. For example, diastolic hypertension is different from systolic hypertension and what we have shown in the last few years is that in particular patients who have a history of systolic hypertension or wide pulse pressure hypertension are particularly at risk for adverse postoperative outcomes. Unlike diastolic hypertension, where conventional therapies have been shown to be very effective, unfortunately there is not much currently we can do about systolic hypertension risk mitigation. Indeed we have developed algorithms now to sometimes even postpone a possible surgery to better treat uncontrolled diastolic hypertension. Our abilities to treat uncontrolled systolic or wide pulse pressure hypertension



**Figure 1** Professor Solomon Aronson in the 2014 China Heart Congress (the third from left).

are very limited. So we just have to understand that it is a high risk population and that we have to adjust our tolerance to what we are probably going to have to expect or except during the course of surgery in this particularly high risk population. Preoperative characterization of wide pulse pressure hypertension is a marker of significant increased risk of a bad outcome after a surgery. Practically I am much more inclined to accept a higher blood pressure in a patient who presents with wide pulse pressure hypertension because there is now strong evidence that those patients particularly need a higher blood pressure to continue to preserve the organs that have become adapted to see the high blood pressure.

**ATM:** *You gave an impressive speech on the management of acute blood pressure in Chinese Heart Congress today. How do you think to improve it?*

**Prof. Aronson:** I think a theme of all the lectures this morning and certainly, in particular, one of the important messages that I wanted to come out of the presentation that I gave was that there are overriding circumstances that are predicated by the situation, circumstances and the presenting condition of the patient whether or not

there have pre-existing high blood pressure. The situation is determined by what kind of surgery they are going to have, and what circumstance may prevail such as what is the acute need at the time to control blood pressure? We may manipulate blood pressure all the time throughout a very dynamic surgical procedure. An analogy I would use is using a tool, a drug, a therapy that is able to make a quick modification so that you always can stay within a tight guardrail of an acceptable blood pressure is highly desirable regardless of what that acceptable blood pressure may be, given the circumstance or the situation, it is very important. And what you don't want to do is to overshoot either too high or too low or over treat too much or too little. So in general, a drug with very elegant pharmacokinetics that has very effective pharmacodynamics is the ideal. What we have seen from previous clinical trials is that when you use a drug to manage blood pressure that has a long duration than the time you are not in the blood pressure range is more likely to occur, which is much less beneficial than when you are in the blood pressure. So the analogy that I used is that you are driving down a mountain, and it is a narrow winding

road. You know it was important to stay on the road and it was bad if you went off the road either on the left shoulder or the right shoulder. So the more you stay on the road, the better. Then you would probably choose to go down that road in a Ferrari rather than driving a big school bus. Because the likelihood that you wouldn't stand on the road if you drove a big fat school bus would be greater than if you had a sports car. So what we need to do is to find therapies where we can manipulate to the dynamics of a preoperative environment where situations change very quickly to have a drug that responds as quickly as we need to. So we always stay on the road.

*ATM: Thank you so much for your informative talk!*

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