

Joint Event on  
**3<sup>rd</sup> International Conference on  
MEDICAL SCIENCES, HYPERTENSION AND HEALTHCARE**  
World Congress on  
**and  
ORGAN TRANSPLANTATION AND ARTIFICIAL ORGANS**  
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### Novel techniques for measuring blood pressure

Non-invasive measurement of blood pressure dates from the late 19th century, when Riva-Rocci proposed occlusion and then Korotkoff identified the characteristic turbulent sounds. Little changed until the 1980s when Penáz unloading emerged and then pulse wave velocity. There have recently been many announcements of novel techniques and products to measure BP without a cuff, both for clinical and consumer use and for continuous or on-demand monitoring. The workshop will start by reviewing the underlying challenge of measuring blood pressure, including consideration of its variability and the conditions under which it must be measured. The performance of the “gold standard” will be presented. Before considering specific novel techniques, the workshop will examine the physics and physiology of arteries that forms the basis for two different approaches. This will include the stress/strain law applies to artery walls and its implications for the direct and indirect ways of estimating the pressure non-invasively. This will expose some traditional myths, such as that the maximum change in arterial area is found at Mean Blood Pressure and the assumption that the dynamic stiffness is solely a property of the artery wall. That background will introduce the two divergent approaches, based on direct measurement of pressure and indirect measurement of wave velocity. The workshop will then consider in detail seven examples of products that illustrate each of the approaches, including those intended for professional use and those intended for the consumer, and also considering both continuous monitoring and on-demand devices. The examples range from NexFin and Caretaker through to the Asus watch and the development by the author’s company. It will end with a short review of a further eight devices of projects and some observations about the implications for clinical practice.

### Biography

Chris Elliott is a Fellow of the UK Royal Academy of Engineering and a Barrister (trial lawyer) specializing in regulated technology. He has wide experience of the development of leading-edge technological products and their regulatory approval. For the last 7 years, he has specialized in the innovative measurement of blood pressure and the clinical exploitation of the results.

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