An Automated Supine Pressor Test: Implications for the Diagnosis of Preeclampsia

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Development of Automated Early Detection Test for Preeclampsia

Background

- Preeclampsia is a condition in pregnancy associated with excess protein in urine + hypertension + pre-term birth
- Preeclampsia leads to increased risk of morbidity and mortality for mother and fetus, causing >70,000 deaths worldwide [1]
- The Supine Pressor Test (SPT) is a diagnostic tool which predicts a pregnant woman’s risk for preeclampsia by comparing blood pressure taken in the lateral recumbent and supine position [2]

Objective

Develop a fully automated SPT to:
1) Assess usability and feasibility of performing SPT autonomously
2) Determine and quantify baseline change in BP between shifting positions in pregnant vs non-pregnant females
3) Create cohesive device that incorporates BP cuff, position sensor, and smartphone app to detect risk of preeclampsia

Methods

Automated Supine Pressor Test (SPT):

Results

- Non-pregnant females experience a baseline increase in BP when shifting into supine position
- BPs taken in supine position were significantly higher than those taken in lateral position
- Determined parameters for fully automating the SPT
- The SPT can be automated and used autonomously
- Prototype system currently in development to integrate BP cuff, position sensor, and data processing algorithms.

References


Acknowledgements

Initial funding was provided by the Bill and Melinda Gates Foundation, Grand Challenges Exploration Grant. We would like to acknowledge our collaborators at IU Health and SpaceLabs Healthcare for their support.