Researchers at the University of South Florida have invented a device for monitoring fetal heart tone, mother’s heart rate, mother’s labor contractions and ureter/bladder flow using a standard catheter. This novel invention provides access to internal heart rate and heart tones without the use of traditional invasive techniques in utero.

In standard practice, fetal heart tones and labor contractions are measured using sensors or instruments which are either installed externally onto the mother’s body or internally by placement within the womb and onto the baby’s head. These methods are disadvantageous in many ways, as the performance of such a device may be compromised due to poor placement and may increase likelihood of an early delivery due to ruptured membranes. Furthermore, the device could expose the fetus to instrumentation that may cause injury or infection. The presence of multiple fetuses may also affect sensor performance and accuracy.

USF scientists have developed a device that enables monitoring of the fetal heart rate (or tone), mother’s heart rate, mother’s contractions and bladder flow using a standard urinary catheter. An attached balloon instrumented with a microphone measures intrauterine pressure and detects contractions. The microphone allows measurement of heart rate or tone. As it is placed in the mother’s bladder, the chances of measuring the fetal heart beat and contractions are far greater when compared to an external sensor based method. This invention can be used as a cost-effective alternative to all current external and internal labor and delivery monitoring methods.