A flash of blue light can end the risk of premature childbirth. The invention of a light emitting goggle has levels of melatonin connected to contractions dropping significantly, according to a study by Florida State University associate professor James Olcese. Olcese has begun to make strides toward the hopeful prevention of preterm labor in women after 30 weeks of pregnancy.

Revelation brought about the impact of blue light. Basic biology demonstrates that vision through the eyes is based on rods and cones in the retina which process the color of light. White in this case is the most effective because it actually carries every color of light. White, however, disturbs sleep by connecting to the visual receptors.

Blue, on the other hand can pass through the eye lid without problem, meaning the women don’t even have to be awake to gain the effects of the light. It triggers the melatonin receptors in the same way that the sky does. The color light travels to the thalamus alerting the neurotransmitter without accessing the visual cortex.

By allowing the brain to believe it is morning, the body will halt the contractions with the displacement of melatonin, a neurotransmitter in the brain thought to be connected with sleep cycles.
But through careful research by Olcese it seems to be more clearly related to the association of nighttime in the circadian or daily rhythm. This revelation led to the concept of light affecting the levels of melatonin in women during late night contractions. If you add light, the brain will be tricked into thinking that it is morning, which will quickly lower the levels of melatonin to nonexistent.

Using this information Olcese and his research team conducted a model on women at the Tallahassee Memorial Hospital. Women would come in at 7 p.m. and have a blood test and be set up with a tocometer, a device that measures sensitivity to tension and contractions, which would be monitored for twelve hours. The blood samples would measure the melatonin in order to derive a correlation with the tocometer.

At 11 p.m. the women would be woken up by a bright lamp about the size of a computer screen, into which they would have to stare, frequently moving their eyes to gain full exposure. The results were astonishing. During the time the women were exposed to light their melatonin levels were zero as well as their contractions stopping. Not only did it stop for the hour, but continued for several hours before the melatonin levels were restored as they finished their night of sleep.

Although this revelation seems simple for the suppression of contractions these studies led to discomfort in women’s sleep cycles, in addition to how bright light might affect a partner’s sleep.

Through the award of the GAP grant from FSU the next step for Olcese and his team is to take the research even further than the discovery of this color correlation. With the only known side effect being the displacement of the sleep cycle to later on in the night and eventually through the day, Olcese and his team are working toward changing the variant in which light is emitted.

By changing the schedule and duration of the light, the impact on the levels of melatonin, and therefore the amount of sleep, it is believed that women will feel less contractions without harming the sleep needed in the final weeks of pregnancy. Another risen issue is the design of the goggles themselves in finding a suitable design for comfort during sleep.

Through the next stages of the research and design Olcese sees the long term goal of the project, for the goggles to be on the mark within the next two to three years. Olcese’s research will not only impact the lives of women, but will create a generation of healthier happier babies cutting the statistic of 35 percent of infant deaths due to premature delivery.