



Infant Hearts Beat to Electromagnetic Pulses

New research at the Policlinico Le Scote in Siena, Italy suggests that electromagnetic fields generated by incubators in hospital nurseries can affect the heart rates of newborns. Findings of the study have been reported in the Fetal and Neonatal Edition of the Archives of Disease in Childhood.

Our body adapts to changes in the environment with help from the autonomic nervous system, which adjusts and regulates stress responses. These are automatic or involuntary functions and include but are not limited to adjustments in blood vessel size, changes in blood pressure, and generation of electrical activity in the form of electrical signals that make the heart muscle contract to keep the heart beating.

The new study shows that electromagnetic fields are capable of bringing about changes in the activity of the autonomic nervous system. For the study, researchers led by Dr. Carlo V. Bellieni evaluated heart rate variability in 43 newborns. None of the infants were premature or critically ill. The researchers tested heart rate variability in 27 of the infants for five minute intervals while an incubator motor was turned on, off, and on again. For the remaining 16 infants, the researchers used audio stimuli that sounded just like an incubator motor.

Heart rates in healthy individuals change as per the condition they are in whether they are resting or working. This is known as heart rate variability in medical terms and healthy individuals normally record significant variations. If however, a person has some sort of cardiac abnormality, it would result in reduced heart rate variability.

Dr. Bellieni and colleagues recorded an increase in the total power and high-frequency component of heart rate variability along with a drop in the low frequency/high frequency ratio when the incubator motor was turned off. When the motor was restarted, this balance was restored. When the motor was turned on a second time, a significant change

was observed in the low frequency component of heart rate variability. On the other hand, no changes were found in heart rate variability in the group of infants exposed to just changing background noise.

Based on their findings, the researchers note that while the long-term impact of exposure to electromagnetic field is unclear, it could have an impact on preterm infants who are placed in incubators for several weeks at a stretch. International recommendations and laws set levels to safeguard the health of workers exposed to electromagnetic fields; newborns should be worthy of similar protection, the authors conclude. In their opinion, there should be periodic evaluations for preterm infants with special attention being paid to the development of their autonomic nervous system.