

## A Note from the President

By Angela Lanfranchi MD



After nearly a year of research and writing the manuscript, I finally finished a review article to explain the results of a 2010 large prospective cohort study that found that women who took hormonal contraception were more likely to die a violent death. The authors stated that while they didn't know why their data had found that fact to be statistically significant, they thought that it was likely true as they had also found a dose effect, i.e. the longer a woman took hormonal contraception, the more likely she was to have had a violent death. Having a dose effect meant there was more likely a basis in a physiologic mechanism.

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## The Link between Hormonal Contraception Failure and Women's Deaths

Not many women are aware that the **failure to prevent pregnancy** by their choice of hormonal contraception could lead to their own violent death. BCPI Report readers know that hormonal contraception is carcinogenic for breast cancer. The mechanism of carcinogenesis is either causing proliferation of milk duct cells leading to mutations and cancer or being metabolized into 4-OH catechol estrogen quinone, another known carcinogen. However there are other ways that hormonal contraception can lead to women's deaths.



A 2012 study in the American Journal of Obstetrics and Gynecology revealed that almost half (45%) of women **overestimated the effectiveness** of hormonal contraceptives. They were not aware that the Pill, taken according to directions, had a 9% failure rate which is the same for the patch and vaginal ring. Even Depo-Provera injections every 3 months have a 6% failure rate. Popular wisdom believes that the Pill is 100%

effective if none are missed. Men may become suspicious that women who get pregnant while taking the Pill are trying to "trap" them. With approximately 12 million American women taking hormonal contraception and a significant failure rate there are well over 750,000 unplanned pregnancies a year. According to the Guttmacher Institute, about 42% or 317,000 women will abort their pregnancy leading to increased violent deaths of the mothers.

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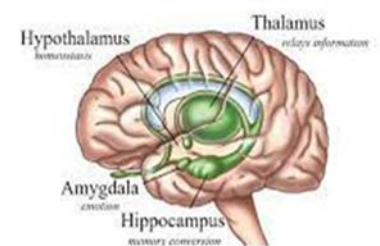


## Review Article in *Frontiers* Explains Hormonal Contraception and Violent Death

*Hormonal contraception linked to structural brain changes*

Published in *Frontiers in Behavioral Neuroscience* on July 30, 2021, "Hormonal Contraception and Violent Death: the Physiological and Psychological Links" seeks to explain the results of two large prospective cohort studies which found that women taking hormonal contraception had a higher risk of dying a violent death than women who did not. Violent death included suicide, homicide and accidents. There were several reasons found for this. As previously discussed in BCPI Reports, a large prospective Danish study found that suicide attempts and suicide increased after just 2 months of exposure to hormonal contraception. Symptoms of Borderline Personality Disorder (BPD) also increased with use of hormonal contraception. Some symptoms of BPD are risk-taking which might contribute to accidents and depression that can lead to suicide and self-medication with alcohol or drugs thereby contributing to accidental over-dose deaths. Suicide is the main factor in risk of violent death.

### The Limbic System



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Immediately after the 2010 Hannaford study was published, S.C. Roberts, a British researcher, wrote a letter to the editor stating his opinion for the finding of increased violent death. Having done research on MHC preference of women choosing their mate, he found that hormonal contraception changed their preference to mates with similar MHC genes to themselves. Choosing mates with dissimilar MHC genes would result in offspring that had a wider variety of MHC genes which provides a survival advantage by increased innate ability to fight infections. MHC genes involve immune competency, the ability to clear infections. Before the advent of antibiotics in the 1940s, infection was a leading cause of death and infant mortality rates were high. In his letter, Roberts posited that hormonal contraception led to more volatile relationships and would lead to increased intimate partner violence (IPV) and possible deaths. For instance, women who take hormonal contraception are more likely to have “extra-pair bondings” and find their mate less attractive. They and their mates are also more jealous and the resulting mate retention behaviors may lead to IPV. Mate retention behaviors are measured in psychology studies and used as an inventory of behaviors. They can range from benignly improving physical attractiveness and gift giving to threats or deeds that can be emotional, verbal or physical. I found it all very intriguing. Still there was no reason stated why women would be more jealous or engaged in more “extra-pair bondings” or infidelity.

As a physician, I was always interested in the “why” of what we did; the pathophysiology of what made us sick or behave as we do. During my research, I found that hormonal contraception interfered with oxytocin which modulates pair-bonding and women taking HC lost their normal response to oxytocin which increases perceived attractiveness of their partner. I also found out that the degree of jealousy was proportional to the amount of estrogen in the formulation taken. *BCPI Report* readers know with the report of the Skovlund study in 2020, hormonal contraception increases suicide and depression after just 2 months of use. From other studies I also learned that the sizes of some brain structures were diminished within 3 months of exposure to hormonal contraception which supports Skovlund’s finding of depression in hormonal contraceptive users. I hope to share some of this information with you over the next few Reports. A copy of the published paper can be found under the resources tab at our BCPI website, [www.bcpiinstitute.org](http://www.bcpiinstitute.org).

## The Link between Hormonal Contraception Failure and Women’s Deaths

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In 2011, a meta-analysis of 22 studies by Coleman revealed that there were adverse mental outcomes in women who aborted their pregnancy including a 20.9% increased risk of suicide. There was also increased risk of drug and alcohol abuse which can lead to accidents such as with motor vehicles and drug overdoses. Women may also become victims of intimate partner violence if they fail to abort despite a father’s insistence. Several studies have documented that a leading cause of death of pregnant women is homicide, usually by an intimate partner. In the U.S., 30% of female homicides are by an intimate partner. These findings were corroborated by a 1999 Finnish study by Gissler. Up to one year after induced abortion, when compared to women who gave birth or miscarried, there was a statistically significant increase of 340% in homicides, 273% in suicides and 111% in accidents using vital statistic records. In another study published in 2015 Gissler found women who were counseled post abortion and screened had markedly reduced suicide rates.

## Review Article in Frontiers Explains Hormonal Contraception and Violent Death

### *Hormonal contraception linked to structural brain changes*

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The primary mechanism for the development of depression and suicide was a change in critical brain structures that govern emotions in humans. The limbic system is the part of the brain involved in our behavioral and emotional responses, especially when it comes to behaviors needed for survival including reproductive responses. The limbic system largely consists of the amygdala, hippocampus, and cingulate gyrus. The amygdala controls emotion and behavior. The hypothalamus which regulates mood, menstrual cycles, libido, appetite, sleep cycles, heart rate and temperature connects the endocrine to nervous system. The amygdala and hypothalamus are rich in alpha and beta estrogen receptors. Studies have shown a reduction in the size of the left amygdala and the hypothalamus with the use of hormonal contraceptives. The reduction in size of these brain structures are associated with depression which can lead to suicide. Hormonal contraception started in adolescence, before brain development is complete, resulted in long term increase in major depressive disorders.

In addition to structure, hormonal contraception also affected brain functioning as demonstrated by functional MRI brain studies. Hormonal contraceptives enhanced fear learning by visual stimuli possibly increasing anxiety in users. Hormonal contraceptives also interfered with oxytocin which modulates pair-bonding; women lost their normal response to oxytocin which increases the perceived attractiveness of their partner. This interference with oxytocin may be the mechanism for studies finding that women on hormonal contraception are more likely to engage in “extra-pair” bondings. They and their partners also become more jealous which can result in more mate retention behaviors damaging relationships. Interestingly, the degree of jealousy was proportional to the amount of estrogen in the formulation taken but was unrelated to the amount of progestin.