

THE PILL KILLS

The Life Threatening Medical Consequences
of Oral Contraceptives
A.K.A. estrogen–progestin combination drugs

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BREAST CANCER
Prevention
INSTITUTE

If the Pill is so bad, why do teenagers love it?

- ▶ They get bigger breasts
- ▶ They have lighter periods
- ▶ They have predictable periods
- ▶ They have painless periods
- ▶ They improve their complexion
- ▶ They think they don't have to worry about pregnancy if they give in or slip up



If the pill is so bad, why do their parents love it?

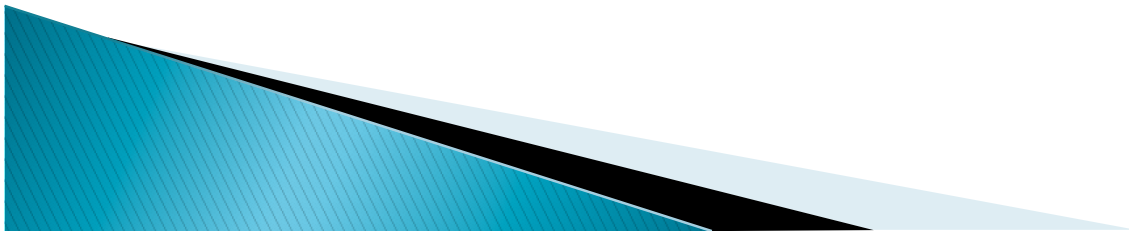
- ▶ Parents think the pill will keep their kids from getting pregnant
- ▶ Parents will worry less
- ▶ Parents possess the strong defense mechanism of denial – *“it’s for acne”* or *“it’s for painful periods”*
- ▶ Parents think it makes their kids *“responsible”* if they choose to have sex
- ▶ Parents don’t know the medical risks



How the PILL KILLS

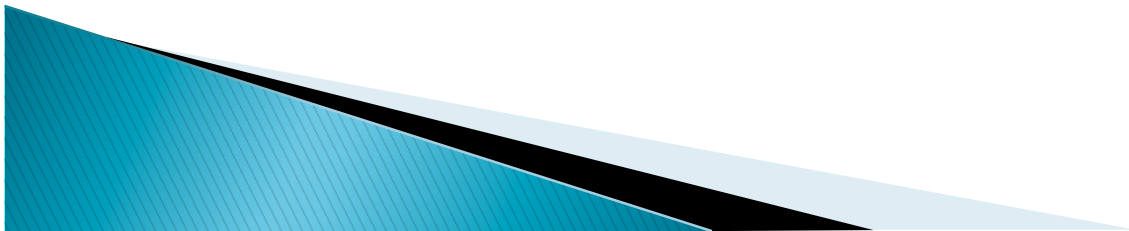
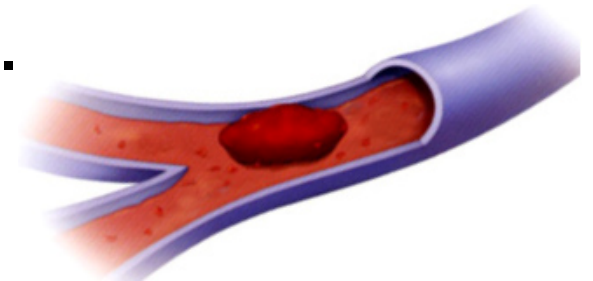
The Four Major Mechanisms

- ▶ They cause your blood to clot
- ▶ They cause cancer
- ▶ They make it easier to get potentially lethal infections
- ▶ They make it more likely you will die a violent death



They Make Your Blood Clot

- ▶ Blood clots in a heart artery cause a heart attack (**MI**)
- ▶ Blood clots in a brain artery cause a stroke (**CVA**)
- ▶ Blood clots in your leg veins cause deep venous thrombosis (**DVT**).
- ▶ And blood clots, that break off from the legs and go to the lungs, can cause a fatal pulmonary embolism (**PE**) and is known as venous thromboembolism (**VTE**).



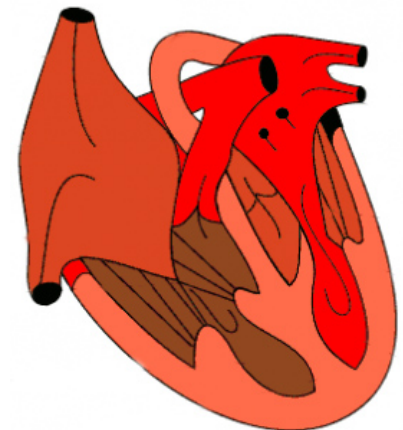
They Make Your Blood Clot

MI

Women who use the Pill have **twice** the risk of MI

- ▶ Women with no conventional risk factors (hypertension, hypercholesterolemia, diabetes, or smoking) who used oral contraceptives had a relative risk of myocardial infarction of 2.0 (95 percent confidence interval, 1.5 to 2.8).
- ▶ The duration of oral-contraceptive use did not differ significantly between patients and controls (median, 10 years).

Tanis, BC et al Oral Contraceptives and the risk of myocardial infarction, NEJM 2001; 345: 1787-1793

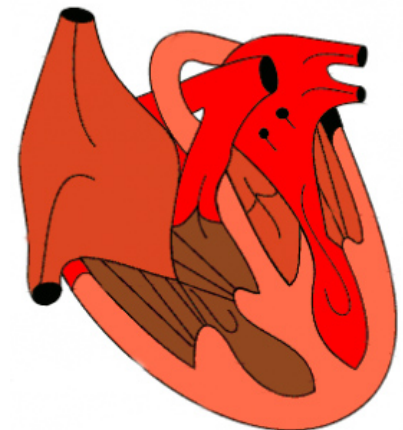


They Make Your Blood Clot

MI

Among women who had used oral contraceptives, the risk of **myocardial infarction** was highest among:

- ▶ Those with **hypertension** (odds ratio 6.1) or **5 times the risk**
- ▶ Those who **smoked** (odds ratio, 13.6), or **12 times the risk**
- ▶ Those who had **diabetes** (odds ratio, 17.4), or **16 times the risk**
- ▶ And those who had **hypercholesterolemia** (odds ratio, 24.7) or **23 times the risk**



They Make Your Blood Clot

CVA

There is over **twice** the risk of stroke in **women on the Pill**

By a meta-analysis which combined the results of 16 studies, there was a relative risk of 2.75 (2.24–3.38) or near 3 times the risk of ischemic stroke.

The risk is even higher with other risk factors

But for women who take birth control pills and **smoke**, have **high blood pressure** or have a history of **migraine** headaches, the stroke risk is significantly higher

Gillum, LA Ischemic stroke risk with oral contraceptives
JAMA July 5 2000; 284: 72–78



They Make Your Blood Clot

Pulmonary embolism PE (> 90% from leg clots DVT)

Venous Thromboembolism VTE



There is two to three times the risk of pulmonary embolism in women on the Pill

- ▶ In total, 4,213 venous thrombotic events were observed, 2,045 in current users of oral contraceptives.
- ▶ The overall absolute risk of venous thrombosis per 10,000 woman years in non-users of oral contraceptives was 3.01 and in current users was 6.29.
- ▶ Compared with non-users of combined oral contraceptives, the rate ratio of venous thrombembolism in current users decreased with duration of use (<1 year 4.17, 95% confidence interval 3.73 to 4.66, 1–4 years 2.98, 2.73 to 3.26, and >4 years 2.76, 2.53 to 3.02; $P < 0.001$) and with decreasing dose of oestrogen.
- ▶ Lindegaard, O et al Risk of venous thromboembolism from use of oral contraceptives containing different progestogens and oestrogens Danish cohort study 2001–9 BMJ 2011 343:d6423



They Make Your Blood Clot

Pulmonary embolism PE (> 90% from leg clots DVT)

Venous Thromboembolism VTE

VTE

Pills with androgenic progestins have an additional 60–80% risk of VTE

Compared with oral contraceptives containing levonorgestrel, those with:

- ▶ desogestrel 1.82 (1.49 to 2.22),
- ▶ gestodene 1.86 (1.59 to 2.18),
- ▶ drospirenone 1.64 (1.27 to 2.10),
- ▶ with cyproterone 1.88 (1.47 to 2.42).

(eg. Yaz and Yasmin)



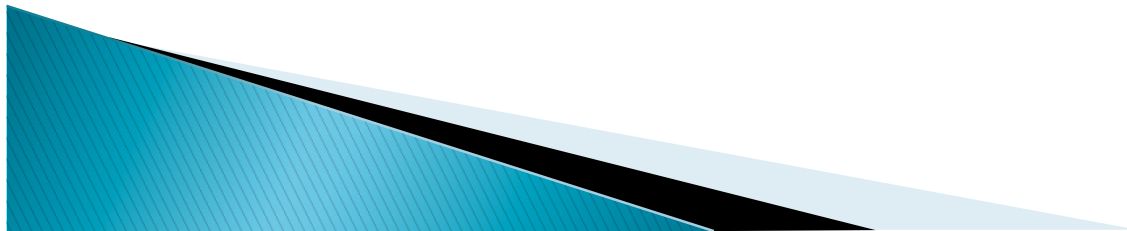
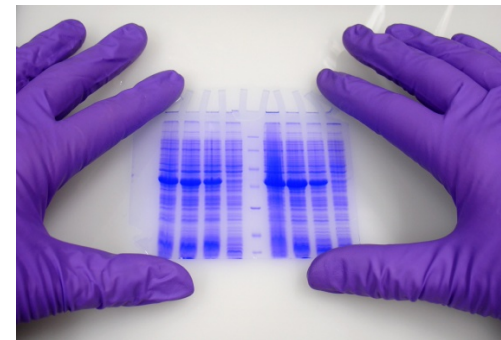
They Make Your Blood Clot

Pulmonary embolism PE (> 90% from leg clots DVT)

Venous Thromboembolism VTE

VTE

- ▶ The Patch causes estrogen to be 60% higher than the Pill and greatly increases all clotting.
- ▶ Women with hereditary conditions that cause clotting (protein C & S deficiency, antithrombin III def., Factor V Leyden def.) have even higher rates of VTE.



They cause cancer

BREAST

- ▶ In 2000, the National Toxicology Advisory Panel put estrogen on its list of carcinogens. There are metabolites of estrogen which directly damage DNA causing mutations and cancer.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans

- ▶ In 2005, the UN's International Agency on Research of Cancer (IARC) reported in their Monograph 91 that estrogen-progestin combination drugs (the Pill) was a group 1 carcinogen for breast, cervical and liver cancer. Although the risk of uterine and ovarian cancers were lower on the pill, there is 6 times more breast cancer in women than uterine and ovarian cancers combined.

They cause cancer

BREAST

- ▶ In 2006, Kahlenborn's meta-analysis in the Mayo Clinic Proceedings showed a 44% increase risk of breast cancer in women who took the Pill before having a child.
- ▶ In 2009, Dolle in Cancer Epidemiology and Biomarkers and Prevention showed a 320% increase risk of triple negative breast cancer
- ▶ Since 1975, the risk of in-situ breast cancer has increased 400% in premenopausal women

Kahlenborn, C et al Oral contraceptive use as a risk factor for premenopausal breast cancer: A meta-analysis 2006 Mayo Clinic Proc 2006 81(10): 1290-1302

Dolle, J et al Risk factors for triple negative breast cancer in women under the age of 45 cancer Epidemiol Biomarkers Preve 2009; 18(4) 1157-1165

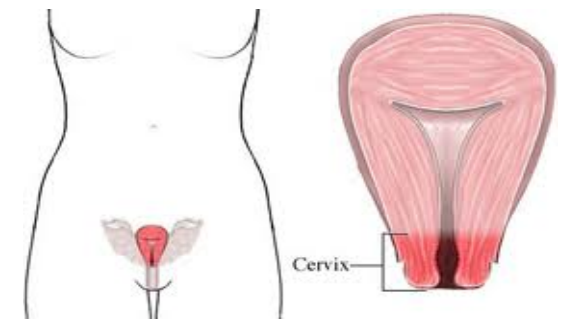
They cause cancer

CERVICAL

The risk of cervical cancer does increase with more than five years of the Pill

- ▶ Women who use the OCPs for five to nine years have **twice** the risk of cervical cancer OR 2.82 (1.46–5.42)
- ▶ Women who use the OCPs for 10 years or more have more than a **three** times risk of cervical cancer OR 4.03 (2.09–8.02) .

Moreno V et al Effect of oral contraceptives on risk of cervical Cancer in women with HPV infection: the IARC multicentric case control study Lancet 2002 Mar 30; 359(9312): 1085–92

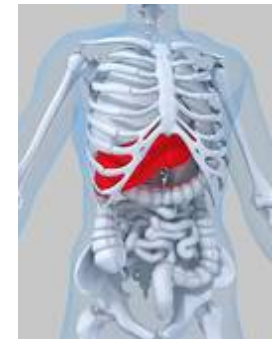


They cause cancer

LIVER

Primary liver cancer (hepatocellular carcinoma) is rare in developed countries and the pill increases risk over 50 –70% in women.

- ▶ The evidence of OC and liver cancer is based on at least 12 case-control studies, including 739 cases and 5223 controls, which were reviewed in a meta-analysis. The overall RR was 1.57 (95% CI: 0.96–2.54), with some evidence of duration–risk association in six studies. Exclusion of a recent multinational European study increased the pooled RR to 1.70 (95% to 1.12–2.59) and decreased heterogeneity. The association is less strong in studies from developing countries, where hepatitis B and C infections are more common.
- ▶ The pill also increases the risk of benign tumors, hepatic adenomas.
- ▶ The pill increases the risk of focal nodular hyperplasia (FNH) of the liver.



IARC 2005 Monograph 91

More likely to develop lethal infections

- ▶ Women on the pill **increased their risk 60% to get HIV infection** when compared to women not taking the pill.
- ▶ Women on the pill were **twice as likely to transmit HIV** to their partner.
- ▶ Women on the pill were **twice as likely to get infected with HPV** (human papilloma virus)

Wang, C C et al Risk of HIV infection in oral contraceptive pill users: a metaanalysis JAIDS 1999 May 1 21 (1) :51-58

Franceschi, S et al Genital warts and cervical neoplasia: an Epidemiological study Br J Cancer 1983; 48:621-628



More likely to die a violent death

The Walnut Creek Contraceptive Study
Prospective study of the side effects of oral
contraceptives

Journal of Reproductive Medicine
December 1980

Chapter 9 Mortality

The major causes of death were:

- ▶ malignant neoplasms (45%)
- ▶ **accidents or violence (19%)**
- ▶ cardiovascular diseases (15%)

More likely to die a violent death

Mortality among contraceptive pill users: cohort evidence from Royal College of General Practitioners' Oral Contraception Study

BMJ 2010

Results 1,747 deaths occurred in never users of oral contraception and 2,864 in ever users. Compared with never users, ever users of oral contraception had a significantly lower rate of death from any cause (adjusted relative risk 0.88, 95% confidence interval 0.82 to 0.93). They also had significantly lower rates of death from all cancers; large bowel/rectum, uterine body, and ovarian cancer; main gynaecological cancers combined; all circulatory disease; ischaemic heart disease; and all other diseases. **They had higher rates of violent deaths.** No association between overall mortality and duration of oral contraceptive use was observed, although some disease specific relations were apparent. An increased relative risk of death from any cause between ever users and never users was observed in women aged under 45 years who had stopped using oral contraceptives 5-9 years previously but not in those with more distant use. The estimated absolute reduction in all cause mortality among ever users of oral contraception was 52 per 100,000 woman years.

More likely to die a violent death

The Whys of why violent death more likely

13 March 2010

S. Craig Roberts, Senior Lecturer *School of Biological Sciences,*
University of Liverpool, Liverpool L69 7ZB

Hannahford et al. (2010) report convincing evidence for reduction in mortality from several forms of cancer and other disease in women who have used oral contraception compared to never users. **However, they also find a higher rate of violent death among ever users, and that the rate of violent death increases with longer duration of oral contraceptive use**, but they are unable to explain these intriguing results. I suggest that recent evolutionary insights into human partner choice may provide a clue.

More likely to die a violent death

There is evidence that use of oral contraception alters women's baseline preferences for men such **that pill users prefer men who are relatively similar to themselves at loci in the major histocompatibility complex (MHC).**

One consequence of being partnered with relatively MHC-similar men is that such women

- **express lower sexual responsivity toward their long-term partner** compared with women in relatively MHC-dissimilar couples
- **reject sexual advances from their partner more frequently**
- **and report having had more extra-pair partners[4].**

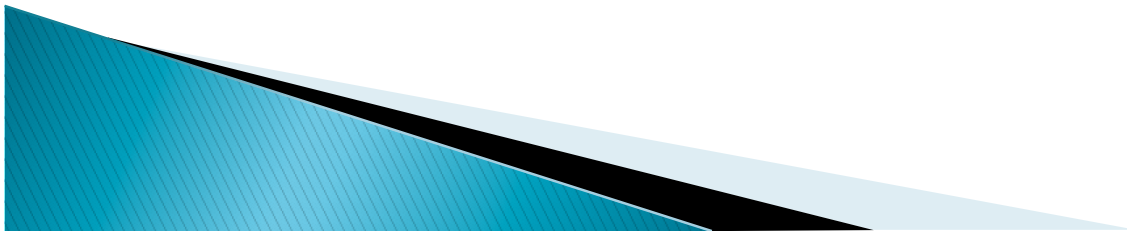
In others words : Bad sex, less sex and cheating lead to VIOLENCE.

More likely to die a violent death

Other evidence points to MHC–similar couples being more likely to experience

- ▶ problems conceiving children, and
- ▶ having less healthy children due to lower MHC–heterozygosity.

Cumulatively, these effects could have real impact on the quality of spousal relationships.



More likely to die a violent death

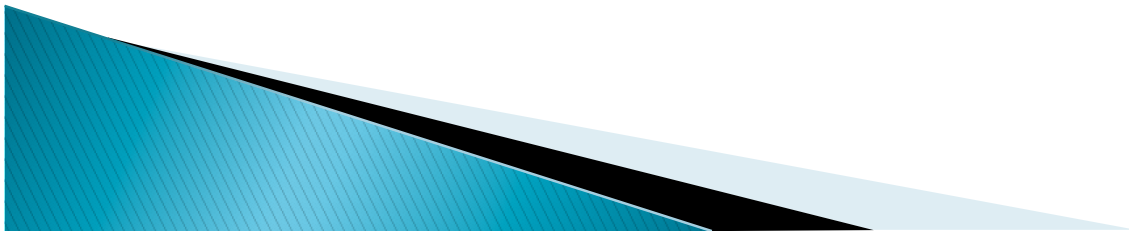
- ▶ It is not unreasonable to suspect that such effects could also influence rates **of intimate partner violence**. This is the **most common cause of nonfatal injury among women and accounts for more than a third of women murdered in the US**.
- ▶ Furthermore, ex-partners are a key risk factor, which could further emphasize the risk for pill users if the behavioral effects of pill use ultimately influence rates of marital breakdown
- ▶ (No doubt a reason for the fact the greatest cause of death of pregnant women is homicide.)

Kellermann AL, Mercy JA (1992) Men, women and murder: gender-specific differences in rates of fatal violence and victimization. Journal of Trauma 33: 1-5.

The pill is also an abortifacient

- ▶ As is well observed by those on the pill, menstrual periods are light because the pill reduces the thickness of the endometrial lining, resulting in difficulty of implantation of the embryo after conception has occurred.
- ▶ The pill also results in biochemical changes such as in the levels of interleukins, which are molecules necessary for implantation.

Wilks, J The impact of the pill Ethics and Medicine 2000 ;16(1):15-22



THE PROBLEM IS HUGE

- ▶ There are approximately 75 million women of reproductive age (15–45 years old).
- ▶ 82% of these women take the Pill.
- ▶ Women on THE PILL are more likely to have an MI, a CVA, a PE, get breast, cervical and liver cancers, get HIV and HPV infections and die a violent death.
- ▶ Is this what we want for young women ? ? ? ?

THE PILL KILLS



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