Medical condition:
Hormonal contraception and
breast and ovarian cancer

Update July 2018
MC: CHC breast and ovarian cancer

Contents

- Effect of CHC on breast cancer risk
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- CHC and breast cancer risk in women with hereditary breast cancer
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- CHC and breast cancer risk in carriers of BRCA1/BRCA2 mutations
- Contraceptive options for women after breast cancer
Breast cancer and ovarian cancer
lifetime risk

- **Breast cancer** is the most frequent cancer diagnosis in women (lifetime risk 10%)
- **Ovarian cancer** is rarer (lifetime risk 1.3–1.6%); mortality, however, is higher

Effect of CHCs on breast cancer risk in women with no predisposition

Study population: 15-49 year old women, data from 1992-2012

| Category                                      | RR  
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Current use HC</td>
<td>1.2</td>
</tr>
<tr>
<td>Current use CHC</td>
<td>1.19</td>
</tr>
<tr>
<td>Breast cancer cases in non-users based on 100000 person-years: 55</td>
<td>1.0</td>
</tr>
<tr>
<td>Breast cancer cases in CHC users based on 100000 person-years: 68</td>
<td>1.19</td>
</tr>
</tbody>
</table>

This corresponds to 13 additional BC cases in 100000 person-years or 1 additional BC for every 7690 women using any HC for 1 year.

s: significant p<0.05


The data were collected from a Danish Cancer registry 1995-2012. Included women were 14-49 years old. It reports 11517 incident breast cancers in 1.8 million women, mostly using modern CHC with an EE-content of 20-40mcg, but also women using POC and the LNG-IUS.

Breast cancer cases in non-users based on 100000 person-years: 55  RR 1.0
Breast cancer cases in CHC users based on 100000 person-years: 68 RR 1.19


Ref 2: This study included many women using the older higher dosed CHCs. POC data are not reported.

- In absolute numbers it found one additional case of breast cancer in 20000 women (RR 1.24). This number is lower in comparison to study 1 with the modern preparations
- Women starting a COC at age 20–25 years were at higher risk (RR 1.59)
- The risk decreased 10 years after stopping CHC. Such a decrease in risk was not confirmed in Ref 1.

Ref: 1 Risk after stopping: contradictory, potentially small decrease in risk more than 5 years after stopping

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1. **Source and comments: Wikipedia.org BRCA Genes**

The BRCA genes are tumour suppressor genes pictured here on their respective chromosomes. **BRCA1** has the cytogenetic location 17q21, the q arm of chromosome 17 at position 21. **BRCA2** has the cytogenetic location 13q12.3, the q arm of chromosome 13 at position 12.3. Both genes produce proteins that help repair damaged DNA, keeping the genetic material of the cell stable. A damaged BRCA gene in either location can lead to increased risk of cancer, particularly breast or ovarian cancer in women.
There are hundreds of different genetic types of breast cancer. *BRCA1/BRCA2* mutations are the most prevalent types of hereditary breast cancer. Over the whole population, *BRCA1/BRCA2* mutations are rare.

*Triple-negative breast cancer is a type of breast cancer that does not express the following receptors:
• Estrogen receptor.
• Progesterone receptor.
• HER2 receptor (HER2 is a protein that stimulates the growth of breast cancer cells).
BRCA1/BRCA2 mutations are also associated with some other types of cancer. One of the most prevalent is colorectal cancer. The risk of colon cancer in BRCA1 is fourfold. The risk of colon cancer in BRCA2 is twofold.
Does CHC use increase breast cancer risk in women with BRCA1 and BRCA2 mutations?

<table>
<thead>
<tr>
<th>BRCA1</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narod 2002</td>
<td></td>
</tr>
<tr>
<td>Use &gt;5 years</td>
<td>1.33*</td>
</tr>
<tr>
<td>Start &lt;20 years</td>
<td>1.36*</td>
</tr>
<tr>
<td>Breast cancer diagnosis &lt; age 40</td>
<td>1.38*</td>
</tr>
<tr>
<td>Brohet 2007</td>
<td>1.47*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BRCA2</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haile 2006</td>
<td></td>
</tr>
<tr>
<td>Use &gt;5 years</td>
<td>2.0*</td>
</tr>
<tr>
<td>Duration of use/year BRCA2</td>
<td>1.08*</td>
</tr>
<tr>
<td>Brohet 2007</td>
<td>2.3</td>
</tr>
</tbody>
</table>

**Yes, under certain circumstances** *(Significant $p<0.05$)*


Protection from ovarian cancer as a result of CHC use in this context is not relevant, as early ovariectomy is currently recommended.

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Bilateral removal of tubes and ovary in BRCA1 carriers reduces the breast cancer risk in these patients. BRCA1-associated breast cancer is also estrogen receptor negative. Use of tamoxifen can reduce the risk of contralateral breast cancer.