CPC PowerPoint I

Worksheet

The following worksheet provides an explanation for each diagram on the PowerPoint Presentation.

Slide #24

Breast Lobule Maturation Before and After First Pregnancy.
The color-coded key on the left shows that pink and blue are used to represent immature, cancer-susceptible Type 1 and 2 breast lobules. 97% of all breast cancers arise in Type 1 and 2 lobules. The color-coded key on the right shows that green and black are used to represent lobules that are resistant to cancer. These lobules are called Type 3 and 4 lobules.

After Puberty Before Pregnancy.
This diagram shows why the most cancer-susceptible time in a woman's life takes place between the onset of menstruation and first full term pregnancy. During this period, the overwhelming majority of the childless woman's breast lobules consist of immature, cancer-susceptible Type 1 lobules. 85% of all breast cancers arise in Type 1 lobules. That is where ductal cancers are known to originate. Lobular cancers arise in Type 2 lobules which account for 12% of all breast cancers.

End of First Trimester.
By the end of the first trimester, the breasts have increased in volume due to the influence of pregnancy hormones (mainly estrogen). The mother has now grown more cancer-susceptible Type 1 and 2 lobules. If she has an abortion, she will be left with more places for cancers to start in her breasts than before she became pregnant.

End of Third Trimester.
By the end of the third trimester (at 40 weeks gestation), 85% of the breast lobules consist of fully mature, cancer-resistant Type 4 lobules. The mother is left with fewer places for cancers to start than before she became pregnant. Research shows that breast cells are not mature and cancer-resistant until they have lactated.

After Weaning.
After the mother weans her baby, some regression takes place. Type 4 lobules regress and become cancer-resistant Type 3 lobules.

Slide #25

Photomicrographs of Lobules
Figure 1 shows actual photomicrographs of Type 1, Type 2 and Type 3 lobules. Type 1 and 2 lobules appear far more immature and less complex than Type 3 lobules.

Slide #29

Breast Tissue After Abortion vs. After Early Premature Delivery
These slides show that the mother is left with more places for cancers to start whether she has an induced abortion or a premature birth before 32 weeks of pregnancy. In both cases, the mother has been exposed to an elevated level of pregnancy hormones which stimulated breast growth and the multiplication of her cancer-susceptible Type 1 and 2 breast lobules.

SLIDE #32

After Puberty Before Pregnancy.
Between the onset of menstruation and first full term pregnancy, most of the lobules consist of Type 1 and Type 2 lobules, which are not resistant to cancer. 97% of all breast cancers originate here.

By the End of First Trimester.
By the end of the first trimester, the breasts have grown and the mother has developed more places for cancers to start - more Type 1 and 2 lobules.

End of Third Trimester.
By the end of the third trimester, most of the mother's breast lobules are resistant to cancer. 85% of the lobules are cancer-resistant Type 4 lobules.

After Weaning.
After weaning, some regression takes place and most of the lobules are Type 3 lobules. These lobules are also resistant to cancer.

Slide #37

This is a page from the Institute of Medicine's book, Preterm Birth, which can be found online. Notice that Table B-5 on page 519 lists induced abortion as a risk factor for having a premature birth later in life.

Slide #44

Lobular Structures in the Human Breast
This graph shows a comparison between the structures in the breasts before first full term pregnancy and after first full term pregnancy. Notice that before first full term pregnancy, the vast majority of the lobules consist of Type 1 lobules, which are not resistant to cancer. But after first full term pregnancy, most of the lobules consist of cancer-resistant Type 3 lobules.

Slide #46

Dr. Susan Love's Breast Book.
This is a page from Dr. Susan Love's Breast Book. The diagram shows that the more menstrual cycles a woman has, the greater her breast cancer risk is. Women who have more menstrual cycles are exposed to more estrogen during their lives and are, therefore, at greater risk for breast cancer.

In addition, the diagram shows that the most cancer-vulnerable time in a woman's life takes place between puberty and first pregnancy.

Slide #54

The Study, Dolle et al. 2009.
This is the first page of the study, Dolle et al. 2009, entitled "Risk factors for triple-negative breast cancer in women under the age 45." Although the primary focus of the study was on the link between use of the birth control pill and a deadly form of breast cancer called, "triple-negative breast cancer," the authors had to control for other risk factors, including induced abortion. Importantly, National Cancer Institute branch chief Dr. Louise Brinton co-authored the study. Note that the authors listed "abortion history" among "known and suspected risk factors" for breast cancer.

Slide #55

The Study, Dolle et al. 2009.
The authors of the study, Dolle et al. 2009, found that among women 40 years of age or younger who had used the birth control pill (oral contraceptives) for one or more years, this group of women multiplied their risk of developing triple-negative breast cancer by 4.2 times.

Slide #56

The Study, Dolle et al. 2009.
In the Results section of the study, the authors wrote that their findings were “consistent with the effects observed in previous studies on younger women.” Then they added in their conclusions the following statement, “Specifically, older age, family history of breast cancer, earlier menarche age, induced abortion, and oral contraceptive use were associated with an increased risk for breast cancer. Risk was decreased in relation to greater number of births and younger age at first birth.”