

Web Table 1. Variables included in the lifetime ovulatory cycles (LOC) algorithms identified from the literature

| Reference | Algorithm | Age at menopause | Age at menarche | Duration of oral contraceptive use | Duration of non-contraceptive hormone use | Average cycle length | Duration of breastfeeding | Post-partum amenorrhea | Duration of pregnancy | Number of abortions | Number of miscarriages | Number of still births | Number of live births | Missed/irregular periods | Amenorrhic time |
|------------------------|-----------|------------------|-----------------|------------------------------------|---|----------------------|---------------------------|------------------------|-----------------------|---------------------|------------------------|------------------------|-----------------------|--------------------------|--------------------|
| Casagrande, 1979 (1) | A | Yes, available | Yes, available | Yes, available | | | | | Yes, available | | | | Yes, available | | |
| Lavecchia, 1983 (2) | B | Yes, available | Yes, available | Yes, available | | | | | | Yes, available | Yes, available | | Yes, available | | |
| Pettersson, 1986 (3) | C | Yes, available | Yes, available | | | | | | | | | | Yes, available | | |
| Cramer, 1995 (4) | D | Yes, available | Yes, available | Yes, available | | Yes, available | | | Yes, available | | | | | | |
| Cramer, 1996 (5) | E | Yes, available | Yes, available | Yes, available | | Yes, available | | | | | | | Yes, available | | |
| McPherson, 1996 (6) | F | Yes, available | Yes, available | | | | | | | | | | Yes, available | | |
| Schildkraut, 1997 (7) | G | Yes, available | Yes, available | Yes, available | | | Yes, available | | Yes, available | | | | | | |
| Webb, 1998 (8) | H | Yes, available | Yes, available | Yes, available | | Yes, available | Yes, available | | Yes, available | | | | | | |
| Siskind, 2000 (9) | I | Yes, available | Yes, available | Yes, available | | | | Yes, not available | Yes, available | | | | | | Yes, not available |
| Moorman, 2002 (10) | J | Yes, available | Yes, available | Yes, available | Yes, available | | Yes, available | | Yes, available | | | | | | |
| Purdie, 2003 (11) | K | Yes, available | Yes, available | Yes, available | | Yes, available | Yes, available | | Yes, available | | | | | | Yes, not available |
| Tung, 2003 (12) | L | Yes, available | Yes, available | Yes, available | | Yes, available | Yes, available | | Yes, available | | | | | | Yes, not available |
| Odugogbe, 2005 (13) | M | Yes, available | Yes, available | Yes, available | | | Yes, available | | | Yes, available | | | Yes, available | | |
| Pelucchi, 2007 (14) | N | Yes, available | Yes, available | Yes, available | | Yes, available | Yes, available | | | Yes, available | Yes, available | | Yes, available | | |
| Terry, 2007 (15) | O | Yes, available | Yes, available | Yes, available | | Yes, available | Yes, available | | | Yes, available | Yes, available | Yes, available | Yes, available | | |
| Schildkraut, 2008 (16) | P | Yes, available | Yes, available | Yes, available | Yes, available | Yes, available | Yes, available | Yes, not available | Yes, available | | | | | Yes, not available | |

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|---------------------------|---|----------------|----------------|----------------|--|--|----------------|--|--|--|--|--|-------------------|--|--|
| Gates, 2010 (17) | Q | Yes, available | Yes, available | Yes, available | | | Yes, available | | | | | | Yes, available | | |
| Kotsopolous, 2012 (28) | R | Yes, available | Yes, available | Yes, available | | | Yes, available | | | | | | Yes, available | | |

Web Table 2. Algorithms for the lifetime ovulatory cycles (LOC) algorithms identified from the literature

| Reference | Formula |
|-----------------------|--|
| Casagrande, 1979 (1) | "ovulatory age" = age at menopause - age at menarche - $\left(\text{number of live births} \times 12 \frac{\text{months}}{\text{birth}} + \text{number of months of incomplete pregnancies} + \text{number of months of oral contraceptive use} \right)$ |
| Lavecchia, 1983 (2) | "ovulatory years" = age at menopause - age at menarche - number of full-term births $\times 12 \frac{\text{months}}{\text{birth}}$ - number of miscarriages/therapeutic abortions $\times 3 \frac{\text{months}}{\text{each}}$ - number of months of oral contraceptive use |
| Pettersen, 1986 (3) | "menstruation span, years" = age at menopause - age at menarche - number of births $\times 1.5$ |
| Cramer, 1995 (4) | "ovulatory cycles" = $\frac{\text{age at menopause} - \text{age at menarche} - (\text{years of being pregnant or using oral contraceptive use}) \times 365.25}{\text{average cycle length in 20's and 30's}}$ |
| Cramer, 1996 (5) | "estimated ovulatory cycles" = $\frac{\text{current age} - \text{age at menarche} - \text{parity} + \text{years of oral contraceptive use}}{\text{average cycle length in adulthood (30's)} / 365}$ |
| McPherson, 1996 (6) | "years of ovulation" = age at menopause - age at menarche - months or years of pregnancy |
| Schildkraut, 1997 (7) | "lifetime ovulatory cycles" = (index age ^a - age at menarche $\times 13$) - $\frac{(\text{number of months of breastfeeding} + \text{number of months pregnant} + \text{number of months of oral contraceptive use}) \times 13}{12}$ |
| Webb, 1998 (8) | "ovulation years" = $\frac{\text{age at menopause} - \text{age at menarche} - \text{duration of oral contraceptive use} - \text{duration of being pregnant} - \text{duration of breastfeeding}}{\text{average cycle length} / 13}$ |
| Siskind, 2000 (9) | "ovulatory life per decade" = (age at menopause - age at menarche - duration of pregnancy - postpartum amenorrhea - duration of oral contraceptive use - amenorrhea due to other causes) "ovulatory life per life" = weighted the results from each decade by the intensity of ovulation in that decade and then summed |
| Moorman, 2002 (10) | "lifetime ovulatory cycles" = age at menopause - age at menarche - months pregnant - months of oral contraceptive use - months of breastfeeding |
| Purdie, 2003 (11) | "ovulation years" = (age at menopause - age at menarche - duration of births and abortions - duration of oral contraceptive use - postpartum amenorrhoea - other periods of amenorrhoea) \times average cycle length / 13 |
| Tung, 2003 (12) | "lifetime ovulatory cycles" = age at menopause - age at menarche - duration of pregnancy - duration of lactation - duration of oral contraceptive use - duration of amenorrhoea) \times number of estimated cycles per year |
| Odukogbe, 2005 (13) | "total ovulatory period, years" = age at menopause - age at menarche - $\frac{\left(\text{number of pregnancy} \times 40 \frac{\text{weeks}}{\text{pregnancy}} + \text{number of abortions} \times 14 \frac{\text{weeks}}{\text{abortion}} + \text{number of weeks of breastfeeding} \right)}{52 \text{ weeks/year}}$ |
| Pelucchi, 2007 (14) | "lifetime ovulatory period" = age at menopause - age at menarche - number of pregnancy $\times \frac{9 \text{ months}}{\text{pregnancy}}$ - number of abortions $\times \frac{3 \text{ months}}{\text{abortion}}$ - months of oral contraceptive use - number of births $\times \frac{6 \text{ months of breastfeeding}}{\text{birth}}$... \times number of estimated cycles per year |
| Terry, 2007 (15) | "lifetime ovulatory cycles" = $\frac{\text{age at menopause} - \text{age at menarche} - \left(\frac{\text{number of abortion/miscarriages/ectopic pregnancy} \times \frac{0.15 \text{ year}}{\text{abortion/miscarriages/ectopic pregnancy}} + \text{number of pre-term birth} \times \frac{0.65 \text{ year}}{\text{pre-term birth}} + \frac{\text{number of full-term birth} \times \frac{0.92 \text{ year}}{\text{full-term birth}} + \text{number of breastfed child} \times \frac{1 \text{ year}}{\text{breastfed child}} + \text{years of oral contraceptive use} \right)}{\text{average cycle length}} \times 365$ |

| | |
|---------------------------|---|
| Schildkraut, 2008 (16) | $\text{"total ovulatory cycles"} = \frac{\text{age at menopause} - \text{age at menarche} - \text{months of pregnancies} - \text{months of breastfeeding} - \text{months of postpartum amenorrhea} - \dots - \text{months of missed/irregular periods}}{\text{average cycle length}}$ |
| Gates, 2010 (17) | $\text{"ovulatory years"} = \text{age at menopause} - \text{age at menarche} - \text{parity} \times \frac{1 \text{ year}}{\text{birth}} - \text{duration of breastfeeding}$ |
| Kotsopolous, 2012 (28) | $\text{"ovulatory cycles"} = 12 \text{ months} (\text{age at menopause} - \text{age at menarche} - \text{years of oral contraceptive use} - \text{parity} \times 0.77 - \text{years of breastfeeding})$ |

Web Table 3. Pairwise correlation between LOC algorithms in combined controls from the Polish Cancer Study

| | A | B | C | D | E | F | G | H | J | M | N | O | Q | R |
|---|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| A | 1.000 n=1181 | | | | | | | | | | | | | |
| B | 0.999 n=1100 | 1.000 1191 | | | | | | | | | | | | |
| C | 0.936 n=1181 | 0.938 1191 | 1.000 1300 | | | | | | | | | | | |
| D | 0.998 n=1181 | 0.997 1186 | 0.950 1277 | 1.000 1277 | | | | | | | | | | |
| E | 0.999 n=1181 | 0.998 1191 | 0.940 1282 | 0.997 1277 | 1.000 1282 | | | | | | | | | |
| F | 0.934 n=1181 | 0.936 1191 | 1.000 1300 | 0.948 1277 | 0.938 1282 | 1.000 1300 | | | | | | | | |
| G | 0.934 n=1177 | 0.981 1181 | 0.877 1272 | 0.933 1272 | 0.934 1272 | 0.875 1272 | 1.000 1272 | | | | | | | |
| H | 0.981 n=1177 | 0.981 1181 | 0.920 1272 | 0.979 1272 | 0.980 1272 | 0.917 1272 | 0.952 1272 | 1.000 1272 | | | | | | |
| J | 0.981 n=1177 | 0.981 1181 | 0.920 1272 | 0.979 1272 | 0.980 1272 | 0.917 1272 | 0.952 1272 | 1.000 1272 | 1.000 1272 | | | | | |
| M | 0.936 n=1177 | 0.936 1117 | 0.952 1216 | 0.933 1199 | 0.936 1199 | 0.950 1216 | 0.914 1199 | 0.961 1199 | 0.961 1199 | 1.000 1216 | | | | |
| N | 0.997 n=1177 | 0.997 1186 | 0.945 1277 | 0.997 1272 | 0.994 1277 | 0.943 1277 | 0.937 1272 | 0.983 1272 | 0.983 1272 | 0.940 1199 | 1.000 1277 | | | |
| O | 0.995 n=1177 | 0.996 1186 | 0.932 1277 | 0.992 1272 | 0.995 1277 | 0.929 1277 | 0.942 1272 | 0.989 1272 | 0.989 1272 | 0.946 1199 | 0.994 1277 | 1.000 1335 | | |
| Q | 0.978 n=1177 | 0.978 1186 | 0.907 1277 | 0.972 1272 | 0.980 1277 | 0.904 1277 | 0.949 1272 | 0.997 1272 | 0.997 1272 | 0.959 1199 | 0.977 1277 | 0.988 1277 | 1.000 1277 | |
| R | 0.980 n=1177 | 0.980 1186 | 0.920 1277 | 0.978 1272 | 0.981 1277 | 0.918 1277 | 0.950 1272 | 0.999 1272 | 0.999 1272 | 0.961 1199 | 0.983 1277 | 0.988 1277 | 0.998 1277 | 1.000 1277 |

Web Table 4. Pairwise correlation between LOC components and LOC algorithms in the combined controls from the Polish Cancer Study

| Algorithm | Age at Menopause | | Age at Menarche | | Oral Contraceptive Use | No. of Live Births | |
|-----------|------------------|-------------|-----------------|-------------|------------------------|--------------------|-------------|
| | Continuous | Categorical | Continuous | Categorical | Categorical | Continuous | Categorical |
| C | 0.8855 | 0.8273 | -0.2731 | -0.2644 | -0.1304 | -0.0394 | -0.0392 |
| D | 0.8505 | 0.7962 | -0.2745 | -0.268 | -0.2797 | -0.1193 | -0.1175 |
| G | 0.7934 | 0.7198 | -0.2438 | -0.2351 | -0.2976 | -0.173 | -0.1721 |
| M | 0.8198 | 0.7682 | -0.2652 | -0.2565 | -0.1171 | -0.1926 | -0.1914 |
| R | 0.8071 | 0.7582 | -0.2547 | -0.2466 | -0.2957 | -0.1832 | -0.182 |

Web Table 5. Selected characteristics of ovarian and endometrial cancer case and controls in the Polish Cancer Study

| | Endometrial Cancer | | | | Ovarian Cancer | | | |
|---|--------------------|-----|-------------------------|-----|--------------------|-----|-------------------------|-----|
| | Cases (n = 532) | | Controls (n = 1,286) | | Cases (n = 302) | | Controls (n = 1,356) | |
| | No. | % | No. | % | No. | % | No. | % |
| Age, years | | | | | | | | |
| <40 | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% |
| 40–49 | 49 | 9% | 49 | 4% | 84 | 28% | 62 | 5% |
| 50–59 | 168 | 32% | 517 | 40% | 84 | 28% | 553 | 41% |
| 60–69 | 223 | 42% | 496 | 39% | 93 | 31% | 514 | 38% |
| ≥70 | 92 | 17% | 224 | 17% | 40 | 13% | 227 | 17% |
| Missing | 0 | | 0 | | 0 | | 0 | |
| Age at menopause | | | | | | | | |
| <45 | 34 | 7% | 113 | 9% | 39 | 13% | 112 | 9% |
| 45–49 | 112 | 22% | 358 | 29% | 106 | 37% | 358 | 27% |
| 50–54 | 253 | 49% | 586 | 47% | 112 | 39% | 656 | 50% |
| ≥55 | 115 | 22% | 181 | 15% | 32 | 11% | 183 | 14% |
| Missing | 18 | | 48 | | 13 | | 47 | |
| Age at menarche | | | | | | | | |
| <13 | 149 | 28% | 264 | 21% | 82 | 27% | 279 | 21% |
| 13 | 132 | 25% | 291 | 23% | 69 | 23% | 309 | 23% |
| 14 | 128 | 24% | 343 | 27% | 91 | 30% | 363 | 27% |
| 15 | 56 | 11% | 141 | 11% | 30 | 10% | 148 | 11% |
| ≥16 | 64 | 12% | 228 | 18% | 28 | 9% | 236 | 18% |
| Missing | 3 | | 19 | | 2 | | 21 | |
| Duration of oral contraceptive use | | | | | | | | |
| Never user | 502 | 95% | 1,198 | 95% | 277 | 93% | 1,260 | 94% |
| <2 years | 11 | 2% | 29 | 2% | 7 | 2% | 33 | 2% |
| 2–4 years | 9 | 2% | 21 | 2% | 9 | 3% | 24 | 2% |
| ≥5 years | 6 | 1% | 19 | 1% | 5 | 2% | 19 | 1% |
| Missing | 4 | | 19 | | 4 | | 20 | |
| Duration of breastfeeding | | | | | | | | |
| Never breastfed | 80 | 18% | 195 | 17% | 54 | 22% | 204 | 17% |
| <12 months | 210 | 48% | 583 | 51% | 134 | 54% | 630 | 52% |
| 12–23 months | 110 | 25% | 231 | 20% | 43 | 17% | 238 | 20% |
| ≥24 months | 34 | 8% | 131 | 11% | 18 | 7% | 137 | 11% |
| Missing | 98 | | 146 | | 53 | | 147 | |

(Table continues)

No. of pregnancies

| | | | | | | | | |
|---------|-----|-----|-----|-----|----|-----|-----|-----|
| 0 | 65 | 12% | 100 | 8% | 42 | 14% | 102 | 8% |
| 1 | 92 | 17% | 193 | 15% | 75 | 25% | 199 | 15% |
| 2 | 154 | 29% | 402 | 31% | 81 | 27% | 423 | 31% |
| 3 | 112 | 21% | 268 | 21% | 52 | 17% | 287 | 21% |
| ≥4 | 109 | 20% | 323 | 25% | 52 | 17% | 345 | 25% |
| Missing | 0 | | 0 | | 0 | | 0 | |

No. of births

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 100 | 19% | 149 | 12% | 54 | 18% | 149 | 11% |
| 1 | 172 | 32% | 380 | 30% | 124 | 41% | 412 | 30% |
| 2 | 214 | 40% | 561 | 44% | 105 | 35% | 590 | 44% |
| ≥3 | 46 | 9% | 196 | 15% | 19 | 6% | 205 | 15% |
| Missing | 0 | | 0 | | 0 | | 0 | |

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