

## GLOSSARY

# Terms in reproductive and perinatal epidemiology: I. Reproductive terms

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This is the first of a two part glossary of terms used in reproductive and perinatal epidemiology.

which is sometimes defined as starting at implantation.<sup>6</sup>

The terms included in the glossary have widely diverse origins, ranging from endocrinology and reproductive biology to sociology and demography to obstetrics and paediatrics. Perhaps because of these disparate origins, definitions are not always consistent. Frank differences in definitions of common variables can lead to inconsistencies among research studies.<sup>1,2</sup> Even more confusing is that the definitions may seem contradictory. For example, a couple can be defined as infertile and then fertile, and then infertile again.<sup>3</sup> While a glossary cannot resolve all these problems, it provides a point of reference for understanding these problems. When conflicting definitions are in use, we rely on the ICD-10 definition if available. Part one focuses on processes before birth, while part two emphasises those after birth. Terms are generally alphabetical within each part, although a few terms are grouped for clarity.

### ABORTIFACIENT

Factor or condition that induces abortion.

### ASSISTED REPRODUCTIVE TECHNIQUES (ART)

Procedures that entail the handling of human gametes outside of the body for the express purpose of creating a pregnancy. In vitro fertilisation (IVF) was the first and remains the best known; others include intracellular sperm injection (ICSI) and gamete intrafallopian transfer (GIFT).<sup>4,5</sup>

### BLASTOCYST

Early stage of embryonic development in which the cells of the conceptus form a hollow ball. Implantation takes place at the blastocyst stage.

### CLINICAL PREGNANCY

A pregnancy that lasts long enough to be recognised by the mother or clinician (often defined as a pregnancy surviving at six weeks or more after last menstrual period). (See PREGNANCY LOSS)

### CONCEPTION

Fertilisation of an ovum by a sperm producing a zygote, typically occurring in the fallopian tube. Not necessarily the establishment of pregnancy,

### CONCEPTUS

A generic term for the product of an ovum and sperm, including all stages from fertilisation to delivery.

### CONTRACEPTION

Methods used by sexually active couples to prevent conception. This includes reversible behavioural methods such as natural family planning methods, coitus interruptus (withdrawal), barrier methods such as diaphragm and condom use, woman's systemic use of hormones, and post-coital drugs. Non-reversible methods may include hysterectomy and tubal ligation (which among some women can be reversed).

### CORPUS LUTEUM

A transient hormonally active tissue on the surface of the ovary that regulates the second half of the menstrual cycle (the luteal phase) by the production of progesterone. The corpus luteum is formed from the remnants of the ruptured ovarian follicle.

### EMBRYO

Stage of development from roughly the second week (around implantation) through the eighth week of life, during which the major organ systems are established.

### ENDOMETRIUM

The lining of the uterus, which proliferates during each menstrual cycle in preparation for implantation of a conceptus and then is sloughed (in "menstrual bleeding") during the secretory phase if no pregnancy has occurred.

### FALLOPIAN TUBES (SEE OVIDUCTS)

### FERTILITY

The capacity to conceive and deliver a baby. This is the common usage in colloquial and medical English. Demographers define fertility differently to mean the actual production of a baby rather than the latent capacity to do so. In that sense (not preferred), "fertility" is the proof of being able to conceive, rather than the potential for it.

### Fecundity

The capacity to conceive and deliver a baby (same as fertility).<sup>7</sup>

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**Fecundability**

A couple's probability of conception in one menstrual cycle, given regular intercourse and no method of contraception. There is wide variation in fecundability among couples depending on age of the partners, coital frequency, and other factors.<sup>8</sup>

**Fertile window**

The time during the menstrual cycle during which intercourse can produce conception (specifically, the six days ending on day of ovulation).<sup>9</sup>

**Infertility**

Inability to achieve a clinically recognised pregnancy after attempting for more than a year (American College of Obstetrics and Gynecology definition), or for more than two years (World Health Organisation definition).<sup>10 11</sup> Couples with low fecundability may have infertile intervals before a pregnancy.

**Primary infertility**

The failure of an individual or couple ever to have achieved a pregnancy.

**Secondary infertility**

Inability of an individual or couple to achieve pregnancy after having had a previous pregnancy.

**Sterility**

The complete inability of a person or couple to conceive. This may be intentional (for example, surgical sterilisation) or unintentional (for example, result of upper reproductive tract infection in women). When sterile people are included in study population to determine fecundity, higher rates of infecundity and longer times to pregnancy may be present.

**Subfertility**

Probability of conception, or fecundability, that is less than "normal". Normal fecundability differs greatly throughout the world, determined by such things as age structure of the population and rates of sexually transmitted diseases. As used by demographers, subfertility would also include women who are unable to carry a pregnancy to live birth.

**Time to pregnancy**

Time interval (counted in months or menstrual cycles) from the time contraception is discontinued (or unprotected intercourse is initiated) to the conception of a pregnancy. The basis for estimating fecundability.

**FERTILISATION**

The combination of the genetic material of an ovum and a sperm to produce a conceptus.

**GAMETE**

A haploid reproductive cell (ovum or sperm).

**HUMAN CHORIONIC GONADOTROPIN (HCG)**

A glycoprotein hormone secreted by the cells of the blastocyst (that later become the placenta) soon after pregnancy is established. hCG mimics luteinising hormone, and is the standard hormonal sign of pregnancy. (All home pregnancy tests and clinical serum tests are based on measures of hCG.)

**HYSTERECTOMY**

Surgical removal of the uterus, which may or may not include removal of the ovaries.

**IMPLANTATION**

Attachment of the blastocyst to the uterine lining. In humans implantation typically takes place 6 to 12 days after conception.<sup>12</sup>

**IN VITRO FERTILISATION (IVF)**

Fertilisation that takes place outside the body, conducted by combining sperm and ova under favourable conditions. (While these babies are colloquially known as "test tube babies", fertilisation usually takes place in a flat dish.)

**INDUCED ABORTION**

Intentional termination of a pregnancy and removal of conceptus through either medical or surgical intervention, typically in the first or second trimester of pregnancy. Carried out for reasons ranging from unwanted pregnancy to malformations of the fetus to conditions that threaten the life of the mother.

**INTRACELLULAR SPERM INJECTION (ICSI)**

A variation of in vitro fertilisation (IVF) in which a single viable sperm is inserted into an ovum. A common intervention for couples with male factor infertility. In some situations, ICSI and other methods of IVF are used together.<sup>3</sup>

**MENOPAUSE**

The time of cessation of ovarian function, either naturally or by removal of the ovaries. A prospective definition of natural menopause is difficult, as it is possible only in retrospect to know when a woman's "last" menses has occurred. Some prospective epidemiological studies have defined menopause as the absence of menstruation for at least 12 months.<sup>13</sup> Clinical studies may use more strict clinical definitions (at least 55 years of age and no natural menses for five years, or no natural menses for at least two years and serum FSH concentration more than 40 IU/l, or recorded bilateral oophorectomy, or reported bilateral oophorectomy with FSH concentration more than 40 IU/l and oestradiol concentration less than 92 pmol/l).<sup>14</sup> Mean age at menopause is around 51.<sup>15</sup>

**Ovarian senescence**

Exhaustion of ovarian follicles and the decline in production of ovarian hormones with age, culminating in menopause.

**Perimenopause**

Stage before natural menopause during which ovarian oestrogen production becomes more erratic, and menstrual cycles lengthen and become more variable.

**Premature menopause**

Natural (non-surgical) menopause before the age of 40 (also called premature ovarian failure).<sup>16</sup>

**MENSTRUAL CYCLE**

Women's monthly cycle of ovulation and bleeding that includes two distinctive phases (follicular and luteal). The benchmark of the cycle is onset of menses.

**Follicular phase**

The first phase of the menstrual cycle, usually starting on the day menses begins and ending on the day before ovulation. Length of the follicular phase can be highly variable, ranging from 10 to more than 50 days.<sup>17</sup>

**Luteal phase**

The second major phase of the menstrual cycle, usually starting with the day after ovulation and ending on the day before the onset of next menses. The luteal phase is more regular than the follicular, although it is not fixed at two

weeks as is sometimes assumed (range of around 11 to 17 days).<sup>17</sup>

### **(Secondary) amenorrhoea**

A time without menses, either pathological or physiological (such as during pregnancy) among women of reproductive age who have already had a spontaneous menstruation. The American College of Obstetrics and Gynecology defines amenorrhoea as at least three months without menses.<sup>18</sup> May be medically induced.

### **Primary amenorrhoea**

The condition of never having had menses among women who are at least 16 years old.<sup>18</sup> May be medically induced.

### **Lactational amenorrhoea**

The temporary cessation of menses with regular breast feeding.

### **OLIGOSPERMIA**

Low concentrations of sperm in semen (<20 million/ml); a common cause of male subfertility.<sup>19</sup> Other aspects of sperm activity and morphology are also assessed to determine male factor infertility. (See SEMEN ANALYSIS)

### **OOCYTE**

Female germ cell that has begun meiosis, commonly limited to mean the egg before ovulation.

### **OVIDUCTS (FALLOPIAN TUBES)**

Tubes attached to the uterus and opening near the ovaries, through which the ova travel on their way to the uterus. Site of fertilisation. Oviducts are easily damaged by infection, leading to reduced fecundability.<sup>20</sup>

### **OVULATION**

The release of an oocyte from a mature ovarian follicle; at times in some women, more than one oocyte may be release.

### **OVARIAN FOLLICLE**

A fluid filled chamber on the surface of the ovary that encases an oocyte. While the oocyte is microscopic, the follicle is not—follicles often reach a diameter of two centimetres before rupture.

### **OVUM**

The female reproductive gamete, also called the egg. Sometimes used more specifically to designate the egg after ovulation but before penetration of a sperm.

### **PELVIC INFLAMMATORY DISEASE (PID)**

Inflammation from ascending infection and damage to one or more pelvic organs (for example, obstruction of one or both oviducts), usually from a sexually transmitted infection. An important cause of ectopic pregnancy and infertility.

### **PREGNANCY LOSS**

#### **Biochemical (subclinical, early) loss**

Pregnancy ending with vaginal bleeding that is easily mistaken for menses. Sometimes defined as pregnancy loss within six weeks of LMP (last regular menstrual period). Pregnancies lost after implantation but before producing symptoms can be detected by measurement of human chorionic gonadotropin in urine or blood. About 25% of pregnancies end in detectable early loss.<sup>21</sup>

#### **(Clinically) Recognised loss**

Any loss of a product of conception after the woman recognises she is pregnant; commonly, a clinician may also know of her pregnancy status. Includes spontaneous

abortions (miscarriages), ectopic pregnancies, and stillbirths. (See CLINICAL PREGNANCY)

### **Ectopic pregnancy**

Implantation of the conceptus anywhere outside the uterus, often but not always in the oviduct (“tubal pregnancy”).

### **Spontaneous abortion (miscarriage)**

Loss of a clinically recognised pregnancy, most of which occur in the first trimester. Upper limits of gestational age for a spontaneous abortion can vary, often set at 20 or 28 weeks.<sup>22–23</sup> About 10% to 15% of clinically recognised pregnancies end in spontaneous abortion.<sup>23</sup>

### **Fetal death (stillbirth)**

There is probably no health outcome with a greater number of conflicting, authoritative, legally mandated definitions. The basic WHO definition of fetal death is the intrauterine death of any conceptus at any time during pregnancy.<sup>24</sup> However, for practical purposes, legal definitions usually require recorded fetal deaths to exceed some gestational age (16, 20, 22, 24, or 28 weeks) or birth weight (350, 400, 500, or 1000 g). In the USA, there are eight different definitions by combinations of gestational age and weight, and at least as many in Europe.<sup>25–26</sup>

### **PUBERTY**

The onset and progression of rapid growth—signified in changes in physical appearance, hormone production, and behaviour—in adolescence culminating in sexual maturity.

### **Thelarche**

The prepubertal onset of breast development.

### **Menarche**

The event of first menses, marking the onset of a woman’s capacity to reproduce.

### **SEMEN ANALYSIS**

A laboratory assessment of semen (both spermatozoa and seminal plasma) to identify possible causes of male infertility. Components of semen analysis are semen volume, sperm concentration, sperm motility, sperm morphology, and concentration of white blood cells, and an immunobead or mixed antiglobulin reaction test.<sup>19–27</sup>

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## THE JECH GALLERY

### Cheers for health

This image (which is common in the rural populations of Peru and several countries), is of a “bodega” (little market) in Puerto Maldonado (a city in the middle of the Peruvian Amazon forest) prepared as a clinic. The bed for the examination of the patient is surrounded by boxes of beers. It is seen here how social inequalities and lack of opportunities influence directly the forgotten and poor people. Perhaps it is time to consider the theme of inequalities in medical careers, to work with all medical students, and their clinical practices in towns such as illustrated here.

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