

# THE ILLNESS PARAMETERS OF PREGNANCY

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## THE ILLNESS PARAMETERS OF PREGNANCY

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**Abstract**—Pregnancy has always held certain risks of death or serious complications for women, although the medical profession has helped to reduce these risks significantly in recent years. These risks arise from the pathological features of pregnancy, which regularly appear in spite of the medical profession's insistence on calling pregnancy "normal", or rather, a modified state of health.

Furthermore, we may easily place pregnancy within the traditional cognitive framework of illness by listing and classifying the *illness parameters* of pregnancy; etiology, pathogenesis, pathophysiology, clinical manifestations including diagnostic signs and symptoms, laboratory findings, complications, differential diagnosis, treatment, prognosis, epidemiology, prevention, and behavioral aspects.

It appears that, in terms of modern knowledge, it would be more appropriate and useful to regard pregnancy as an illness for which Western society has already devised an elaborate system of prevention and treatment.

*Of The Signs of Conception* (From Book I, Chapter III, of *Des Maladies Des Femmes Grosses Et Accouchées* by Francis Mauriceau, Paris, 1668)

"I will not trouble myself to make a recital of a great number of signs of conception . . . , but only the most essential and ordinary, by which a Chirurgion may be assured of it; of which some may be presently perceived, others not till afterwards. . . .

'She may know whether she retains the Seeds, if she perceives nothing flow down from the womb after Copulation: The Woman some few months after perceives also some small pain about her Navel, and some little commotions in the bottom of her Belly, caused by the womb's closing itself to retain the Seeds. . . . the light pain of the Navel comes from the Blader [*sic*] of the Urine. . . . which is a little agitated. . . .

'These are the signs of Conceptions. . . . Besides these signs, there are others which cannot be known till some time after, as when the Woman begins to have loathings, having no other Distemper, loseth her appetite to meats which she did love: longs to eate [*sic*] strange things, to which she was not accustomed, which happens according to the quality of the humors predominating in her, and with which she abounds: She hath often nauseatings and vomittings, which continue a long time: The Tearms [*sic*] stopping, no other cause appearing, having always been in good order; her Breasts swell, wax hard, and cause pain, from the flowing of the blood and humours to them, wanting their ordinary evacuation. . . . the Navel starts, her Nipples are very obscure or dark colored, with a yellow livid circle round about: her Eyes are dejected and hollow, the whites of them dull and troubled: her blood when she hath conceived some time, is always bad, because of the superfluities of it not being purged, as accustomed, is altered and corrupted by their mixture.

'All these signs concurring in Woman who hath used copulation, or the most part of them together and successively, according to their seasons; we may pass judgment, that she hath conceived, notwithstanding that many of them may happen upon the suppression of the terms, which usually produce the like."

(Translation by Hugh Chamberlen, M.D., 1673)

The clinical entity of human pregnancy has been the subject of specialized attention within the medical profession to an increasing extent during the past several hundred years. The Chamberlen family of 16th

century England developed the obstetrical forceps which were the forerunners of a wide variety of similar instruments useful in today's obstetrical practice [1]. Semmelweis made his famous discoveries regarding the role of handwashing in the prevention of puerperal infections in 1847 [2]. The early part of this century saw the development of the specialty of obstetrics and maternal mortality began a dramatic decline. Part of this decline was related to better living conditions and nutrition. A significant part of the decline, however, arose from the increasingly effective medical management of pregnancy including the prevention and treatment of eclampsia, postpartum hemorrhage, and postpartum infection [3, 4]. Successful surgical intervention, including Caesarean section, in the cases of soft tissue and bony dystocia, also saved many lives.

The combination of factors, including longer birth intervals and fewer total pregnancies in the average fecund woman, has resulted in a lowering of the U.S. maternal mortality rate from 680 in the early 1920s to the present 21.5 per 100,000 live births [5, 6]. The risks of serious morbidity and mortality have always been a part of pregnancy and may continue to be for some time, but some authors have contended that the mortality rates can be brought still lower [7-9].

The important fact, however, is that the pregnant woman is subject to a wide variety of serious and sometimes lethal complications arising directly from the physiological changes which take place during pregnancy. This fact forces us to consider the possibility that pregnancy may be regarded as a specific kind of pathological condition which can be described, diagnosed, treated and prevented in the same manner as other clinical entities.

With this in mind, we may consider the hypothesis that pregnancy is an illness and attempt to determine whether this hypothesis explains reality, has predictive value, has survival value for the species and for individuals experiencing pregnancy, and is consistent with good standards of medical practice.

Describing pregnancy in the same manner as a well-recognized illness is not the same as saying that pregnancy is an illness; however, it may be deemed

a useful exercise if it helps us to understand better our framework of action with regard to pregnancy. A logical point of departure is simply to enumerate in brief outline those features of pregnancy which coincide with the recognized *illness parameters* of any clinical syndrome.

#### DEFINITION

*We may define human pregnancy as an episodic, moderately extended chronic condition with a definable mortality risk to which females are uniquely though not uniformly susceptible. It is a universally distributed bio-social adaptation resulting in species reproduction and has a changing significance for species survival.*

#### ILLNESS PARAMETERS

The following *illness parameters* of the condition of pregnancy may be described:

- (1) *Etiology.*
- Fertilization and implantation of ovum
- (2) *Pathogenesis.*
- Host-parasite relationship
- (3) *Pathophysiology.*
- Displacement and compression of abdominal contents
- Ureteral dilatation [10]
- Increased venous pressure [11, 12]
- Increased estrogen and progesterone levels [13]
- Elevated basal metabolism rate [14]
- Glycosuria [15]
- Increased aldosterone secretion [16]
- Sodium and water retention [17-19]
- Decreased CO<sub>2</sub> [20]
- Hypercoagulability of blood [21, 22]
- Increased blood volume [23, 24]
- Bone marrow hyperplasia [25]
- Increased renal blood flow [26]
- Increased glomerular filtration rate [27, 28]
- Increased hepatic metabolic activity [29]
- (4) *Clinical manifestations* include a *subclinical phase* followed by distinct *clinical signs* and *symptoms* which provide the basis for *clinical diagnosis*. Diagnosis may also be obtained through gross examination of the products of conception:
  - Positive signs of pregnancy.* (Hellman and Pritchard, 1971)
    - \* hearing and counting the fetal heart beat
    - \* perception of active fetal movements by the examiner
    - \* radiological recognition of the fetal skeleton
    - \* sonographic recognition of the fetal parts
  - Probable signs of pregnancy.* (Hellman and Pritchard, 1971)
    - \* enlargement of the abdomen
    - \* changes in the shape, size, and consistency of the uterus
    - \* changes in the cervix
    - \* ballotment
    - \* outlining the fetus
    - \* positive hormonal test for pregnancy
  - Presumptive signs and symptoms of pregnancy.* (Hellman and Pritchard, 1971)
    - \* cessation of menses
    - \* changes in the breasts
    - \* nausea and vomiting [30]
    - \* discoloration of the mucous membranes of the vagina and vulva
    - \* pigmentation of the skin and development of abdominal striae
    - \* urinary disturbances
    - \* fatigue

*Other symptoms of pregnancy.* (Hellman and Pritchard, 1971; Benson R. C., *Handbook of Obstetrics & Gynecology*, Lange, 1964)

- \* pica [31, 32]
- \* increased irritability [33]
- \* marked fluctuations in libido [34]
- \* leg cramps
- \* abdominal pain
- \* backache
- \* dyspnea
- (5) *Laboratory findings.*
  - \* chorionic gonadotrophin present [35, 36]
  - \* hyperlipemia [37]
  - \* decreased serum calcium [38]
  - \* decreased serum iron [39]
  - \* decreased hemoglobin [40]
  - \* increased iron-binding capacity [41]
  - \* decreased serum folic acid [42-44]
  - \* increased serum copper [45]
  - \* increased neutrophil alkaline phosphatase [46, 47]
  - \* alterations in serum protein pattern: decreased immunoglobulin G [48, 49]
  - \* increased fibrinogen levels [50, 51]
  - \* positive C-reactive protein [52]
  - \* bacteriuria [53]
  - \* histologic study of the products of conception
- (6) *Complications* include both *acute* and *subacute exacerbations* which are specifically associated with conception and pregnancy: (Hellman and Pritchard, 1971)
  - \* diseases of the trophoblast: benign—hydatidiform mole [54, 55]; malignant—chorioadenoma destruens—choriocarcinoma
  - \* pre-eclampsia [56]
  - \* eclampsia
  - \* anemia
  - \* placenta praevia
  - \* abruptio placentae
  - \* hypofibrinogenemia
  - \* dystocia
  - \* uterine rupture
  - \* amniotic fluid embolism
  - \* diabetes
  - \* urinary tract infection
  - \* hydramnios
  - \* multiple pregnancy
  - \* ectopic pregnancy
  - \* hyperemesis gravidarum
  - \* displacement of the uterus
  - \* thromboembolic disease [57]
  - \* puerperal psychosis
  - \* hemorrhage
  - \* puerperal infection
  - \* retention of placenta
  - \* uterine dysfunction
  - \* sickle cell crisis [58]
  - \* right ovarian vein syndrome [59, 60]
- (7) *Differential diagnosis.* (Hellman and Pritchard, 1971; Benson, 1964). Requires distinction between
  - \* uncomplicated pregnancy
  - \* hydatidiform mole
  - \* pseudocyesis
  - \* hematometra
  - \* uterine sarcoma
  - \* enlargement of uterus due to interstitial or submucous myomas
  - \* extrauterine tumors
- (8) *Treatment* may include *medical management* in the form of prenatal care; *early surgical intervention* in the form of abortion; *late surgical intervention* in such a form as Caesarean section; and/or *supportive psychotherapy*.
- (9) *Prognosis* includes a characteristic *duration* which varies within certain limits, *recovery* which may be spontaneous or induced, a definable *recovery rate*, and a risk

of permanent or temporary *sequelae*. Pregnancy carries a *case fatality rate* which varies according to the patient's general health status and the availability of effective medical care, and it can be listed as a *cause of death*. Its recurrence is *episodic* among *survivors* not practicing effective preventive measures.

(10) *Epidemiology*. Pregnancy is *universally occurring* among females, but *susceptibility* is highly variable and dependent on both biological and nonbiological factors. A fecund female engaging in coitus with a fertile male at a time of maximum susceptibility is said to be "*exposed to the risk of pregnancy*". There is a definable *population at risk*, an *incidence* of both conception and pregnancy among the population at risk, a *point prevalence* and *period prevalence* of pregnancy, and *periodicity* in the latter three characteristics [61, 62]. Community *case finding* techniques may employ a urine *screening test* for the detection of pregnancy followed by *referral* of patients for appropriate treatment.

(11) *Prevention*. Pregnancy may be prevented by a wide variety of methods of variable effectiveness, including abstinence and sterilization [63].

(12) *Behavioral aspects*. Patients may exhibit *health behavior* in anticipation or prevention of pregnancy, *illness behavior* in seeking medical or surgical treatment for an existing pregnancy and participation in a *sick role* [64-69]. Pregnancy may also have other *overlaid functions* such as *status affirmation* [70-73].

## DISCUSSION

The preceding exercise allows us to view pregnancy in the context of human illness. Pregnancy is viewed, by Western society, at least, as a "normal" phenomenon to be distinguished from illness states, even though defining pregnancy as "normal" neither explains what we know about pregnancy nor is it predictive of events surrounding pregnancy. The strength of any hypothesis is its utility in dealing with reality. The hypothesis that pregnancy is merely an altered state of "normal" health does not meet this test. Neither does the null hypothesis that pregnancy is not an illness.

Using the formulation of the sick role as defined by Parsons, McKinlay has examined this question and concluded that pregnancy is a normal state which cannot be considered an illness [74]. Aside from McKinlay's consideration of the relationship of pregnancy to Parson's paradigm, he accepts certain assumptions about pregnancy which can be questioned.

For example, McKinlay calls pregnancy "statistically normal" since "most of the population of possible conceiver at some time... are in this state". While there is no data provided to support this assertion or extended discussion of what this means in terms of epidemiological parameters such as incidence, point prevalence, period prevalence, susceptibility, case fatality rate, or definition of population at risk, there is a hidden assumption that what is common is "normal". However, changing technology, customs, and attitudes may make such a condition both less common and simultaneously bring about a perception that it is not necessarily "normal" [75].

A second assumption made by McKinlay is that pregnancy can be considered "normal" simply because it has been, up until now, a biological

adaptation resulting in species survival. This assumption can be viewed in another perspective, as will be shown later.

A third erroneous assumption made by McKinlay is that pregnancy can be considered "normal" because it is often thought to be a desirable state of affairs. As the director of a busy abortion clinic, I can testify it is quite often regarded as a totally undesirable state of affairs. In any case, the frequency with which women seek abortions to terminate an unwanted pregnancy is well documented [76-78].

The most serious error in McKinlay's entire paper, however, lies in his assertion that he is concerned primarily with women "... who conceive, experience an uneventful gestation and parturition, and have no resulting delivery or obstetric complications". His justification for this is that they comprise the majority of those who become pregnant. The latter assertion is not necessarily true, since various reports have been published showing ratios of 650 to over 1000 abortions per 1000 live births [79, 80].

The principal error, however, lies in the systematic exclusion of a significant portion of women who carry pregnancies to term or near-term but experience a wide variety of catastrophic or serious complications. In epidemiologic methodology, this type of error is called *selection* or *bias*. McKinlay defines his conclusion in advance by excluding a significant portion (i.e. women obtaining abortions or having obstetric complications) of the universe about whom he is making generalizations.

Another serious error is the procedure of beginning with a definition (McKinlay's or Parson's) of illness or sick-role and then trying to fit generalizations about pregnancy into these definitions, rather than beginning with data and attempting to form generalizations from these.

For example, McKinlay questions whether a pregnant woman can be said to be allowed exemption from the performance of normal social-role obligations. He asserts that this is seldom the case, although both Newman and Menken have shown evidence to the contrary [81, 82]. One only need ask: what about the teenage girl who gets pregnant before finishing high school? In the absence of effective intervention (i.e. abortion), her social-role obligations are certainly interrupted.

McKinlay's assertion that the pregnant woman cannot be exempted from responsibility for her "condition", and therefore is disqualified from one of Parson's criteria, is more of a philosophical point. It is clear, however, that women who are raped and women who are using contraception which fails (such as an intrauterine device) cannot be said to have sought pregnancy. It is probably true, also, that most people have sexual intercourse not for the purpose of conceiving, but because it feels good.

McKinlay doubts that the pregnant woman is motivated to get well. To this one may only contrast the legendary and heroic efforts of women to obtain abortions for unwanted pregnancies in spite of every obstacle which is placed in their paths. Also, one may say that a woman may expect to "get well" if she only waits for nine months. The search for prenatal care during this period is a way of avoiding the more serious disasters of pregnancy for the woman who

has a desired pregnancy or is afraid to seek an abortion.

As for the lack of talk about "curing" with regard to pregnancy, abortion patients frequently view their procedure in this light and respond to it accordingly. Lewis documents the common Latin American characterization of parturition as "curing" or "healing" [83]. Also, use of the system devised by Kasl and Cobb [84] and Mechanic [85] would allow attempts to obtain contraception to be characterized as "health behavior" and attempts to obtain prenatal care or abortion as "illness behavior".

McKinlay asserts that pregnant women are not obliged to seek "technically competent help", as required by Parsons for them to fit into the "sick role". Whether or not most pregnant women seek such help, of course, depends to a considerable extent on whether it is available, how and by whom "technical competence" is defined, whether they are aware of such service, and whether they have the bus fare available to reach it. Both public and private prenatal services are heavily used in the United States, as they are in Britain and other Western European countries.

In any case, the medical statistics recited previously clearly show that women who are pregnant *should* seek technically competent help, *whether the pregnancy is desired or not*. Both the maternal mortality rate and septic abortion rate have declined markedly in direct proportion to the availability of competent prenatal and safe abortion services [86, 87]. There are few medical facts which are so well known and well documented.

Various authors have pointed out the pathological features of pregnancy [88-90]. In 1668, Mauriceau referred to it as "... a disease of nine months duration" (*maladie de neuf mois*) [91]. Its resemblance to other illness states, in any case, is no stranger to women, and it displays many non-specific features of illness. In spite of its actual risks and subjective symptomatology, however, pregnancy is still widely regarded as a "normal" phenomenon [92], particularly in standard medical literature, to wit:

"From a biologic point of view pregnancy and labor represent the highest function of the female reproductive system and *a priori* should be considered normal. The manifold changes in the maternal organism during pregnancy, however, render the borderline between health and disease less distinct, and slight derangements... may pre-empt pathologic conditions that seriously threaten the life of the mother or the child or both... Indeed, it is an absolute necessity [to keep pregnant patients under close supervision] in order to prevent disasters in many women and their offspring."

(Eastman and Hellman, *Williams' Obstetrics*, 13th ed., 1966)

In the most recent edition, the authors followed the opening statement of this paragraph ("*A priori* pregnancy should be considered normal.") with a new sentence: "Unfortunately, the great variety and complexity of the functional and anatomic changes induced by gestation tend to stigmatize the pregnancy as an abnormal state if not actually a disease." (Hellman and Pritchard, *Williams' Obstetrics*, 14th ed., 1971.)

The continued use of the term "normal pregnancy" in medical education and practice has a tendency to

perpetuate and enhance this view of pregnancy as "normal". The term is useful in the context of obstetrical practice in distinguishing uncomplicated pregnancies from complicated ones, but it tends to obscure the possibility that pregnancy, while exceedingly common, may be considered a pathological process.

The relationship between the gravid female and the fetoplacental unit, for example, is basically one of a host and parasite. Local and systemic defense mechanisms on the part of the host may include increased uterine circulation, uterine contraction, increased blood volume and a variety of other reactions including isoimmunization. Billingham has suggested that parturition may represent an immunological rejection similar to rejection of a homograft [93]. Aggressive mechanisms on the part of the fetoplacental unit include local invasion by the syncytial trophoblast which is initially protected from maternal immunorejection [94, 95], compression of the abdominal viscera and vessels, rupture of the uterus or establishment of ectopic pregnancy, elaboration of a luteotrophic hormone, and nutritional competition with the host. Kaplan and Grumbach hypothesize that the increased maternal resistance to insulin produced by the placental lactogen has the effect of sparing glucose for transfer to the fetus [96]. Page has speculated since 1939 that the placenta elaborates a substance which results in an increased placental blood perfusion by producing maternal hypertension, leading, in turn, to the development of pre-eclampsia and eclampsia [97].

Cameron enumerates several conditions upon which the successful existence of a parasite depends: (1) penetration into the host; (2) adequate conditions of survival within the host; (3) protective mechanisms of the parasite against the defenses of the host; and (4) absence of effective reaction of the host [98]. Conditions of penetration into, and persistence within the host are known as *invasiveness*. The capacity of parasites to produce disease is referred to as *pathogenicity*, while *virulence* is the measure of this capacity [99]. None of these features depend exclusively on the parasite, but rather are determined by the interaction between parasite and host.

In this context, it may be seen that pregnancy, while exhibiting certain neoplastic characteristics, including actual malignancy at times, is most easily categorized as a host-parasite relationship. To this end, the effect of medical treatment, as in other parasitic conditions, is aimed at three fundamental goals: the blocking of the deleterious effects of the parasite(s) or its destruction, the facilitation of the action of maternal systemic defense mechanisms, and the improvement of the general conditions of the host, which in itself results in an increase in defense mechanisms [100]. The institutional arrangements and technology through which such goals are identified and accomplished may be regarded as cultural adaptations which augment maternal biological adaptations.

The idea that pregnancy could be considered a pathological process does not seem at first to be consistent with the continued survival of human species for the past million years. Any biological event, however, and particularly disease process, can be considered in the light of adaptive responses which result

in species survival and secondarily, survival of the individual organism [101–104]. In this respect, pregnancy is a highly successful biological adaptation to the survival needs of the species [105, 106], although its survival value is changing under conditions of rapid population growth. As with other adaptations, however, it may have disadvantages for all or a portion of the individuals in that species.

The best-known example of this is sickle-cell trait and sickle-cell disease of West Africa [107]. Heterozygous inheritance results in protection against lethal *falciparum* malaria, but homozygous inheritance is itself lethal for the small proportion of individuals who receive it. Pregnancy seems to be in the same general category: it has had outstanding survival advantages for the species but definite and often lethal disadvantages for individuals experiencing it. Our persistence in calling it “normal” in the face of these facts has been a *cultural* adaptation with a high survival value until recently.

The present situation is changed in three significant respects from previous human evolutionary experience:

(1) A greater assurance of individual survival has lessened anxiety that the majority of a given couple's offspring will not survive to adulthood;

(2) Technological developments such as effective contraception and safe abortion techniques now provide new choices and offer new perspectives about pregnancy which previously were unavailable;

(3) Under current conditions of phenomenal human population growth, “normal” (i.e. unlimited) reproduction, if anything, endangers survival of the human species and other species as well.

There has been a cultural lag, however, with respect to our view of pregnancy. We cling to the outmoded view of pregnancy as women's highest, most “normal” function, even though Western medicine has begun treating pregnancy as a specialized kind of illness. In terms of cultural function, Western society already defines pregnancy as an illness for which it has devised specific treatment programs ranging from medical management in the form of prenatal care to surgical intervention in the forms of abortion or Caesarean section. These treatment programs have had positive results which the patients themselves recognize and seek out whenever they can afford it.

Clearly, the view that pregnancy is a woman's most “normal” state has low survival value for the individual in terms of our growing understanding of the risks inherent in pregnancy and it has a decreasing survival value for the species in the context of rapid population growth. Instead of being adaptive, the view of pregnancy as “normal”, or rather, as a modified state of health, has become maladaptive both for individuals and for the species. Moreover, it does not explain the biological and social realities that accompany pregnancy.

This analysis, however, leaves us with the dilemma of having to cope with varying concepts of what is “normal”, what is “health”, what is “illness”, and what is “disease”.

Benedict once proposed that “normality” is culturally defined [108]. She gave examples of behavior in Kwakiutl society which, while considered “normal”

in that culture, would be considered unhealthy and delusional to the point of being psychotic in Western society. Mead later suggested that the question with health is whether it is regarded as an existing average or an ideal or goal to be attained [109]. In Western society, it tends to be the latter.

Using Mead's analysis, we can say that it was “normal” for the Cocos-Keeling Islander women to be pregnant for 25–30 per cent of their reproductive years (and therefore relatively “normal” to be pregnant), whereas the average suburban American housewife may expect to be pregnant for only 5 per cent of her fertile years [110]. For the American housewife, it is quite a bit less “normal” to be pregnant.

One question which arises here, of course, is that if a woman is “normal” when she is pregnant and has numerous potentially fatal physiological changes going on inside her, what is she when she is *not* pregnant?

Engel dealt with this problem to some extent in his proposal that *grief* be considered a disease. He pointed out that grief is “normal” only in a statistical sense of being common [111]. It is not, however, normal in the sense of total health. If disease is considered to be part of an adaptive process, though, grief can be more properly viewed as a disease. If the adaptive process is successful, recovery occurs and the patient re-achieves a state of health. If it is not successful, more illness or even death results.

This path is consistent with the analysis of Wolf, who viewed disease also as response or adaptation to noxious forces in the environment, as a reaction to, rather than an effect of noxious forces [112].

The concepts developed by Engel and Wolf would be consistent with the view of pregnancy presented here, i.e. that pregnancy has been a biosocial and particularly biological adaptation to the survival needs of the species in the general sense and is an individual physiological adaptation in interaction with the fetoplacental unit. The latter physiological adaptations may, as we have seen, either result in a spontaneous recovery or serious impairment and death.

There is a temptation, of course, to wonder if life itself is a disease and death the cure, as alluded to by McEwan [113]. This view may be held by philosophers and may someday prove to be valid, but the physician tends to view life in the full, functioning sense of being not only free of symptoms but having a sense of physical, mental, and social well-being.

Polgar, in defining health and illness in the Encyclopedia of Social Sciences, utilizes this latter World Health Organization definition of health as his starting point [114]. He goes on to define illness as temporary or permanent impairment of functioning or appearance which need not be restricted to a decrease in the ability to function in ordinary ways. This definition is concerned with the person as a member of a group as well as with his or her biological function.

Polgar also points out that explanations of illness serve, among other things, to indicate courses of preventive and curative action as well as to explain reality. Defining pregnancy as an illness would appear to be consistent with Polgar's definition.

There may be a difference between the *disease* entity as diagnosed by the physician, however, and

illness as experienced by the individual [115]. Health status as perceived by the patient may be more important in determining behavior in the context of illness than the correct medical diagnosis itself.

If the patient who is pregnant perceives herself as ill, for example, this may be much more important in terms of pregnancy outcome than the view of the physician that she is *not* ill [116]. Engel points out, moreover, that the presence of a complaint (i.e. symptoms of pregnancy) must be regarded as presumptive evidence of disease [117].

In view of these facts and analyses, it appears to be helpful to note those features, or parameters, of pregnancy which coincide with our traditional cognitive framework for "illness" in order to see how well it fits. The test of the strength of the hypothesis lies in whether it explains reality and whether it predicts events.

The questions become these: does the hypothesis that pregnancy is an illness explain the fact that people everywhere often seek its prevention, whatever the effectiveness of their methods, and have done so since the earliest historical times [118]? Does it explain the fact that once pregnancy occurs, important physiological changes take place, subjective symptoms appear, and a significant excess risk of death is experienced? Does it explain the fact that medical supervision will be sought *whether the pregnancy is desired or not*? Does it explain the fact that this is true in nearly all human cultures and that the same cultures respond by the maintenance of rituals, procedures, and specialized persons or skills in order to meet the demand for supervision or assistance of some kind? Does it explain the fact that these activities continue in spite of countless and repeated assertions that pregnancy is "normal"?

Pregnancy may not be an illness. If it is not, though, one must ask: in what way is it *not* an illness?

#### CONCLUSION

The hypothesis is presented that human pregnancy should be viewed as an episodic, moderately extended chronic condition with a definable mortality risk to which females are uniquely though not uniformly susceptible and which:

\* is almost entirely preventable through the use of effective contraception, and entirely so through sterilization or abstinence;

\* when not prevented, is the individual result of a set of species-specific biosocial adaptations with a changing significance for species survival;

\* is a neoplastic, endoparasitic (i.e. neoparasitic) autoinfection of relatively high pathogenicity and low average virulence which is localized, self-limited, and nontransmissible;

\* may be defined as an illness requiring medical supervision through: cultural traditions, functional or explicit; or individual illness behavior;

\* may be treated by a variety of surgical and medical procedures and supportive psychotherapy as indicated;

\* may be tolerated, sought, and/or valued for the purposes of reproduction, self-expression, and/or status affirmation; and

\* has an excellent prognosis for spontaneous recovery if managed under careful medical supervision.

Accordingly, the open recognition and legitimation of pregnancy as an illness would be consistent with the individual self-interest of those experiencing pregnancy, good standards of medical practice and the continued survival of human and other species.

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